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R H FARRANDS MEMORIAL ISSUE

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COLCHESTER ARCHAEOLOGICAL GROUP

Editorial

Capt. R. H. Farrands, D.S.C., R.N.R.

This issue of the Bulletin is special in that we have dedicated it to Dick Farrands, a member of the Group for many years, serving several spells on the Committee until his death in December, 1984. An obituary for Dick appeared in Volume 27 but, in this Volume, we have tried to summarise his archaeological work and to assess the contribution he has made to knowledge in Essex.

Dick was a prodigious worker, energetic and enthusiastic, always ready for a challenge and, in keeping with his profession as a Merchant Navy Officer and a Trinity House Pilot, precise in all his map work and recording. Fie was ever alert to what was going on around him as the proximity of his own home to the sites which he dug demonstrates. But, although working so often alone, he was always ready to help others. His work is a fine example of what an amateur can achieve. (He was a particular boon to editors as he always produced his article typewritten and perfect to the last comma well before the deadline).

In this Volume Paul Barford has written an account of Dick's field work and Ida McMaster of his aerial photography.

David Buckley, the County Archaeologist, has kindly sent us an expert's appreciation of Dick's contribution to knowledge in Essex, and a delightful photograph of him is included. Here he and Ida McMaster can be seen receiving the County Amenity Award for their album of aerial photography.

Although Dick's cancer was well advanced by the early 1980s few people were aware of it. He continued to work energetically and, knowing what the future held in store for him, made great efforts to get his records in order. Undaunted, he even took a skiing holiday which resulted in a badly fractured leg, only a couple of years earlier. For many of us our last memories of him will be at the Group Christmas Party in January, 1984. Dick was to be admitted to hospital next day for investigations for which he was fasting, but he cheerfully manned the bar for the whole evening, driving from Dovercourt and back in the snow. Then followed almost

a year of complete hospitalisation, though he was able to spend a few weeks at home before the end. The Group is proud of his achievements and we shall go on missing him for a long time yet.

Amongst other contributions to this issue James Fawn has contributed a long article on ancient salt making, challenging some of the earlier held theories and suggesting new interpretations of some of the evidence. We see here the value of re-assessing long held ideas contributed by several workers over a period of some 70 years.

In 1985/6 we enjoyed another series of excellent lectures in our Winter programme. For these we thank Ida McMaster who planned them and made all the arrangements with the lecturers, and Harry Palmer who has, once again, produced for us notes of every single talk.

Congratulations to Pat Adkins: Last year, 1985, Pat won the Lloyds Bank Award to Amateur Archaeologists. He received £100 for equipment and the cost of radio carbon dating on a sample from a possible Saxon smelting works.

This year, 1986, he has won the same award, this time for a remote control mechanism for a balloon controlled camera. Both awards given in recognition of his work at Site 2, Rook Farm, Little Totham.

This note provides an opportunity to thank Pat most sincerely for his regular and dependable operation of the slide projector at our weekly Winter meetings.

Again this year I am very glad to thank Jenny Knowles for all her help in the production of the Bulletin.

Editor

THE EXCAVATIONS AND FIELDWORK OF R.H. FARRANDS 1950-1985

P.M. Barford

I first met Dick Farrands in summer 1975 at the start of the 1975-1978 excavations of the Roman villa at Seaview Avenue, Little Oakley, directed by M.J. Corbishley. Dick had earlier dug the site alone in the 1950s. It was the first of many such meetings when Dick and I discussed local archaeology in general - and his own work in particular. He would show me his finds, loan them to me for further study and discuss his records with me. At the time I was to write the Pottery and Later Finds reports for the Corbishley excavation which was often complemented by material from Dick's earlier work there. It was clear that the one report would make most sense only if published with the other. Dick and I discussed this possibility several times but, unfortunately, his failing health and other commitments prevented our starting this work. After his untimely death it was clear that his Little Oakley excavation would never be reported as it deserved to be, unless I could take it on myself.

Fortunately Dave Buckley, the County Archaeologist, shared my view of the importance of the site - though neither his section nor the Colchester and Essex Museum staff could fit the writing up of Dick's excavation into their forthcoming work programme. It was finally agreed that reports of both the Farrands and the Corbishley excavations should appear together as an East Anglian Archaeology Monograph.

I have written up Dick's excavation and, to enable me to do so, Dave Buckley has provided funds and facilities. I am most grateful for this help and should, particularly, like to mention the assistance of the excellent draughtspersons in the Section, though I should add that the provisional plans in this paper are my work.

As I went through Dick's field notes, draft reports and finds - which went en masse to the Colchester and Essex Museum in accordance with his wishes upon his death - it became clear that his work embraced much more than just this one site, and that his field work between the years 1951 - 1960 was truly remarkable. It must be remembered, and I need not point this out to long-standing members of CAG, that professional field archaeology was all but dead in this area at that time, there being only J.G.S. Brinson, Rex Hull and Bryan Blake at work in virtually the whole county. Dick's work thus fills a large gap in our knowledge. It was, therefore, necessary to write up other sites in addition to Little Oakley and it is proposed to publish these as a series of notes in a forthcoming volume of the Transactions of the Essex Archaeological Society along with some complementary work of mine; for example, that on the Red Hills. Again, the County ° Archaeology Section has lent its full support to this scheme.

Dick's introduction to Archaeology

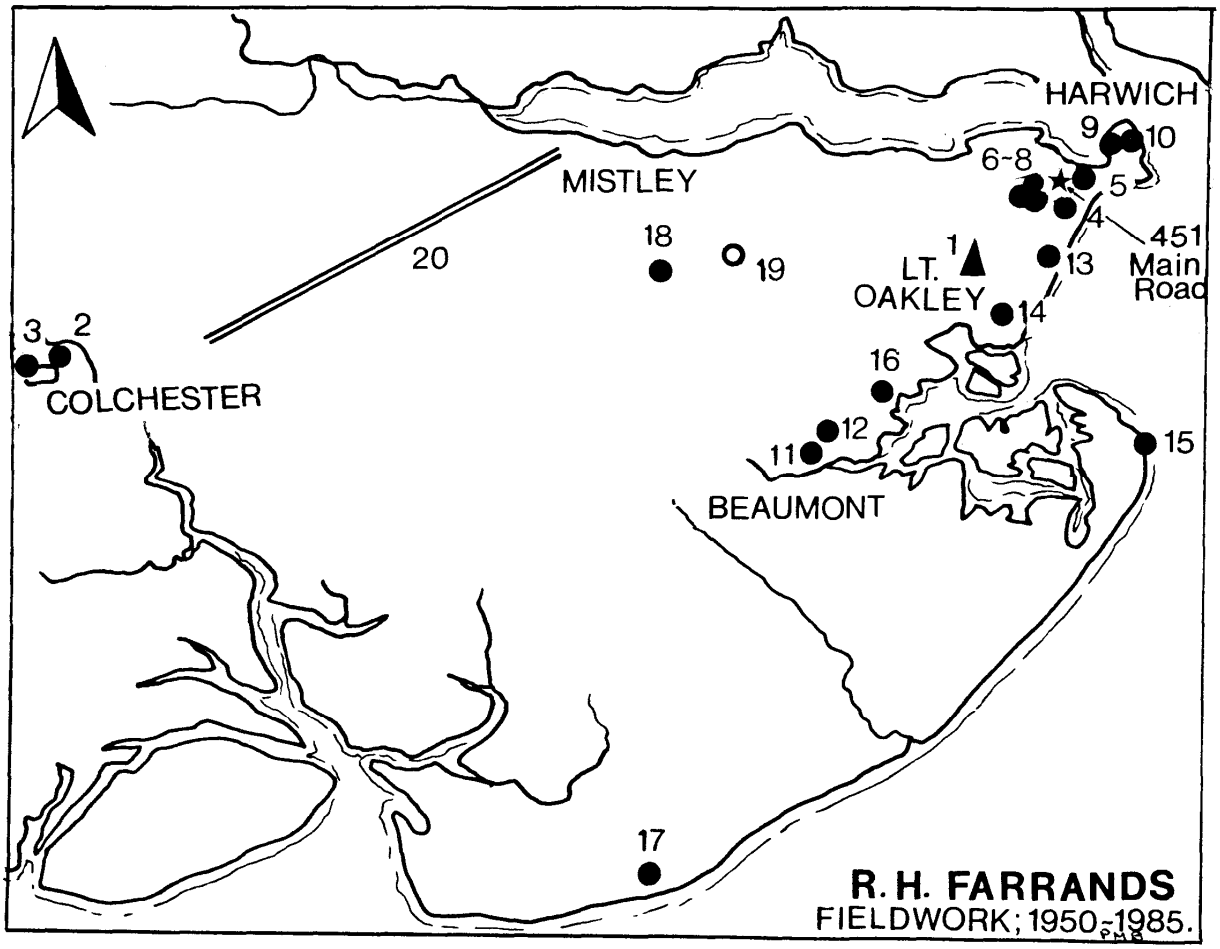
Dick was born in Southend but, in the 1920s, his father moved to Hove in Sussex. Dick remembered - as a schoolboy - being driven around the Sussex Downs and hearing from his father about the history of the monuments there (he later realised that this was somewhat romanticised). He went off to sea at the age of 16 and it was while on shore leave in 1948 that he recalled developing his first real interest in archaeology. In the library he read up the ancient sites of the area to impress a young lady-friend whom he took strolling on the Downs. I think it went deeper than that, for one of the sites he visited was a series of earthworks in Truleigh Hill near Thundersbarrow which was being ploughed up in 1948 for the first time since the abandonment of its fields. Within three years, the earthworks were totally destroyed. Dick realised he had to record the site. He surveyed it properly, collected a large amount of late Roman pottery and enlisted the help of a school master, Mr. Sheppard Frere, a classics teacher at nearby Lancing College. Frere brought a team of boys and began excavating a feature which turned out to be a Middle Bronze Age barrow. Those few days with Frere were, until 1956, the only practical training Dick had in excavating. Frere went on to become a professor at the London Institute of Archaeology and then a professor of Archaeology at Oxford. In 1950 Dick moved to Essex.

Dick told a good story referring to his time at Truleigh in 1948. He enlisted the help of a pretty German girl to take photographs. She was, in Dick's words, a one hundred per cent Nazi, who had worked for the German Naval High Command in the war and fled what is now the East German border, in advance of the Russians. Although she busily photographed Dick and his helpers with her Leica, he noticed that she frequently disappeared to the top of the hill where there was an RAF station. When Dick finally got the prints he saw that they had been processed by a firm in Kiel, Germany, and when he last met the girl in 1951 she was social secretary to a high ranking German Government official! The finds and records of this excavation are now in Brighton Museum and will be published in the near future.

It is for his excavations in Essex and, particularly, at Seaview Avenue, Little Oakley however, that Dick Farrands will probably be remembered. The final publication of this important site will be a substantial Monograph (Barford and Corbishley forthcoming). Dick had always intended to publish his part of the site fully and the beginning of the 1975-8 excavations under Mike Corbishley added new impetus to his intentions; but, for various reasons, he was not able to undertake this time-consuming and detailed work. After his death the finds and notes passed to the Colchester and Essex Museum where I began to work on them in April 1985 and, at the time of writing - July 1985 - the report on his part of the excavation is complete and ready for editing. As mentioned previously, publication will be as an East Anglian Archaeology Monograph (one of the first for Essex) with a projected publication date of 1987 or 1988. Publication is, however, now dependent on the receipt of the contribution by Mike Corbishley on his part of the excavation completed in 1978. He informs me it should be ready early in 1987. During the course of my work on Dick's part of the excavation at Little Oakley it became clear what an immense task Dick had had in front of him to complete the full report. In fact, it took me about ten months of almost full-time work to finish the project. An interim report, which appeared in the first volume of this Bulletin (Farrands 1958) is still substantially valid but, since it was written, new evidence has come to light which affects Dick's first conclusions. Since the publication of the full report is still some way off, the site, as it is currently understood, is now discussed at some length.

Descriptions of other sites Dick excavated follow and they are all shown on the map (Fig.1) by the number given them in the text.

Figure 1. Map showing sites of the fieldwork of R.H. Farrands in North-East Essex.



1. Little Oakley, The Roman Villa.

The site was discovered by Hazzledine Warren in a sewer trench in summer 1939 when he observed the substantial masonry foundations (Fig.2) of Building 1. In 1946-47 a 'pre-fab' estate was constructed and the site was visited by M.R. Hull and J.G.S. Brinson, but no excavation took place. In 1952, soon after he arrived in the area, Dick dug a trial trench in the allotments south of the area where Hull and Brinson had seen building remains and pottery. Dick's first finds were so promising that he hired a vacant allotment and received permission from Tendring District Council to excavate it. At the time the excavations began the area was under threat of redevelopment for garages, so work was in the nature of 'rescue' excavation. Dick worked almost single-handed at weekends, making a series of small overlapping trenches. These trenches revealed a remarkable sequence of features. As he worked on his allotment at site I (Figs. 2 and 3) he became more aware that he was investigating part of a larger site. Deeper ploughing in adjacent fields was bringing fresh material to the surface and, in 1953, he began work in a field to the south-east, site IV (Fig.2), which revealed Roman field ditches and Saxon pits containing important fifth century pottery (Farrands, 1975, Myres, 1969). In 1958 he was at work on a timber building, site II (Fig.2) to the west of the allotment, and a remarkable deep sequence of stratified deposits, site III (Fig.2) was found to the south of the allotments.

In 1961 human bones were ploughed up near site IV and a further excavation at site V was begun - but interrupted by the summary removal of the bones by the police due to a breakdown in communications within the police force. The first Dick knew of this was when the local police turned up one evening on his doorstep with a cardboard box containing the loose bones. No records were apparently kept by the police and one might remark that police exhumations of this nature could benefit from a more archaeological technique.

The opening of a single trench in 1973 on site IV to give local school children a chance to experience archaeological excavation, (and post excavation) brings Dick's field work at Little Oakley to a close. Probably most of the evidence sampled on sites II to V has now been damaged by deeper ploughing.

Figure 2. General plan (provisional) of Little Oakley Villa, showing all excavated areas

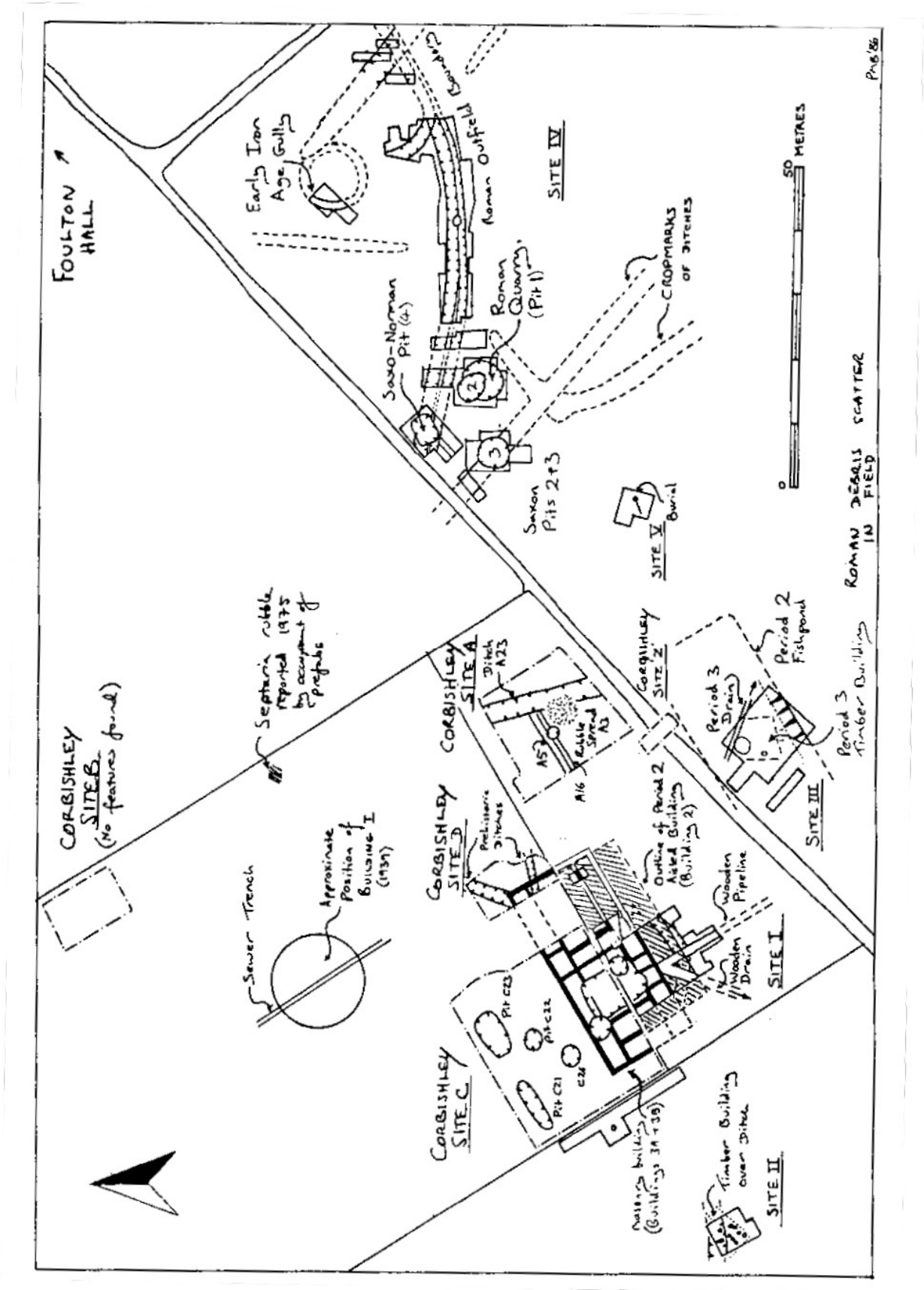
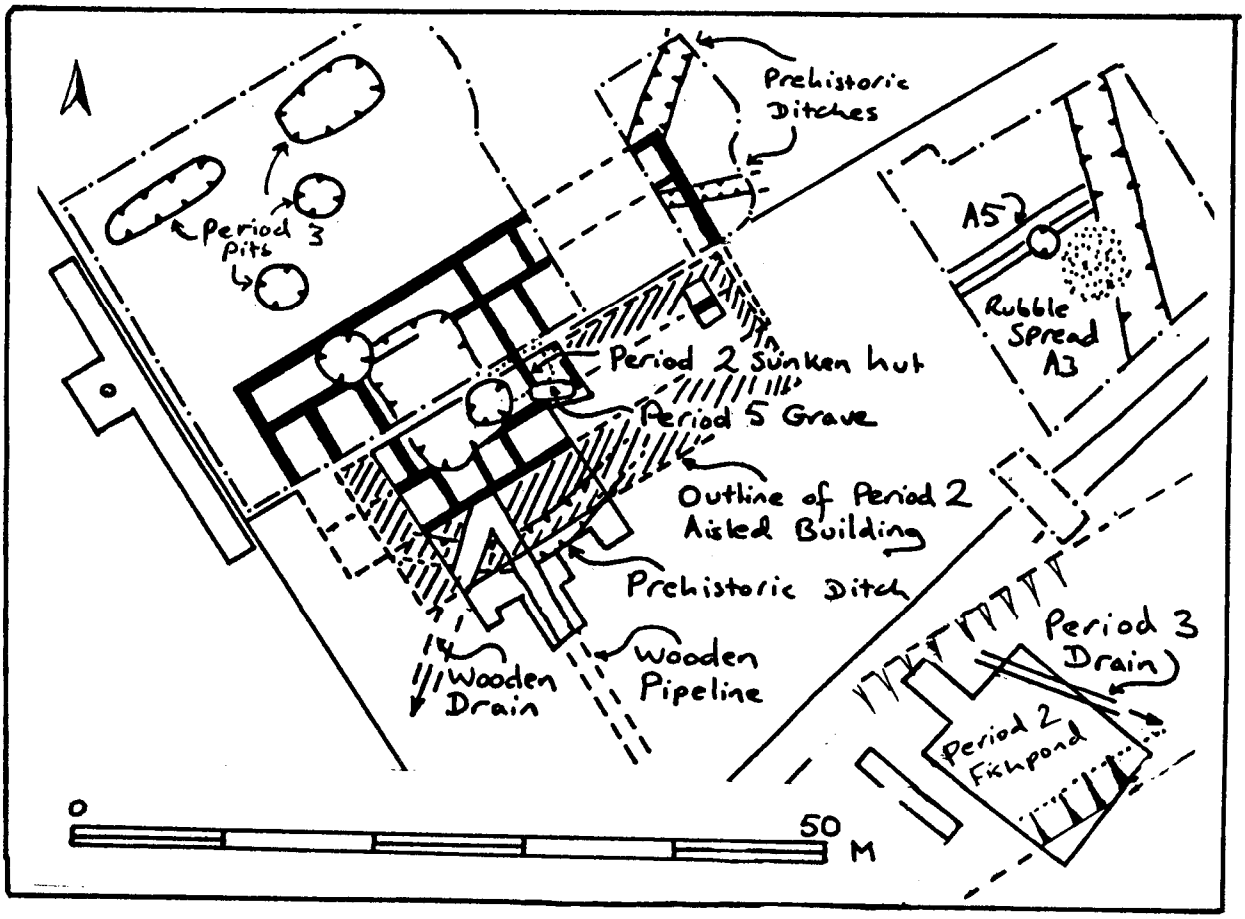


Figure 3. Detailed plan (provisional) of the Little Oakley Villa Buildings 2 and 3 and related features.



The site notes are not as full as would be expected from a modern excavation but this was by no means uncommon with excavations in the fifties and early sixties. This has made interpretation difficult and there are uncertainties and gaps which, had he lived, Dick could doubtless have filled from memory. The plans and sections are, however, very good and there is a good coverage by photography. Dick had made a start by ordering the notes and typing them up which made the early part of the work much easier than it would otherwise have been.

In 1974 the 'pre-fab' estate was scheduled for redevelopment and, as Dick was unable to devote enough time for a full excavation, he notified the County Archaeologist who then initiated the 1975-78 excavation under the direction of Mike Corbishley. Corbishley excavated large open areas which revealed more details of the site, but could not have been understood without the 1952-73 excavations (and vice versa). The results of all the excavations are summarised below, interim reports are detailed in the bibliography.

Little Oakley: Findings

The site has produced evidence for early Neolithic occupation (flintwork) but the earliest pottery dates from the Late Bronze Age and large assemblages of this period and the Early Iron Age were recovered. The site has also produced a little Middle and Late Iron Age pottery. One item was of particular interest, a bodysherd of Dressel 1 Italian wine amphora of the 1st century B.C. All of this pre-Roman material forms Period 1 of the site. There is Claudio-Neronian pottery from Building 1, but the main feature of the first villa is the Flavian aisled timber Building 2 which may have been an agricultural building. It overlay a sunken-floored hut (probably an animal pen). To the south of this building on site III a large steep sided feature almost 2 metres deep is interpreted as a fish pond (Fig.2). This first villa (Period 2) was clearly both sizeable and opulent. Since there is no evidence of pre-conquest occupation on the site of the villa, it may have been financed by foreign investment, in contrast to some other villas where it seems a native family 'got rich quickly' and built themselves a Roman villa.

In the mid second century, Period 3, the timber aisled building was replaced by a stone aisled building (Building 3A) which was later divided by cross walls to form a corridor villa (Building 3B). This included the

insertion of a bath suite, including a hypocausted room with an adjacent plunge bath with a piped water supply. The structure had mosaic and tesselated floors, walls with painted plaster imitating marble sheet and fragments of Purbeck marble veneer were also found. The animal bones found indicate a slight increase in cattle towards the end of Period 3. The field boundaries on site IV were changed several times in this period and the fish pond was infilled.

In the late fourth or early fifth century the villa was dismantled and some of the rubble used to form foundations for framed timber buildings as at Wroxeter (Barker 1986, fig.90B). Dick's record of these rubble spreads on sites I and II constitute one of the earliest British uses of the technique of drawing every stone as exposed by excavation (1958). This technique is now considered standard on many sites of various types, but it is interesting that Dick seems to have hit upon the idea himself long before the majority of professional archaeologists. On site 1 and in spread A3 the 'latest Roman' pottery was accompanied by handmade grass-tempered sherds, and it is argued that some form of 'sub-Roman' occupation of the villa site continued. Although grass-tempered pottery is normally regarded as a Saxon trait, the suggestion of 'sub-Roman' occupation is not now as novel as when Dick was excavating; our hypotheses about the Roman/Saxon transition have changed in the last few decades and Little Oakley may have a contribution to make to the continuing debate.

The site of the villa continued occupied until eventually abandoned. Then a series of large pits with unusually black rubble fills were dug there, followed by an inhumation cut through the robber trench of the corridor wall. The inhumation was probably part of a small cemetery, similar to Roman sites known both in this Country and on the Continent. The upper fills of two large pits (wells?) on site IV contained substantial quantities of Early Saxon pottery and the uppermost fill of the site III fishpond contained a Saxon oven. This early Saxon pottery forms an important assemblage, the only sizeable group to be reported from north-east Essex; it seems to date from the early fifth century as does a 'small-long' brooch found nearby. The focus of settlement seems to have shifted, perhaps towards the mediaeval church, and only a little Middle Saxon pottery (shell-tempered) has been found. A pit on site IV contained Saxo-Norman pottery of the 11th century. This may be something to do with the Domesday Manor of Foulton Hall.

The villa is clearly a site of major importance. It is still one of the few in the county which have been excavated (Alresford, Ridgewell, Rivenhall, Chigwell and Gestingthorpe). Some older excavations do not provide the sort of information required. What is needed is the full excavation of a site and a full study of its environs. Such a project is a long way off and, meanwhile, sites like Little Oakley must fill the gap. Of particular note are the later phases of the villa's history in its transition to an early Saxon site.

Dick's major work was the Little Oakley villa but his interests took him to many areas to excavate for research, but more often to salvage information from sites being destroyed by commercial operations. Most were near his home at Dovercourt, marked by a 'star' on the map showing his sites (Fig.1). However, sites 2 and 3, described next, brought him into the territory of Colchester and Essex Museum and, according to Rex Hull's notes now, this caused a little annoyance but the apparent rift soon healed.

2. Colchester: Everett's Brickyard TM 000257

Dick and Felix Erith excavated a wood-lined well in September 1955 during brick-earth quarrying. This probably relates to a northern suburb of Colchester outside Duncan's gate. The pottery in the well was mostly third century - including a large quantity of mortarium sherds (perhaps from a nearby kiln). A graffiti "IIII" was found on the rim of a storage jar.

3. Colchester: St. Mary's Rectory

In 1955 building works here revealed a number of features and produced much pottery including a quantity of burnt Neronian Samian.

4. Dovercourt: Catholic Church TM 24583090

In 1955 first century pottery was found in a service trench (VCH III, 144).

5. Dovercourt: Gant's Pit TM 241313

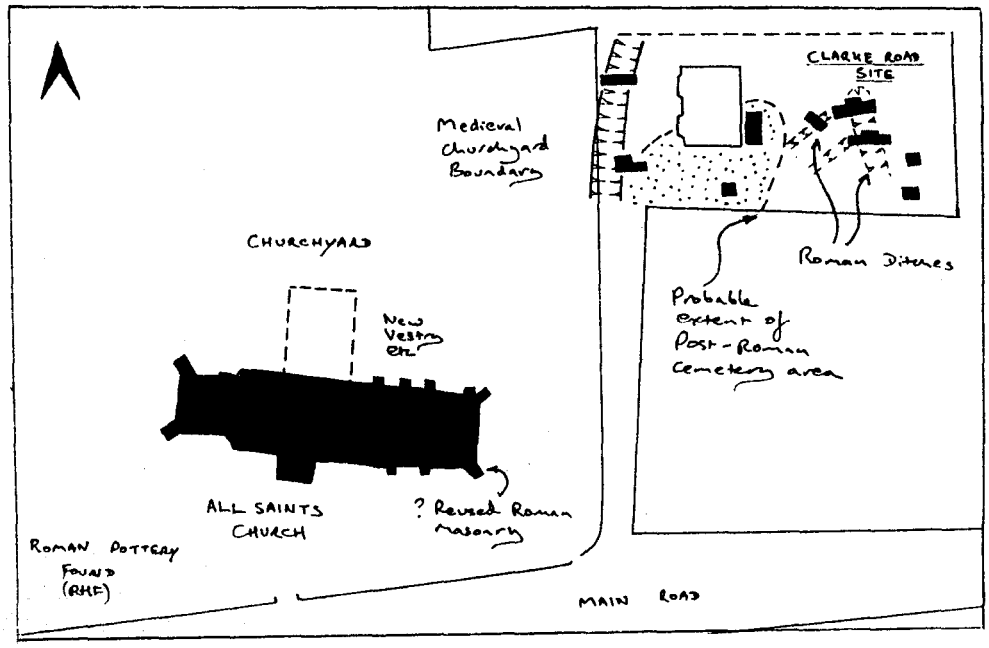
A watch was kept during building in this gravel pit which had previously produced many palaeolithic hand axes. Sherds of a Claudian butt beaker (Cam. form 113B) were found.

6. Dovercourt: Main Road TM 239313

Excavations in 1953 in the back garden of a bungalow revealed a ditch and other features containing Roman and Early Iron Age pottery.

7. Dovercourt: All Saints Church TM 238311

Figure 4. Plan of sites around All Saints Church, Dovercourt



In about 1960 Roman pottery was found in new graves in the south-west corner of the churchyard, most of it in the form of large fresh sherds of first and second century date (Fig.4). This material may derive from a single deposit. A few sherds of Thetford type ware were also found here at the same time.

In 1986 a new vestry was built on the north side of the church, unfortunately with no provision for archaeological investigation. When I examined the upcast, Roman tile and pottery were visible. The south-east buttress of the church has tufa blocks in the foundations. This is almost certainly re-used Roman masonry.

8. Dovercourt: Clarke Road TM 239312

The work done here was particularly significant. In 1954-55 a number of human skeletons were revealed during the construction of a bungalow; Dick kept the site under close observation and dug a number of small trenches. He found a series of Roman ditches containing debris, probably from a nearby building (VCH III, 144). Overlying the ditches were a series of east-west inhumations, probably of a post Roman Christian cemetery pre-dating the enclosure of the churchyard (Fig.4). The enclosure was a large deep ditch which contained 11th and 12th century pottery, including Thetford type ware. The ditch was re-cut a number of times and these re-cuts contained 13th century pottery including Hedingham and Scarborough ware (Cunningham 1983, 65). A sherd of Ipswich ware was also present in the re-cuts.

Discussion of the Dovercourt sites Nos. 6-8

There is evidence of at least one, perhaps two, other substantial Roman sites in the Harwich area. These will be discussed elsewhere, suffice it to note that there is clear evidence for some sort of Roman site, possibly a villa, under All Saints Church, Dovercourt. Almost certainly a major opportunity to examine this was missed in 1986, and any future chance should not be missed again. Just to the south of the church a Saxon iron spearhead found in 1963 (Colchester Museum) may represent an, as yet unexplored, pagan Saxon cemetery in the vicinity of this Roman site. Other Saxon finds from Dovercourt found last century include a small complete pot and a radiate brooch, but they are of unknown provenance. Later on a Christian

cemetery was found to the north-east of the present church and it is difficult to escape the conclusion that it was associated with an early church. Unfortunately the dating evidence is unclear. All Saints itself has 12th century work in the nave, but almost certainly was (Rodwell suggests) a major Norman church. It was the mother church of Hugh Bigod's new foundation of c. 1177 at Harwich. In the 11th century the churchyard at Dovercourt was delimited by a major new earthwork.

In fact, the sequence outlined above finds very close parallels in the sequence suggested by the Rodwells for Rivenhall (Rodwell and Rodwell 1986). Clearly at Dovercourt there is a complex of sites of considerable interest and it is hoped that they will receive more attention than hitherto.

9. Harwich: Trinity Depot TM 259328

Post war reconstruction here in 1950-51 produced much mediaeval and post-mediaeval material which will be written up by Carol Cunningham at the Chelmsford Archaeological Trust as part of the work now proceeding on the excavations in the seventies by Steve Bassett.

10. Harwich: Kings Head Street TM 261329

Limited excavation in 1978-80 behind the Kings Head Garage recovered evidence of 13th and 14th century occupation and rubbish pits. These were overlain by a passageway or courtyard paved with septaria lumps, with traces of walls belonging to a 14th century house. A later wall, clay floor and hearth overlay a 17th century brick and septaria wall. The site has produced an astonishing range of mediaeval pottery, particularly of the 13th century. This included part of a Scarborough ware aquamanile and knight-jug, important enough to merit a short paper to themselves (Cunningham 1983), also Saintonge jugs and Belgian and Dutch coarse wares. Again, this site and pottery are to be published by Carol Cunningham to whom I am grateful for discussion of the site.

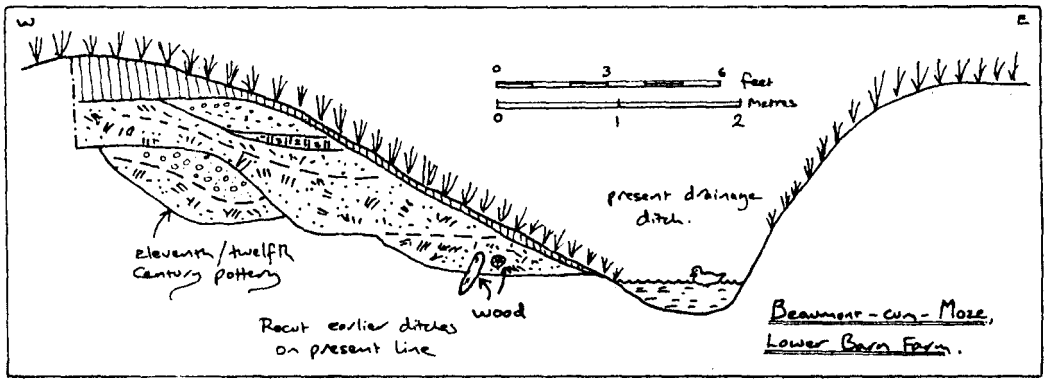
11 . Beaumont Quay TM 190241

Pottery picked up in field walking here includes Roman tile and late fourth century Roman pottery, much of it Oxford colour-coat ware. Two hand-made sherds are like a sub-Roman fabric found at Little Oakley. The material also includes a sherd of Ipswich type ware and much early mediaeval pottery of the 12th and 13th centuries.

12. Beaumont: Lower Barn Farm TM 190247

In July - October 1955 three areas of this site were excavated. The first, Trench A, was a section of the side of a marsh ditch (Fig.5) which demonstrated that it had been cut and revetted in the 11th or 12th century which dates a system of sea-walls visible as earthworks until levelled in the 1960s.

Figure 5. Section of early mediaeval deposits, Beaumont-cum-Moze.



A marsh mound nearby probably relates to salt works seen in the field to the west of the old marsh ditch. Again, these seem to be of 11th or 12th century date and may relate to the salt works recorded here in the Domesday Book. Among the Thetford type sherds are some which appear underfired and could conceivably be wasters.

Near the marsh mound was a rubble spread which contained 13th century pottery and a schist hone-stone. The rubble spread seems to have formed a hut floor and, again, Dick drew a stone-by-stone plan of it.

13. Dovercourt Holiday Camp TM 248299

A Red Hill, destroyed in 1958 by a sea wall ditch, was examined and potsherds and fragments of firebars recovered.

14. Little Oakley, the Little Oakley group of Red Hills

These are considered in detail in the final villa report, but two points are noted here, numbers as in Farrands 1959 paper.

No. 7. This site originally reported as three mounds (Nos.6-8) seems to be only one. Pieces of firebars, pedestals and pottery have been recovered.

No. 9. This mound is now levelled and is the subject of repeated field work by the writer to record the disintegration of briquetage in the plough soil. Fragments of firebars, troughs, pedestals and Roman pottery have been recovered.

15. Walton Foreshore TM 266248

There are reports of a number of Red Hills in this area, what appears to have been a fifth site was observed undergoing erosion at law water mark in May 1976.

16. Beaumont: Red Hill No. 11 TM 201248

Dick dug a series of trenches in October 1954 in this mound, producing many briquetage fragments (firebars, troughs and pedestals) and early Roman pottery. The section revealed a haphazard series of tips of briquetage, red earth and ash, as seen at Osea Road. The mound is now levelled.

17. Jaywick: Meadows Way TM 153135

In June 1974 six flattened Red Hills were recorded during building work.

As can be seen from the foregoing, Dick did a considerable amount of work on the Red Hills of his area. This work is considered in detail elsewhere and is only briefly noted here. It is of interest that his work on these sites was, in fact, earlier than Kay de Brisay's first work published in other volumes of this Bulletin, and elsewhere.

18. Wix: Lodge Moat TM 15452865

Dick field-walked a ploughed-out moat (photograph by him in Aberg (Ed.) 1978, pl. VI), and recovered 12th and 13th century shell-tempered pottery.

19. Wix Abbey TM 163291

Dick helped Bryan Blake with the excavations here in 1960.

20. Colchester: Mistley Roman Road

Here, Dick identified the alignment by map work and aerial photography. The road, first recorded as a cursus (Erith 1967), leads to the Stour at Mistley Railway Station and, while the last few hundred metres are now irrevocably destroyed by 19th century development, a watching brief by the writer in 1975-76 located Roman features, probably on the fringe of a settlement here. Work on this road alignment led Dick into fieldwork in Mistley Park, a site of interest to me and another subject for shared information. During the course of this fieldwork Dick, unwittingly, got himself into a bit of trouble with an irate local lady out walking her dog. In order to survey the line of the road, Dick was triangulating using marked trees as fixed points. The lady, seeing Dick standing with a clip-board by an ancient tree with a small fresh white paint cross on the trunk, immediately started to berate him for planning to fell her dog's favourite tree. Dick, with his typical humour and charm, patiently explained that he was not a council official, but an archaeologist. It is also typical that,

minor local celebrity that he was, the lady had, in fact, heard of this Trinity House pilot/archaeologist. Furthermore, when I encountered her on the same walk several months later, she was able to recount to me - in fair detail - much of what Dick had explained to her. He always was very communicative and forthcoming about his work, though it is unfortunate that he so seldom put pen to paper to record excavations.

Dick, as has been previously noted, had no formal archaeological training. He was a self-taught amateur when he dug the Little Oakley villa site - and most of the other sites discussed here. His work, seen in that light, is of remarkably good quality. Of course, accuracy, precision and care are as much a part of his profession as a river pilot as they are of the professional archaeologist. Nevertheless, one can see records of professional excavations of the early to mid fifties (and, regretfully, also more recently) of a far lower standard than Dick's. He did, however, feel the need for some formal training and so, in 1956, he enrolled at the Great Casterton Training School. Curiously, he appears consistently on their register as 'R. Arrands'. Perhaps there was some advantage in being at the top of the class register.

Despite the fact that Dick rarely wrote reports he has, happily, left behind a rich legacy of finds and records for us. These I have tried to use sympathetically and fairly to report his discoveries in the way he had always hoped to do himself. I hope he would have approved of my efforts.

The final publications of Dick's sites will take some time. The texts are all written, the figures and maps drawn; but progress from this stage to print could be slow. It is with this in mind that I have put together this shortened version in tribute to a colleague and a friend.

M.J. Corbishley's Excavations at Little Oakley - Interim Reports

1977 Little Oakley, Seaview Avenue. in Couchman (Ed) Excavations in Essex 1976. Essex Archaeol. Hist. 9, 100

1979 Little Oakley Villa. in Eddy (Ed) Excavations in Essex 1978. Essex Archaeol. Hist. 11, 105

Two duplicated newsheets of the Tendring Rescue Archaeology Group also contain short interim reports on the site.

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1958 Romano British Villa at Little Oakley. CAG Bull I (iv) 43-45

1959 Essex Red Hills in the Hamford Water area. CAG Bull II (iii) 25-27

1975A Evidence for a Roman road linking Mistley with Colchester. CAG Bull 18, 5-7.

1975B Cropmarks at St. Osyth, Great Bentley and Mistley. CAG Bull 18, 27

1976A Fifth Century Anglo-Saxon pottery from Little Oakley. CAG Bull 19, 7-10

1976B (With Ida McMaster). Recently discovered Cropmarks. CAG Bull 19, 22-23

1977A Canbretovium. CAG Bull 20, 2-3

1977B Archives and Air Photographs - the collection of R.H. Farrands. Aerial Archaeology I, 39 (not 35)

1978A (With Ida McMaster). Cropmarks in the year of the Drought. CAG Bull 21, 15-19

1978B (With Ida McMaster). 1977 Cropmarks. CAG Bull 21, 24-27

1978C Aerial Reconnaissance. Aerial Archaeology II, 85-86

1978D Combretovium, CAG Bull 21, 2-3

1979A Combretovium, CAG Bull 22, 10-12

1979B 1978 Cropmarks. CAG Bull 22, 19-20

1979C Harwich Kingshead Street, in Eddy (Ed) Excavations in Essex 1978. Essex Archaeol. Hist. 11, 104

1979D Gazetteer of Sites. Aerial Archaeol. III, 11-16 & 20-23

1980 1979 Cropmarks. CAG Bull 23, 12-16

1981A 1980 Cropmarks CAG Bull 24, 22-25

1981B Harwich Kingshead Street. in Eddy (Ed) Excavations in Essex 1980. Essex Archaeol. Hist. 13, 52

1982 Harwich Kingshead Street. in Priddy (Ed) Excavations in Essex 1981. Essex Archaeol. Hist. 14, 139

1982 A bill for piloting the Mary Rose out of Harwich. CAG Bull 25, 2-5

Hull also incorporated Dick's notes in VCH 111 (1963) 47, 144 and 164.

AN EXAMPLE OF PARGETTING IN 1666 ON NORTH HILL, COLCHESTER, PROBABLY THE EARLIEST EXTANT IN ESSEX.

A.B. Doncaster

Only a passing reference is made in the Royal Commission on Historical Monuments for north-east Essex 1921 to the building on the site of numbers 37 and 38 North Hill, Colchester; but recent extensive renovations to number 37 - The Castle Bookshop - have revealed some features of considerable interest.

Numbers 37 and 38 are two timber framed buildings with clay tile and slate roofs. Evidence suggests that number 37 is the surviving service bay of a large mediaeval house, the rest of which (number 36) described as "ruinous" in the R.C.H.M, report, was demolished and rebuilt in the 1930s. The original building on the site of number 37 probably consisted of a floored hall and two crosswings. Number 38, however, is a somewhat later and separate timber framed building erected against number 37.

We can, alas, no longer consider number 36, but number 37 is a 15th century jettied mediaeval crossing, see section C - D of accompanying plan, (Fig. 1) and has a fine pair of service doors - long since blocked - in the north wall leading through to the original number 36. These door frames can clearly be seen from the existing passageway between the two buildings. Elevation A - B on the plan (Fig. 1) is the original gable end of the building facing south. It is a well built, close studded wall, on the upper floor of which, a fine five light moulded window frame has been discovered dated c. 1590. This find shows that at this date the gable must have faced an open space. Figure 3 shows the elevation at A - B.

The gable wall, covered with a light green wash, is pargetted on the outside, combining a pattern of figures and symbols including a plaque at the apex which reads H A? (the last letter undecipherable) 1666, (Fig. 2). It is probably the earliest example of pargetting extant in Essex: revealed only when the roof was stripped during the extensive repairs to the house, unfortunately now lost again to view, hidden by the north wall of number 38 which was built so close against it that there is a gap of but 10" between the two houses.

Number 38 must have been put up sometime after 1666 and is timber framed but only survives half way up the first floor, and at one time was probably a complete house, but later a carriage way was driven through the ground floor now leading to Green's Yard.

Drawings and measurements made by Richard Shackle.

Figure 1. Plan showing No. 37 North Hill, Colchester and adjoining houses.

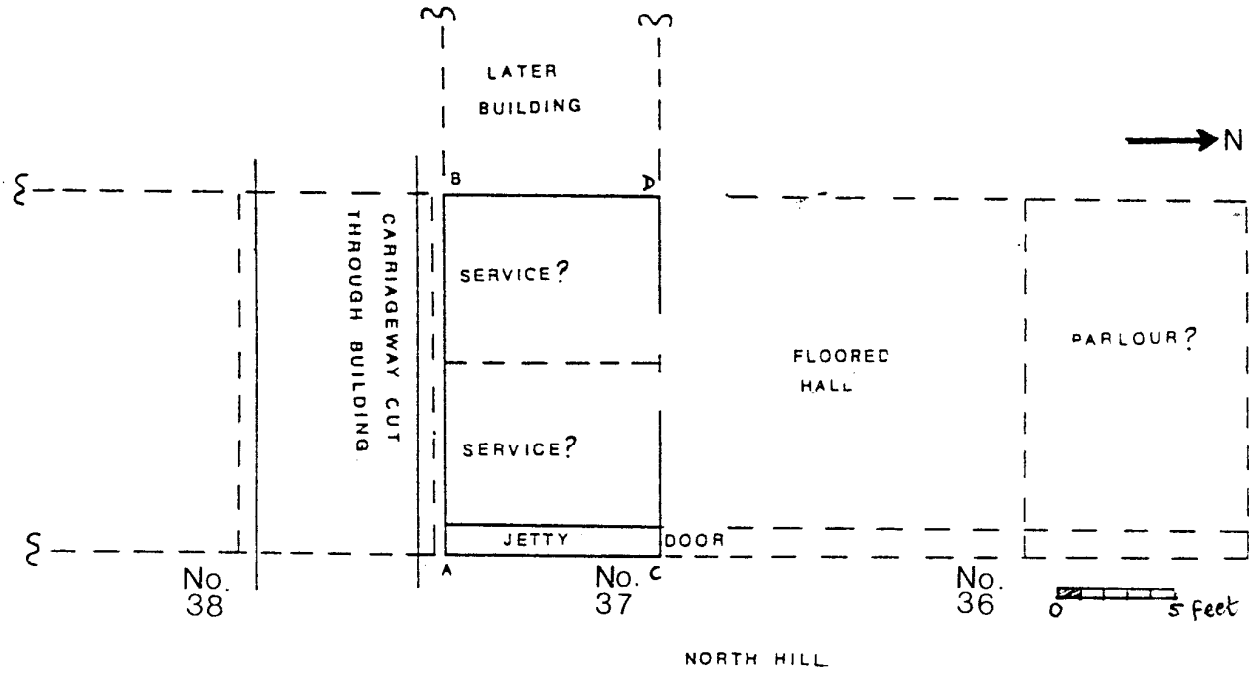


Figure 2. No. 37 North Hill, showing pargetting on gable end, now hidden.

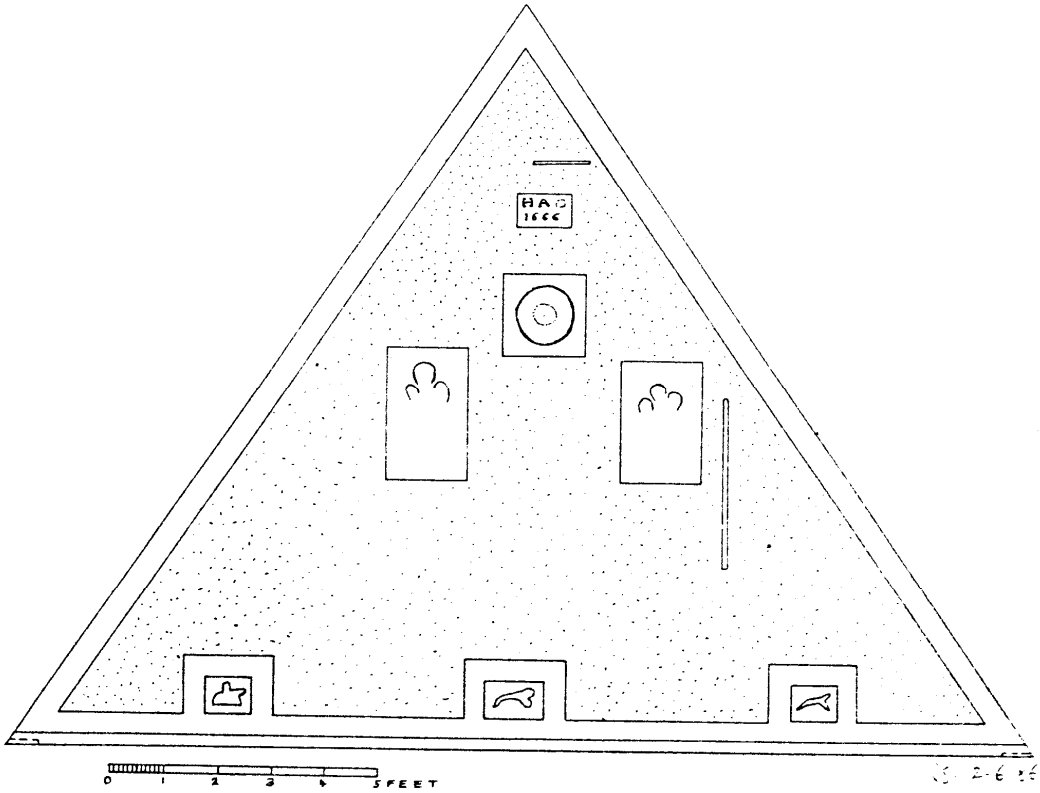
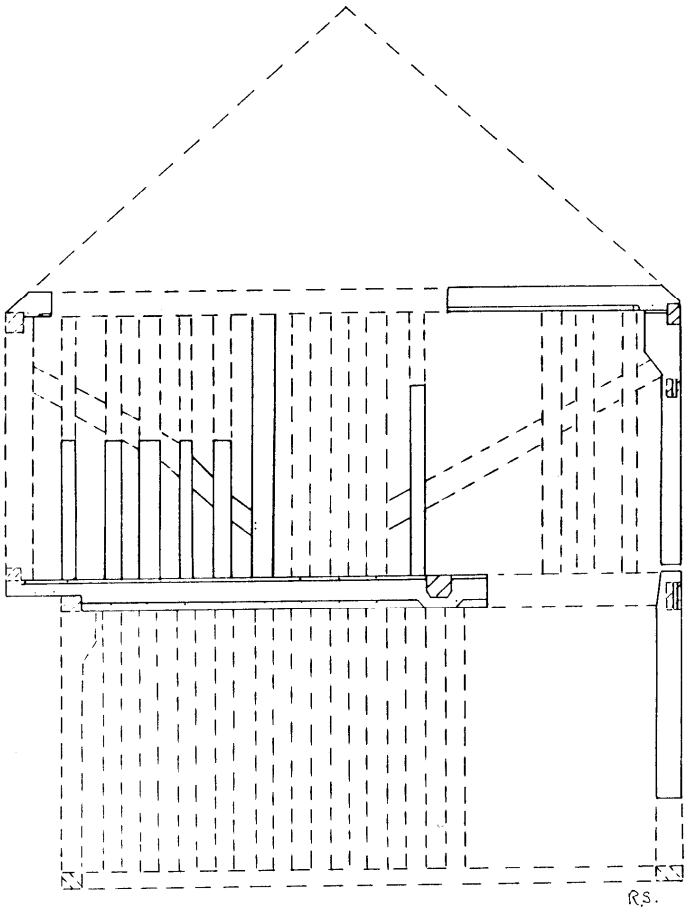


Figure 3. No.37 North Hill, Colchester, 1986 Elevation : A – B



A BRONZE HEAD EFFIGY FROM MESSING

K.P, and P.C. Adkins

The object illustrated Fig. 1, was found by the writers whilst undertaking a field walking exercise employing metal detectors. It was recovered from the plough soil of a field exhibiting no obvious signs of ancient occupation.

The item is solid and of a copper alloy, probably a high lead bronze. Its maximum dimensions are 30 x 24 x 6 mm. The reverse side is flat and unmarked, showing no remnants of provision for attachment. Although the surface of the object was in a relatively poor state of preservation when found, the corrosion has now been arrested by conservation. Prominent features of the effigy include the eyes, also the broad flat face with pointed jaw, the elaborate 'hairstyle' and a row of impressions running close to the base of the object - possibly representing a beaded necklace. Opinions vary as to the dating of the head, ranging from Iron Age to Mediaeval. The object is, at present, with the writers.

Figure 1. Bronze Head from Messing.

A COLCHESTER MADE CAST-IRON WATER TANK

E.J. Russell

Standing in the greenhouse area of the Castle Park (at 21st November, 1986) is a cast-iron cistern, awaiting a suitable exhibition site. It measures 761 by 404 inches over all. It consists of six yard square panels; two each for the sides, and one for each end; and a base, approximately 6 x 3 feet which is a single casting 2 inch thick.

The tank was seen and photographed by the writer on 21st January, 1984, when it served as a rainwater tank against the western end of the buildings flanking the entrance of the Royal Eastern Counties Hospital in North Station Road, Colchester. Those buildings were demolished in the latter months of 1985, together with what had been once the Victoria Hotel. The principal of the demolition company, Mr. Hyland, gave the tank to the Museum which arranged for its carriage to its present site.

The cistern has a cartouche on each of the two square castings forming the "front" of the tank, and on each of the two similar panels forming the "back". ("Front" and "back" mean the sides as seen in the present placing of the tank: which is the same as the positioning at the Hospital). The cartouche does not appear on the end panels. The cartouche bears the words "Catchpool and Thompson, Makers, Colchester", all in capital letters. This elaborate cistern can hardly have been made to be just a rainwater tank: that it had been reassembled from elsewhere may explain why one of the name cartouches on the "front" is now vertical: the other three are horizontal, as intended by the makers.

The central building of the R.E.C.H. was the railway hotel built in the mid eighteen-forties (1). When that building's tower was demolished the removal of its roof revealed a galvanized iron tank, which, viewed from ground level, seemed to be much the size of the cast-iron cistern.

Catchpool and Thompson were in business at the Colchester High Street foundry from 1859 to 1872 (2), other products of the partnership are the door to the Castle Muniment Room (3): the roadside railings at Ardleigh Cemetery (4): railings to the Cavalry Barracks in Goojerat Road, Colchester (5): 10, Burlington Road, Colchester, brought from 4, Alexandra Road, nearby, early 1980, (6): and an elaborate fencing at Brook House, about a mile from Bures St. Mary on the B1508 road to Colchester, on the corner of the road to Wakes Colne.

One end and the "front" of the cistern are well protected by green paint, the surfaces which could be reached when the cistern served as a rainwater tank. The other surfaces have remains of well attached white paint. The approximate interior measurements of the tank are 36 deep by 36 wide by 72 inches long, i.e. 54 cu. ft. At 6.24 (64) gallons per cu. ft., the cistern's capacity is 337 gallons approximately.

Each cartouche, central on its panel, is within a square "picture rail" frame 8/10 wide, about 5/16 inches deep at the highest point on the round.

Figure 1 is a diagram to illustrate the panelling and cartouches on the "front" of the cistern. It is not an exact scale drawing. Figure 2 shows three rubbings: (1) the line of a corner of the "picture rail": (2) piece of that picture rail: and (3) the name cartouche.

Sixty eight of the 72 bolts that fasten the six panels and their base are square-headed, 1 inch on each side. The nuts are hexagonal. The other four bolts are round-headed.

NOTES

(1) Andrew Phillips, Essex County Standard, 5/10/1984, has an illustration of the Victoria Hotel (later, Essex Hall) as at 1846; and mentions a fund raising bazaar in 1859, when Essex Hall became the Eastern Counties Asylum for Idiots. Geoffrey Martin's Story of Colchester, page 92, states that the hotel was taken over by the Metropolitan Idiot Asylum in 1850.

(2) John Booker's Essex and the Industrial Revolution, page 10: 1859 approximately - 1872, Thomas Catchpool and Henry Thompson are partners in the High Street foundry.

(3) Photographed 18/3/1982. Borough Treasurer's accounts, January 23rd 1866, 17.9s.2d.

(4) Photographed 21.5.1981.
(5) Photographed 27.12.1982.
(6) Photographed February, 1980
(7) Photographed 23.3.1981

Figure 1. Illustration of the panelling and the cartouches on the "front" of the cistern.

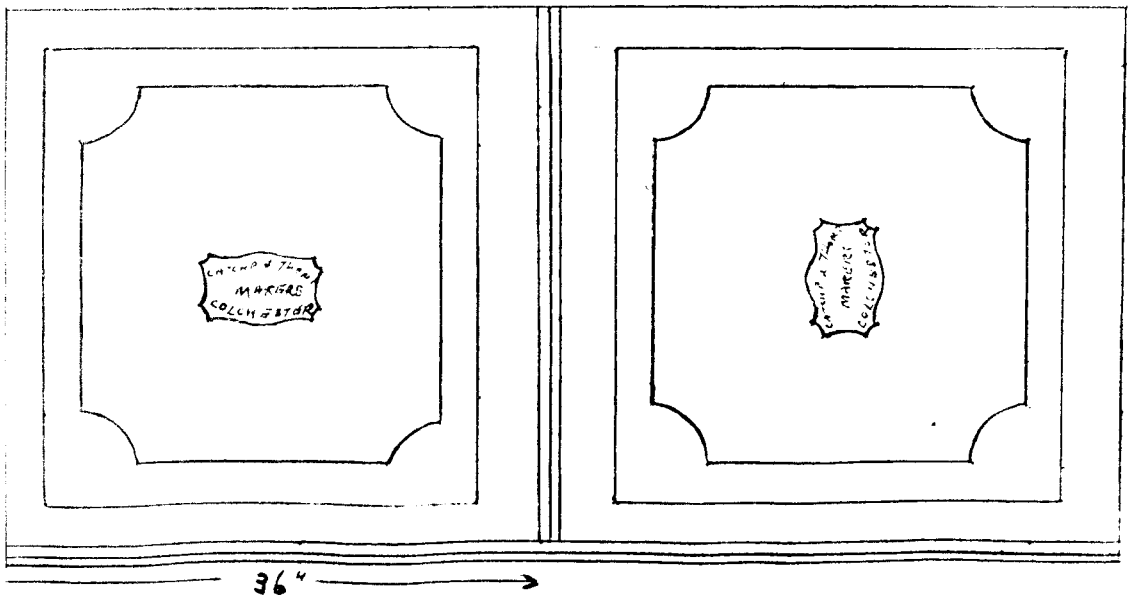


Figure 2. Rubbings from the cast-iron water tank.

Additional Information

Annual Bulletin, Vol.28, 1985. Cast Iron Grave Monument. P.3.

Mr. F.R. Potter aged 77 in 1986, of 31, Bergholt Road, Colchester, stated that Harry Green lived at No. 33, Bergholt Road. Mr. Green was a carpenter employed by the railway company; and had been buried in his first wife's grave - i.e. that marked by the cast-iron monument. That grave was immediately to the west of the south door of the church. The monument was moved to its present position ca. 1972-1973; at that time the monuments on untended graves were moved to the western and northern walls of the churchyard, according to Mr. H. Whitehorn, a former churchwarden.

E.J. Russell, November, 1986

A PARGETTED GABLE IN COLCHESTER

R. Shackle

Number 44 St. Johns Street, Colchester is a timber-framed building with a clay tile roof. It is a substantial building of at least three bays built about 1700 A.D. It now has a building of about 1800 A.D. built against it, but the west end (Fig. 1.) once faced an open space, and has the remains of pargetting on it. The whole of this end wall was probably pargetted but it only survives in the gable.

Figure 1. No. 44 St. Johns Street, Colchester. Gable end with pargetting.

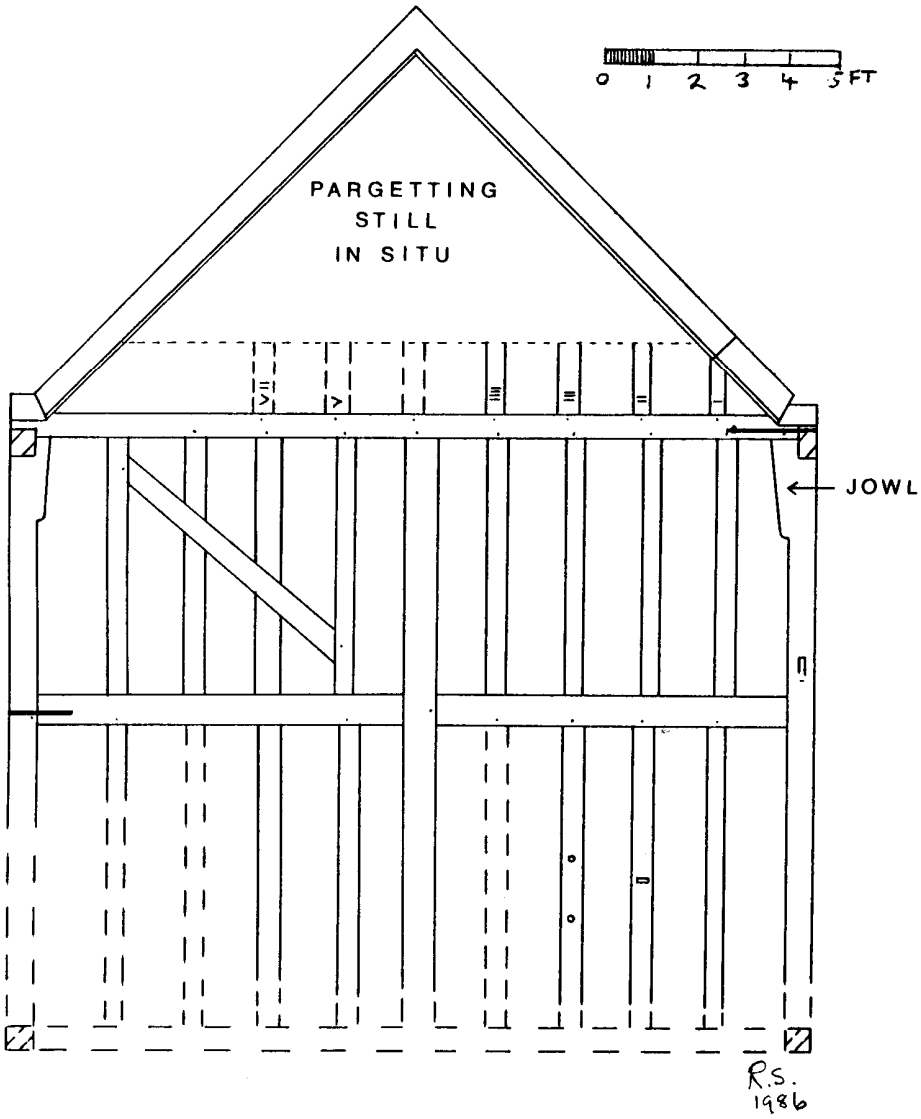
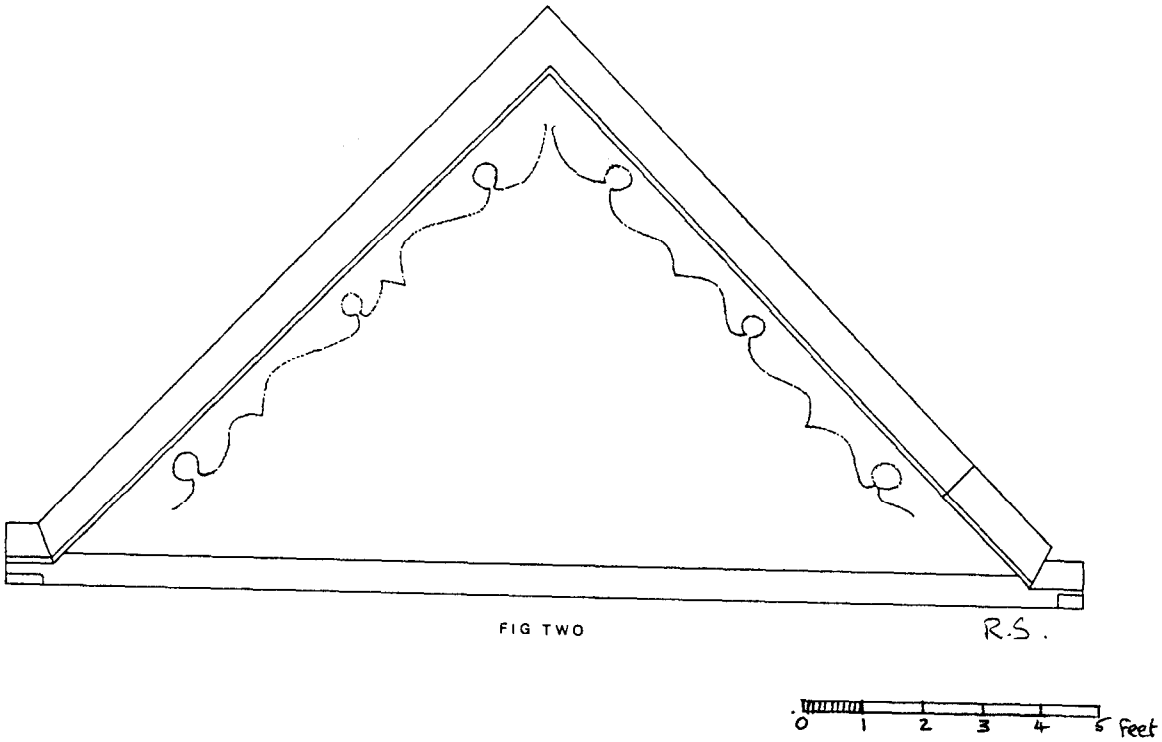


Figure 2. No. 44, St. Johns Street, Colchester. Gable end, showing pargetting, barge boards slightly moulded.



The pargetting (Fig. 2) is a scallop pattern separating a cross-hatched centre from a plain border round the edge.

The details of the scallop pattern are only tentative, as the pattern is damaged in some areas and hidden elsewhere. This kind of scallop pattern is found in about six places in Essex, there is a similar example in Saffron Walden, most of the other examples have been much repaired, whereas this is in its original state.

The timber frame of the building can be dated to about 1700 A.D. by the long twin tapering jowls which you can see on Fig. 2. This dating suggests that this may be a new building put up in 1700 to replace a building damaged or destroyed during the civil war. A building in this position just outside the town walls would have been very vulnerable as it might have been damaged by either artillery from the besiegers or pulled down by the defenders to give them a clear view.

I should like to thank Balfour Beatty for access to the site.

COMBRETOVIUM AGAIN

P.M. Barford

Undoubtedly one of Dick Farrands favourite aerial photograph sites was the important Roman fort at Baylham House, Coddenham, Suffolk. Dick took his first photographs here in 1962 and, by subsequent work, was able greatly to enhance the known plan. He published several notes to this effect in this Bulletin, (Farrands 1979, 10-12; 1978, 2-3 and 1977, 2-3). The site is also extensively mentioned by Webster (1980, 133-5) and the Ordnance Survey photograph Dick discovered is Webster's plate 22.

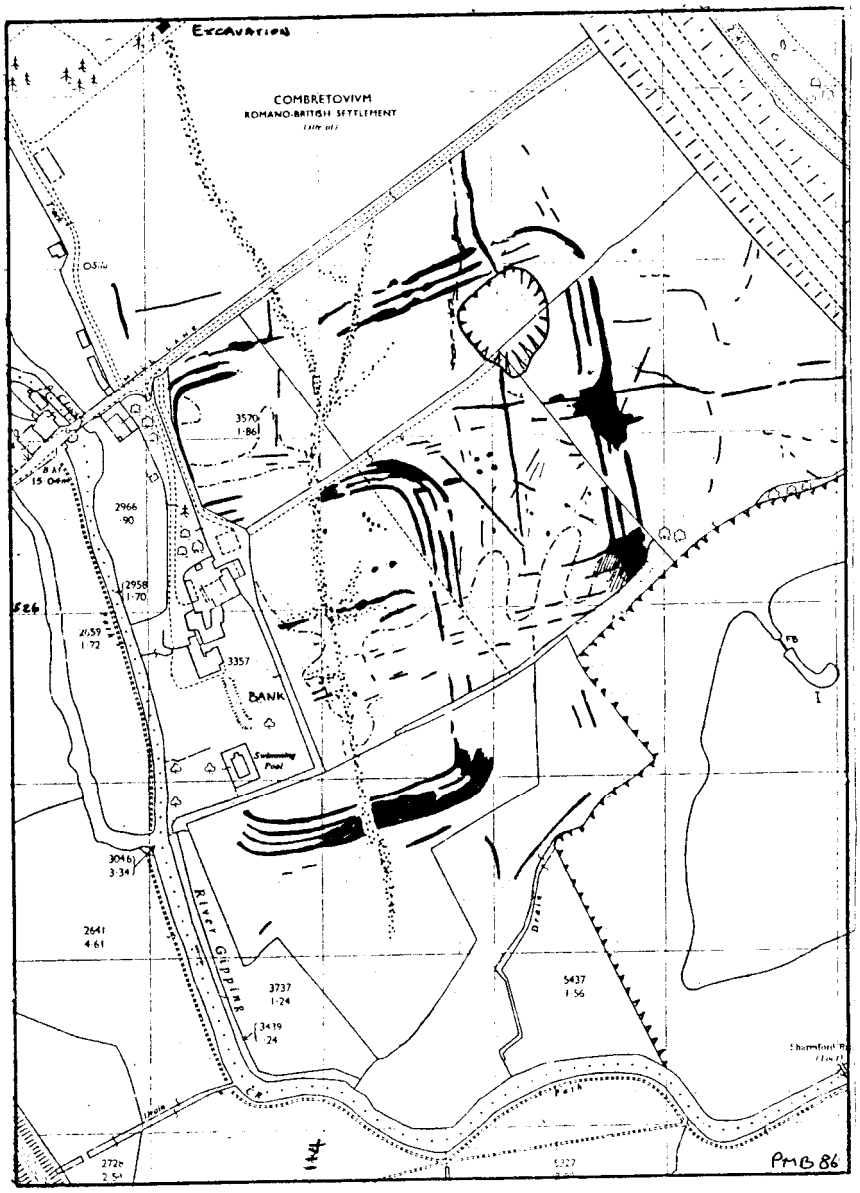
Whilst working on the Farrands papers in the Colchester and Essex Museum the writer found files and correspondence, some with a number of eminent figures in the world of Romano-British archaeology, about this site. After consultation with the Curator, it was decided to deposit the material in the Ipswich Museum. Dick's notes and photographs contain much of interest and include a field plan of the 1973-4 excavations just to the north of the enclosures which show the road which sealed a late first century coin as well as timber buildings etc. Close study of the photographs has resulted in an extension of Dick's plot (Farrands 1979, 11). The latest plot is shown now (Fig.1.) It is, in part, built on an earlier plot of 1979 by Philip Crummy - but includes additional details.

One of the new details concerns the south ditches of the larger northern fort which, I think, can be discovered on the Ordnance Survey photograph running under the centre of the smaller fort, but the detail is not clear because of the nature of the subsoil. The 'larger' fort thus becomes a little smaller and also more irregular; it also has a triple ditch which is unusual, and the entrances are marked by a slight inturn of the north and east defences.

The southern enclosure is more regular and, I would argue, is the later of the two. Not only does the curve of the Roman road on the north suggest that the northern enclosure was already an obstacle, or perhaps retained as an annexe when the road to the smaller enclosure was built, but also the field boundary on the south-East corner clearly relates to the line of the fort which was thus an upstanding visible feature when that field was laid out.

The Farrands collection contains many aerial photographs of south Suffolk sites and these are to be retained in his main collection being kept at the Colchester and Essex Museum, rather than at ' Ipswich, in order to maintain its integrity. Dick had, in any case, kept Suffolk Sites and Monuments Section informed of new discoveries.

Figure 1. Combretovium: a fresh plot of the cropmarks, base map O.S, reproduced with the sanction of the Director of the Ordnance Survey.



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Farrands R.H. 1978C Aerial Reconnaissance Aerial Archaeology II 85-86
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Farrands R.H. 1977A Combretovium CAG Bull 20,2-3
Webster G.. 1980 The Roman Invasion of Britain, Batsford, London.

THREE LATE: BRONZE AGE SMITHS' HOARDS

K.P, and P.C. Adkins

Within the last decade the writers have been fortunate enough to have excavated three separate smiths' hoards of the late Bronze Age.

The hoards were located within three miles of each other north of the River Blackwater.

Hoard 1 contained 26 pieces including fragments of a socketed axe, sword, dagger, socketed gouge, arm bangle - which appears to be a silver bronze alloy - a complete tongued or double edged chisel and an unparalleled object (possibly a bronze linch pin head). The majority of the hoard came from under and around the roots of coppiced hornbeam on the bank of a spring-fed boundary ditch. Erosion of the bank had facilitated discovery of the hoard by metal detectors.

Hoard 2 contained 22 pieces, predominately fragments of bun ingot but it includes also fragments of a socketed axe, spearhead and one fragment of very abraded tin plate. This last item, although found in close proximity with the rest of Hoard 2, is not generally recognised as coming from the late Bronze Age period. Neither is a strip of fine silver incised with parallel lines which also came from the same context. Hoard 2 was located approximately 150 m, from Hoard 1, scattered over the course of a gas main and was probably disturbed during the laying of the pipe.

Hoard 3, our latest discovery, was uncovered by gravel extraction machines and accidentally revealed by a visiting archaeologist, Paul Brown who spotted the green bronze corrosion showing through the ground surface after kicking into the overburden. Hoard 3 contained approximately 6 kg, of bun ingot fragments and a single blade section of socketed axe.

The Hoards are to be studied and recorded by E.C.C. Archaeology Section.

We are privileged in that one of the world's leading experts on ancient metallurgy, Professor R.F. Tylecote of the Institute of Archaeology, London, has agreed to analyse the composition of the bronze work. His interim report states that there were two pieces of artefact, both end pieces of socketed axes. The ingots were typical late Bronze Age, are of solid copper and can only be broken by heating to near melting point. They were clearly • solidified in a hot mould, possibly the bottom of a melting furnace, so that solidification took place on one surface and progressed to the other. This was from the convex bottom upwards.

Records, photographs and finds (with the exception of Hoard 3) are with the authors.

THE WORK OF R.H. FARRANDS IN AERIAL ARCHAEOLOGY AND AN UP TO DATE MAP OF SITES IDENTIFIED BY HIM IN ESSEX AND SUFFOLK.

I. McMaster

Dick Farrands was one of the original eight air photographers who met on 29th October, 1976 at the Bull Inn, Mildenhall, Suffolk, to discuss the formation of a regional committee for archaeological air photography. This proposal was especially welcome to private flyers and Dick became a founder member and attended all the subsequent meetings of the Committee for Archaeological Air Photography (Anglian region). The area to be covered was Norfolk, Suffolk, Essex, Cambridgeshire and Hertfordshire. Some 24 flyers, various representative members and a further 76 affiliated members were gathered together in the first year.

In 1977 the first impressive volume of Aerial Archaeology was published following the inspired lead of D.A. Edwards who was editor and whose work as Flying Officer with the Norfolk Archaeology Unit encouraged many young flyers. In this first volume Dick published an extensive distribution map (see page 39, not the one incorrectly attributed to him on page 35). It showed all the cropmark sites he had discovered when flying between 1959 and 1977, totalling almost 200 sites, some single sites covering a variety of cropmarks of different periods. Since 1977 Dick identified some 60 further sites and these we have added to his map which is now reproduced. (Fig.1.)

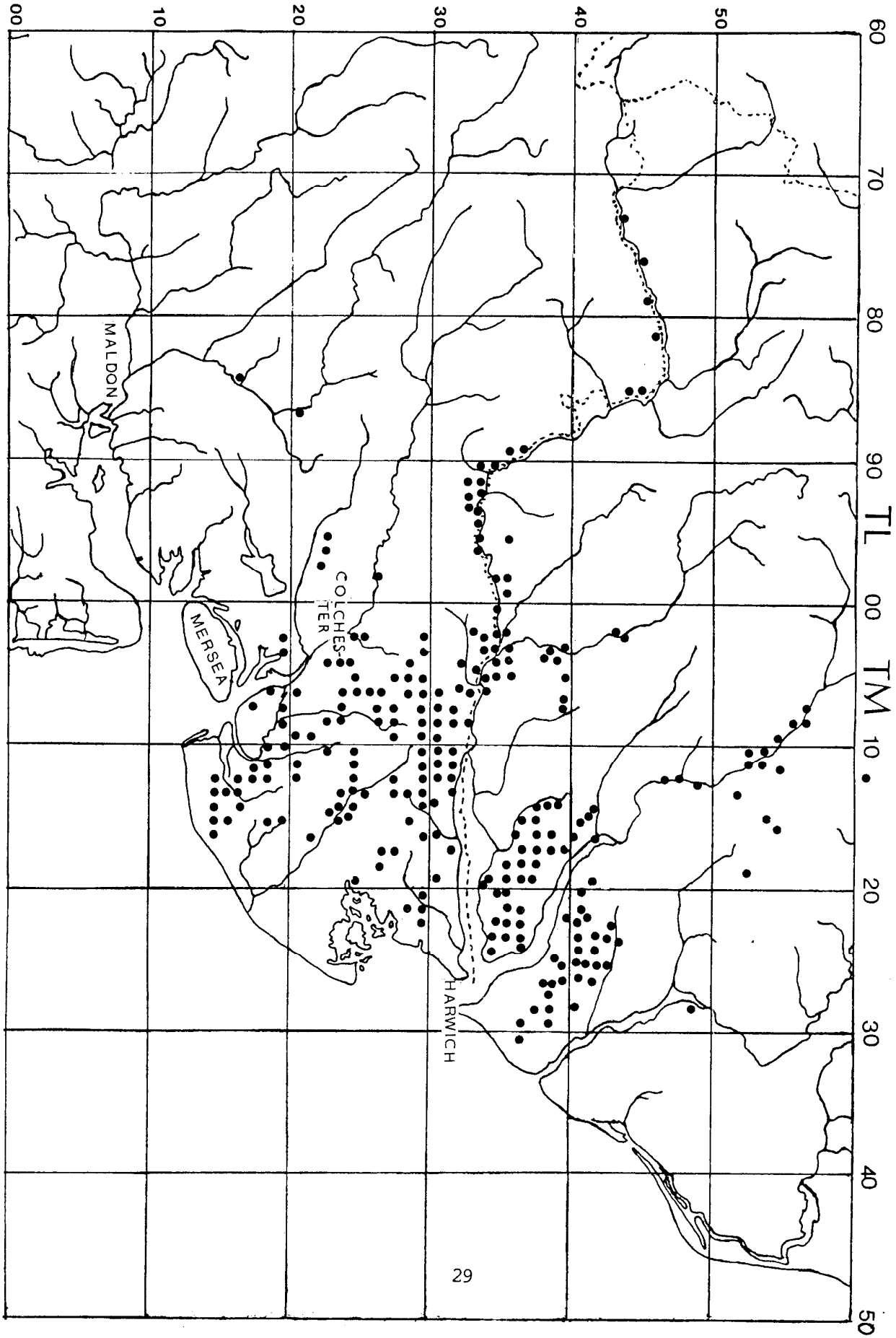
The R.H. Farrands archive of Essex aerial photographs is held at the Colchester and Essex Museum. We plan, in due course, to index the hundreds of photographs so that they are available to researchers. All negatives have been copied by the County Archaeology Section and the RCHME air photographs unit, London.

Volume 3 (1979) of Aerial Archaeology contained a gazetteer of all sites then known and Dick's records featured prominently under Essex and Suffolk. He also published his sites in CAG Bulletins (Volumes 18, 19, 21 ,22, 23 and 24). Full references to his published work appear in the list on page 12.

Dick exhibited his photographs and talked at aerial photography conferences at Norwich in 1977 and Colchester in 1979. Long-standing members of CAG will remember that Dick and I, together, produced an Album of Cropmarks which gained the County Amenity Award in 1978. The photograph below shows the presentation of the Award.

Dick Farrands left, and Ida McMaster right, receiving the County Amenity Award 1978 for their album of aerial photographs.

Figure 1. Cropmark sites identified by R. H. Farrands 1959-1983



Dick was a most energetic and original worker and he has left for us a mass of valuable material. Those of us who saw him towards the end of his life remember his determination to complete his unfinished archaeological work. I regard myself as most fortunate in having been able to work with him; I greatly valued his help and much appreciated his expertise which he so readily shared; I still miss his wise counsel.

THE CONTRIBUTION OF R.H.FARRANDS

No reader needs to be reminded of the immense importance of the County's archaeological heritage. The formation of an Archaeology Section within the County Council's Planning Department in the early 1970s was an acknowledgement of this and a commitment to make provision for its preservation and recording on a county basis. These policies, and their successful implementation, ultimately result from the dedicated and untiring fieldwork of archaeologists such as Dick Farrands. Without his keen observation many sites would have been destroyed unrecorded, whilst his fieldwork, particularly his aerial photography, played a major part in re-assessing the County's past in terms of "landscape archaeology". The Archaeology Section will always be dependent on fieldworkers like Dick, with infectious enthusiasm. We have a great deal to thank him for and to remember him by.

David Buckley, County Archaeologist

THE TECHNOLOGY OF SALT MAKING AND THE RED HILLS. A SURVEY OF AN ANCIENT INDUSTRY.

A.J. Fawn

"The mounds consist of a reddish, porous earth, like disintegrated brick, mixed, in some places freely, with broken pottery of the rudest type, wood charcoal or cinders, and clinkers." Henry Stopes, the first systematic investigator, wrote this description in the second of his two papers on the Red Hills (1879, 1884), curious mounds distributed along the coastal marshland of Essex.

In this century others have published papers describing excavations and discussing results. The local Red Hills are covered by Francis Reader (1908, 1910, 1911), who directed the series of excavations initiated by the Red Hills Exploration Committee, by our past secretary, the late Kay de Brisay (1972, 1973, 1974, 1976, 1978, 1978, 1979, 1979) and by another Group member, Dr. Warwick Rodwell, who excavated Hills in the south of the county and published a comprehensive review (1979).

While assisting in the preparation of the forthcoming Kay de Brisay Memorial Booklet on the Red Hills, I realised that, from published information, a more speculative article could be written. Previous writers have tended to approach the subject by examining the archaeological evidence but I shall start from a scientific and technological basis to discuss the problems of the Hills. My experience of them is restricted to those near Colchester, gained during Mrs. de Brisay's excavations.

Twelve years ago all our members must have been aware of Red Hills. Now, there will be many who are entirely ignorant of them and therefore I make no apology in writing for the general reader, making use of familiar material and endeavouring to render science comprehensible and palatable to the non-scientist. I should say that I am a physicist who has spent his working life in the plastics industry, which leaves me with poor qualifications for expounding, as I do here, on chemistry, geology, ceramics, history and economics, not to mention archaeology.

We must start with the generally accepted origin of the Hills and declare that they are the remains of an ancient industry for the extraction of salt from sea-water by evaporation, using artificial heat, i.e. not solar, at some stage. There is no positive proof of this but there must be few people who favour an alternative nowadays. The industry flourished in the Late Iron Age and Romano-British period and recent evidence suggests that it may have been in existence as early as the Middle Bronze Age. (Wilkinson and Murphy, 1983, 1984, 1986).

Stopes was a good observer and his articles contain much information which is still pertinent today. He describes the Hills as ranging in area from half an acre to thirty acres, and in depth from two to four and a half feet. (Thirty acres must be unique or an exaggeration, as discussed later.) He comments that they are numerous. Archaeologists have been counting them ever since and 298 are listed in the forthcoming Memorial Booklet. He speculates on their age, bearing in mind that their lowest strata rest on London clay one or two metres below the surface of the alluvium. He comments on the coarse pottery fragments now known as briquetage and provides a map of local Hills.

He is non-committal about the suggestion of his contemporary, the Rev. J.C. Atkinson (1880), that the Hills are the relics of salt-works, although he lived until the early 1900s and may have reached that conclusion in his later years, unrecorded by him as far as I know. However, he does, as an F.G.S., remark on their great age from his knowledge of the development of marine marshes and we shall start with this aspect.

The Environment of the Red Hills

"They lie, as a rule, just above the average high-water mark, or its level, where the saltings have been inclosed, as, after conversion into marshes, the saltings always shrink, chiefly from loss of water, to much below their original level." (1884, p.97). Stopes went on to describe how the saltings were formed because he realised that it was relevant to the appearance of the Hills and a further explanation will be given here, drawn from more modern sources (1969).

Saltings are areas of land between the range of high water at spring and neap tides respectively. (See Appendix 1). Alluvium is solid material which has been conveyed in suspension in currents of water and deposited in areas where the current flows sufficiently slowly to allow settlement. Thus the saltings of the Colne and Blackwater estuaries are largely covered by mud which is alluvium brought by the sea from the

cliffs of Clacton, Frinton and Walton or even further north, mixed , no doubt, with material from the rivers themselves and deposited to form a layer one or two metres thick in the vicinity of the Hills.

This deposit is a recent one geologically speaking, formed as a result of the sea rising relative to the land since the last glaciation some twenty thousand years ago. It is estimated that the melting of the ice has resulted in a rise of 60 metres or more, breaking the land-link between England and the Continent and beginning the development of the present North Sea in 7500-5500 B.C. At first the rise was rapid, perhaps two metres per century, but since about 5000 B.C, the average is estimated to have been less than 13-16 cms. per century although it will have varied according to locality (1972). In this period there have been reversals or regressions, i.e. relative sea level falling, as will be discussed later, but the main trend has been upwards.

The alluvium in the vicinity of the Hills rests on London clay, just as the Hills do. When the tide is out the clay may be seen at the bottom of some of the creeks on Langenhoe Marsh and, unlike the alluvium, it is firm enough to stand on without undue sinking. It was laid down about fifty million years ago and, although it has been redistributed by comparatively recent glacial action, its interface with the alluvium represents a most useful difference in time for archaeology.

Mersea Island is an outcrop of the clay, overlaid with gravel. Stopes suggested (1884. p,97) that the Island was formerly a peninsula with a land bridge across the present Colne estuary and that the river then flowed round the back of the Island, eroding the channels of the Pyefleet and the Strood in the London clay before joining the Blackwater. Eventually, with the rising sea level, the water broke through and the peninsula became an island. He does not suggest a date for this - and I cannot find any later information, but presumably it occurred after 5500 B.C., and was probably considerably later.

Before it was covered by the rising water, the surface of the land which was to become the Langenhoe, Peldon and Tollesbury marshes must have sloped gently down to the sea as did the London clay not far beneath its surface. It is suggested that the sea then had more power without the presence of the impeding alluvium and was able to disperse the thin layer of surface material above the clay before starting to lay down the deposit of alluvium.

As the sea slowly rose and the water transgressed further inland, the alluvium settled to a level which was generally slightly below the mean spring high water level. Obviously the marsh could not grow higher than the water which was creating it. Some of the existing creeks are man-made or stream-created but the pattern of the others was formed long ago when the alluvium was first deposited, corresponding to the drainage of the tide. The pattern was made stable by the growth of salt-water plants which encouraged further deposits of alluvium by trapping solid particles from the water. Thus the alluvium grew around the creeks rather than the creeks being the result of erosion of the alluvium as first consideration might suggest.

As the sea's transgression continued, the alluvium grew in area as well as thickness. The oldest and thickest deposit would have tended to be to seaward and the youngest would have been to landward as a relatively thin layer. However, the situation would have also depended on the currents at any given locality. For example, river flow or flooding might have washed away alluvium again.

Having dealt at sane length with the physiography of the marshes we shall now look at the setting of the local Red Hills.

The Development of the Hills

Nobody with any sense would start an operation involving fire on ground covered by a tide every twelve hours. Logically the first fire for evaporation must have been lit on dry land out of reach of at least all but the highest tides but near enough to the normal high tide level for sea-water to be easily accessible. As Stopes says, "just above the average high-water mark", but whether he meant the modern mark or the ancient mark is not clear. We can postulate that the ground surface was then London clay or a superficial layer on London clay. There salt was made for a considerable number of years and, as successive pottery boiling vessels, equipment and fired clay hearths disintegrated, the debris was piled up in heaps, on the London clay surface. The debris would give a better purchase for the feet than the clay and would become a conveniently dry island at exceptionally high tides. Therefore, replacement hearths were built on top of the heaps. The sites would be abandoned in favour of others further inland when the salt-makers became disenchanted with having to paddle ashore in water at high tide or in the growing mud at low.

This imaginative picture suggests that the more accessible Hills, near or on the ancient shore and behind a sea-wall, are the later ones and that the earlier examples, perhaps from the Bronze Age even, lie under the alluvium to seaward or have been washed away.

We, therefore, have a picture of a mound building up into a Red Hill and the water rising gradually around it. However, the sea level probably did not rise very far during the active life of a Hill and, indeed, may have fallen on occasion. We have mentioned one estimate of average rise as being less than 16 cms. per century. If the active life of a Hill was a century or even two or three centuries, the salt-makers were unlikely to have been unduly concerned by the resultant increase in depth of water and the alluvium brought with it. The occasional high spring tide and the less frequent storm surges like the disaster of 1953 would have been more troublesome, although the operating units, to use modern jargon, were the sort of industrial plant which could be replaced easily and no doubt were, in spring at least.

There is evidence of regressions, i.e. falls in relative sea level, around 1300 B.C. and A.D. 300-500. The second regression is of interest because it occurs in a period when the Red Hills are thought to have gone out of use. Reader reported (1908 p.169) evidence of cultivation in the form of narrow stretches on the surface of a Langenhoe Hill and these may have resulted from ploughing at this time when the disused mounds were left high and dry.

The thickness of alluvium at the "wet" sites (i.e. to the seaward of the modern sea-wall) at Peldon (de Brisay 1974) and Tollesbury (de Brisay 1979) was found to vary from 1.0 to 1.3 metres. The thickness at the "dry" site (i.e. to the landward of the sea-wall) at Osea Road,(de Brisay 1972) where no further marine accretion has occurred since the building of the wall but where agriculture may have altered levels, was about 1.0 to 1.5 metres. Reader's sites, all dry, showed a variation of 0.8 to 1.8 metres. Assuming a sea-level rise of 9 cms. per century and an age for the sea-wall of four centuries, we arrive at a range of 11 to 23 centuries for the age of the Hills. Now this calculation is a very approximate one, based on not a few assumptions, and the wide range is an indication of this. Nevertheless, it is not inconsistent with the view that the alluvium has grown up since the formation of the Hills and indeed since they went out of use.

Some Scientific Aspects of Salt

Most people will know that sodium chloride is the chemical name for the substance commonly known as salt. However, the chemist uses the term "salt" for a member of a numerous range of substances which are chemical compounds of acids and bases. In this section we must use the chemical terminology to reduce confusion to a minimum and trust that the reader will be able to follow without too much difficulty.

Sea water contains not only sodium chloride but also a large number of other salts, most of them in very small quantities. However, some are present in significant amounts and an analysis of the main constituents is given in Appendix 2 which has two columns of percentages. The first are the amounts by weight of the main salts in 100 gms. of water and the second are the weights of the individual salts expressed as a percentage of the total weight of salts.

Thus, we can see from the first column that the total amount of salts in sea-water is about 3.5%, and that the amount of sodium chloride is 2.7%. The salts appear in the table in order of increasing solubility. As sea-water is evaporated, the least soluble, calcium carbonate and calcium sulphate, come out of solution first. They are the main components of the hardness of fresh water and form the fur inside a kettle. In a brine evaporating pan they deposit on the sides and bottom and are called pan-scale.

When about 90% of the sea-water has evaporated, sodium chloride starts to crystallise out and, to quote the 17th century diarist Celia Fiennes, "it candy's about the edges or bottom". (1984. p. 70).

Finally, when about 97% of the water has evaporated, the remaining salts, magnesium sulphate, potassium chloride and magnesium chloride crystallise out. Magnesium chloride has a bitter taste and consequently, in the industry, the solution containing the three salts is known as the bittern.

To summarise, the complete evaporation of sea-water to dryness will produce a residue of pan-scale, sodium chloride and bittern solids.

In addition to the soluble salts sea-water contains insoluble substances in varying quantities, such as animal and vegetable matter, living or dead, and minerals, sand, clay and mud. Evaporation concentrates the insolubles as well as the solubles (1% in sea-water will become about one third of the weight of salts in the

finished product) and the salt maker normally has to take steps to remove them by filtration or settling.

Sodium chloride is a deliquescent solid and, in an atmosphere above 75% humidity, will absorb moisture to the extent that it goes into solution so that the crystals become not merely damp but wet. The bittern salt, magnesium chloride, does the same at the even lower humidity of 35% so that, if present, it adds to the wetness. A humidity of 75% is not uncommon in this country, making artificial drying of the product, removal of as much of the bittern as possible and, nowadays, incorporation of an additive to maintain the dryness, desirable.

Scale of the Industry

Dr. Rodwell (1979) points out that the Essex ancient salt industry must have been of surprising magnitude judging by the size and number of the Red Hills. We are used to thinking of salt as pinches on our plates or in cooking (or perhaps none at all in our health-conscious age!) and a few remarks about the size of the industry, going backwards from modern times to Domesday may put matters in perspective.

World production in 1958 was 82 million tons. 28 million tons were produced by solar evaporation and the rest by brine extraction, rock salt mining and vacuum pan evaporation (the modern thermally efficient method). The bulk was used for production of chemicals and only 3% was used for culinary purposes, about 2.5 million tons.

It is manufactured by the open pan process, now obsolete in developed countries, which is of interest to us since it appears to be the direct descendant of the Red Hill operation. It is still used at Maldon and at the Lion Works, Northwich, which is run as a working museum, producing commercially. Prior to the introduction of the vacuum pan it was the principal method of making salt by artificial heat for centuries. In Cheshire and Worcestershire large quantities of refined salt were produced by heating natural strong brines from wells in large iron pans, which ultimately reached 200 square metres and more in area.

It is interesting to note the effect of the growth of population and of the chemical industry on salt production. In 1887, output was 1.8 million tons from Cheshire, 250,000 tons from Worcestershire and a modest 5,800 tons from Staffordshire. In 1823, Cheshire produced 300,000 tons and in 1798 shipped 200,000 tons through Liverpool, mainly to the east coast of America for the fisheries there. Cheshire rock salt was also shipped to Colchester and other East Coast ports in this period for refining by dissolving in sea-water and re-evaporating in open pans.

Information on mediaeval production is scanty and fragmented. Over-production was often a problem and some form of control by authority or agreement was exercised to maintain the price for many centuries. A figure of 1,600 tons a year is mentioned for Droitwich, reducing to about 225 tons a year at the time of Domesday. No figure for Cheshire is to hand. In the late 14th century it is suggested that 200-500 tons were annually imported from the Continent, mainly "bay salt" from the solar pans in the Bay of Bourgneuf just south of Brittany. These early figures are comparable with the estimated production from Red Hills given in Appendix 3.

The Technology of the Salt Industry

We shall now discuss the open pan method and the solar evaporation method in relation to the scientific information on sea-water given earlier.

Basically, the open pan method was simple. A solution of salt was heated to evaporate the water freely in a large flat pan open to the atmosphere, but often beneath a roof to prevent dilution by rain. The largest 20th century pans in Cheshire were 25 feet wide, to suit the largest rake a salt-worker could handle, and up to 140 feet long with a one foot depth of water. Hot gases from coal fires at the front passed through brickwork flues running under the length of the tanks, then under the floor of an adjacent hot house before venting via a chimney.

Unlike sea-water, inland brines are nearly saturated with salt and so there was no large volume of water to evaporate (90% of sea-water as stated previously) before the salts started to crystallise out. First the pan scale deposited over the hottest parts of the pan near the fires. Then the sodium chloride crystallised out and was raked and scooped from the pan into suitable vessels for draining. As the evaporation continued more

brine was fed in to maintain the level and the operation ran continuously for a working week and sometimes longer depending on the type of salt being produced.

At weekends the pan was allowed to cool and was drained, thus removing the bittern. The layer of pan scale was broken up and shovelled out, leaving the pan ready for re-filling, re-heating and another week's operation.

The following points should be noted from this brief summary as having a possible bearing on operations at Red Hills.

First, the pan was not evaporated to dryness, thus avoiding the danger of "burning" the salt, which spoiled the flavour, and the difficulty of controlling the fire in the final stages of complete evaporation.

Secondly, the removal of the sodium chloride from the pan before the bittern salts began to crystallise improved the flavour and reduced the tendency to absorb moisture. These properties were further enhanced by the subsequent draining which removed more bittern. Up to 1900 the wet salt was often drained in conical wicker baskets called barrows, a practice used for many centuries.

Thirdly, the grain size of the salt was controlled by the rate of heating. The lower the evaporation temperature, the larger the crystals of salt, so that certain types such as fishery, requiring large grain salt, were made at about 50° C without boiling. On the other hand, higher temperatures and boiling did not allow large crystals to form, producing a fine salt suitable for the table.

Fourthly, the salt was dried in the hot house to make it as free-flowing as possible before packing. Nowadays, table salt usually contains an additive to maintain free-flowing properties and plastic packing helps to keep it dry.

Information on salt-making in the 17th century is provided by Brownrigg (1748) and in the 16th century by Georgius Agricola in De Re Metallica. The latter's drawing of an open pan shows the familiar rectangular iron tank; albeit considerably smaller in size than the 20th century version, (perhaps 10 ft, by 5 ft by 1 ft) set on a single brickwork flue with the fire at the front. The fuel was wood instead of coal. Conical wicker baskets were used for draining, positioned over the pan so that the drainings were recycled immediately. Nearby was a large wooden tank evidently used for the storage of brine prior to evaporation, a feature which will appear significant during the later discussion of the Hills.

It was the introduction of coal for fuel instead of wood, with consequent higher temperatures, that encouraged the adoption of iron for pans. According to Celia Fiennes (1984, p.70) copper was used in the 17th century at Lymington, Hampshire, where sea-water was partially evaporated in ponds by solar heat and then boiled in pans.

The Romans introduced lead pans which continued until the end of the mediaeval period. Lead was relatively easily fashioned and was resistant to corrosion. If the pan boiled dry accidentally and melted, the metal could be salvaged and reused.

Incomplete surviving Roman lead pans at Middlewich and Northwich (Salt Museum) are about 15 cms. deep by 50 cms. width or length which is about the postulated size for briquetage pans from Red Hills. The introduction of lead pans, in Cheshire and elsewhere, must have been a considerable advance technically because the thermal conductivity of the metal is about thirty times that of pottery and thus substantial savings in fuel would have been achieved especially since the vessel walls could have been made thinner without losing strength. In addition lead pans would better withstand the stresses of heating and accidental knocks.

Sea-water is wholly evaporated by the heat of the sun to produce salt in many hot countries (Kaufmann 1960, Bloch 1976). Modern sun-pans are often very large, 250 hectares or more, and shallow, a few centimetres, relying on the principle that efficient radiation heat transfer and evaporation demand maximum area and minimum depth of water. The pans, on prepared flat land bordering the sea, are divided into connecting sections, the areas of which decrease in sequence as the concentration of the evaporating sea-water increases. Thus, the first section may be for settling and concentration, the second for deposition of calcium salts equivalent to pan scale and the third for crystallisation of salt with a well-prepared sloping bottom to facilitate eventual drainage of bittern.

Successive pans are usually set below the preceding one so that the water flows through the system by gravity subject to control by sluices. When sufficient salt has crystallised, the bittern is drained off and the product is raked into heaps before removal for washing and drying.

Solar evaporation was practised in this country as far north as Scotland (Clow and Clow 1952 p.51) in the post-mediaeval period but it seems to have been used mainly, if not completely, for concentration only in our uncertain climate and the process was completed with the aid of fire. A broad-sheet published by a Societie of Saltmakers in the reign of Charles I pleaded that its method by "Salt-Water and Fire" was "certain" compared with that making "by the sun" since the latter "depended on hot and dry weather" and this must have been a well-founded statement. Solar concentration was used at Lymington (Fiennes 1984, p.69; Cross 1965). A photograph of sun-works at Sutton-on-Sea appears in "Salt" (Rudkin 1975) and these were apparently used for concentration. Another site in Kent is reported with a photograph showing similar features (Eddison 1983).

With an inadequate excursion into the general field of salt production we will return to the Red Hills and will proceed to speculate on their nature.

The Red Hills

The first point is their size. Stopes estimated their area rather than surveyed them. He says that the majority range from half an acre to five acres or more. This is in reasonable agreement with the ones which have been measured in conjunction with excavation to give some idea of their limits. The largest of these is Reader's Goldhanger X, approximately four acres. Stopes mentions a thirty-acre giant (1879, p.1; 1884, p.98) which may be the same as Laver's 26 acre specimen (Reader 1908, p.189) but neither gives a location.

It may be difficult to delimit a Hill because the material has been dispersed by the sea and by agricultural activities. An eye-witness of the 1953 storm surge described the normally sheltered tidal area behind Mersea Island as being like the open sea and such floods, unrestrained by sea-walls and alluvium for centuries, would sweep over the Hills, redistribute their surface material and significantly modify their shape. When cultivation followed the building of the sea-walls, much red earth, as Stopes reported (1884, p.98), was removed for lightening heavy clay soils on local farms. A small quantity of ground briquetage mixed with alluvium gives a good imitation of the red fringes of a Hill and demonstrates that dispersal by sea and agriculture may have made the Hills look bigger in area than they were originally. The Peldon Hill had outskirts of red alluvium and not original red earth. The general redistribution will have disturbed the internal structure of the Hills and it is no wonder that excavators are usually disappointed with their findings.

Using Henry Laver's estimate of the volume of his 26 acre Hill, Dr. Rodwell has calculated that the output of salt from it was about 150 cu. m. per year, equivalent to a 5 metre cube and sufficient to supply the needs of the Trinovantian area, roughly the size of Essex. Although the size of the Laver Hill is unconfirmed, and one cannot help suspecting that it was over-estimated, owing to the reasons given above, Dr. Rodwell's conclusion is not invalidated for the assumed output can easily be transferred to other Hills. Appendix 3 gives further estimates based on population assumptions showing an even higher demand than Dr. Rodwell's figure which is equivalent to 220 tons per year. In Appendix 4 the estimates of 179 to 718 tons per year are related to the number of hearths required which is not inconsistent with the number of known Hills. The figures are a further confirmation that the industry was substantial, giving rise to appreciable activity at a minimum of 50 hearths at any time.

When a Hill, Reader's Goldhanger X, was flattened in the 1960s, two sets of three clay-lined pits were observed, sunk into the red earth of the Hill. Mrs. de Brisay excavated five more sets at Osea Road (1972,1973) and others at Peldon (1974,1978) which were more or less oval in plan with diameters ranging from about one to two metres and depths of down to just over a metre. The lining, about 10-20 cms. thick, was the colour of London clay and cracked readily on drying out after excavation.

The pits obviously functioned as tanks. The Peldon tanks were close to the hearth found there and it is logical that the contents were used to feed the evaporating vessels on the hearth. No definite hearths were found at Osea Road so that the link between hearths and tanks could not be confirmed there.

We must remember that the high tide approached the Hills once every twelve hours and that in between the sea retreated into the far distance as it does today. We may postulate that the tanks were used for storing sea-water near the hearths between high tides. They had sufficient capacity. Appendix 4 gives the

evaporation rates of the Peldon hearth at various temperatures and at the maximum, boiling, the calculated rate is 43.2 litres per hour or just over 1,000 litres per 24 hours. Many of the tanks excavated by Mrs. de Brisay were heavily eroded but the deeper ones were presumably closer to the original size and had a capacity still exceeding 1,000 litres. It appears, therefore, that the capacity was adequate for the postulated evaporation rate.

The fact that they were found in sets of three or more is reminiscent of practice in a modern industrial process wherein, at any given time, one tank is being cleaned and used for collecting a liquid, a second is being used for settling it and a third is feeding the settled liquid into the next stage in the process. Each tank takes its turn in the sequence. Additional tanks may be introduced to cope with any bottleneck in the flow. At the Red Hills, one tank would be cleaned and filled quickly at high tide, a second would be settling and a third would be feeding the vessels.

Mrs. de Brisay reported (1973. p.22) that it took about eight weeks to evaporate the bulk of a pint of sea-water on a south-facing window ledge. I repeated the experiment in the poor August and September of 1986, evaporating water from a Strood creek in a shallow dish in the open air on my south-facing garage roof. The evaporation rate as measured by the fall in level during 24 hours varied from 2.2 mm. on a cold day to 4.4 mm. on a hot day, when the water temperature rose to 27°C. The latter fall is on a par with average values for the Mediterranean and California of about 5 mm. per 24 hours and must represent about the maximum which can be achieved by natural evaporation in this country. However, it is small compared with the rate of over 6 cm. per 24 hours in a heated pan at 50-55°C. and negligible compared with the 25 cm. per 24 hours at 80-85°C. and 108 cm. per 24 hours at boiling. (The rate at boiling depends on how fast the water is boiled but the figure given indicates the order of magnitude). Natural loss in the clay tanks might have made a contribution to the evaporation if large crystals were being made at vessel temperatures of about 50°c, but would have been of little value if higher vessel temperatures were used. One concludes that the functions of the tanks were storage and settling.

The tendency of London clay to crack on drying out has been noted and it may be that the salt-makers back-filled the tanks in the winter close season in order to prevent their deterioration. I remember looking carefully at the sectioned fills of the tanks at Osea Road for evidence of settling deposit and seeing nothing but uniform red earth. The sea may have introduced this, of course, but deliberate filling is a possibility.

We now turn to the problem which has intrigued past investigators, the nature of the hearths, the hearth furniture and the vessels, all of which, it is generally assumed, contributed to the debris, that is the red earth and the briquetage found in the Hills. The problem arises because it is only the debris that is found and reconstruction of the equipment and methods used in the process is, therefore, a matter of guesswork. In the tradition of previous writings on the subject, what follows is mainly speculation, based to some extent on what has been stated in previous sections above.

We have already distinguished three operations involving heat which would have been associated with salt-making. These are the manufacture of the equipment, some of which had to be pre-fired at high temperature, the evaporation of the sea-water, and the drying of the wet salt. All three could have produced material as found in the Hills; the red earth, the briquetage, the charcoal and the clinkers. However, convincing evidence that the equipment was made at the Hills is lacking and the possibility that it was made at inland sites and transported to the salterns should be borne in mind. The drying stage may also have been carried out elsewhere. As the salt, once dried, would have tended to become damp again, it may have been distributed in the moist state after draining and the customer then dried it, according to requirements, in front of the domestic fire. Again, an open mind is best until more evidence is available. The practice may well have differed from Hill to Hill.

In an appendix to Reader's first report (1908, p.182) Jenkins gave details of analyses intended to determine the sources of the materials in Hills and briquetage which would have thrown light on the above problems. Unfortunately, the results did not permit definite conclusions, mainly because the selection and identification of the samples was unsatisfactory. The questions still to be answered by a modern analysis are; is the briquetage made from London clay or alluvium on site or from another clay source? Are the various types of briquetage all made from the same clay source? Is the red earth burnt London clay or burnt alluvium or burnt earth, perhaps turves, from another source? Jenkins' analysis shows one interesting result, the high iron oxide content of the briquetage and some of the clays, which would account for the particular redness of the Hills, compared with the colour of salt sites elsewhere, Lincolnshire for example.

The types of briquetage found are vessel fragments, other flat fragments which may or may not be parts of

vessels, pedestals, firebars, wedges and "pinch-props". They form a group of artefacts which has puzzled investigators since Stopes' time and I must say, forthwith, that I am similarly mystified although I shall make a few observations which I have not found elsewhere. In making them I shall assume that the Red Hill operation was the precursor of the open-pan process; evaporation in open vessels, removal of the crystallised salt to drain and drying of the product.

Enough fragments of vessels have been found (a good selection is stored in the Colchester and Essex Museum) to indicate that the size postulated in Appendix 4, 80 x 30 x 15 cu. cm., is reasonable. However, there is no suggestion that they were uniform in size or shape. Several large sherds collected by Mrs. de Brisay appear to be parts of vessels with splayed sides, some circular rather than rectangular, which may be greater in volume than the size postulated. It may be that some evaporating units operated with one large vessel instead of multiple pans. The splayed sides would have made assembly of multiples over a hearth a little more difficult. Stopes remarked on a sherd belonging to a vessel "at least two feet in diameter" (1884, p.102). Many fragments show off-white coatings on one or both sides. On the inside of a pan one would expect to find pan-scale. On the outside one may find a greyish coating from reaction between clay and wood ash from the fire, a form of over-firing found in flues of kilns. Many sherds may have received their coatings after breakage since they would have been lying on site exposed to further accidental firing and both sides may exhibit the ash-clay reaction.

Some sherds are free of coatings, display a good red colour, have a firm fabric and no signs of over-firing. They may be associated with a different part of the process, perhaps the drying stage which would not have required high temperatures.

Mrs. de Brisay found a pedestal at Osea Road (1972, p.33) near enough complete to show that the form was a round pillar, with a height up to 30 cm, a round or square base and a top which she described as boat-shaped, that is, like the T-shaped handle of a spade but with roughly flattened upper surface. She also found a pedestal with its base fixed to a flat surface (ibid) with wet clay which had become fired in use so that the pillar must have stood vertically and could have been one of a number supporting a vessel. A parallel is to be found in pottery kiln furniture and reported early examples are from the Holt Roman tile and pottery kiln site (Grimes 1930) where they were similarly fixed to the floor with clay. They had triple-pronged tops to give three-point support for pottery vessels being fired. With T-shaped tops three pedestals would have been required to support an evaporating vessel and four would have provided greater stability, provided clay packing ("pinch-props") was placed between pedestal and vessel as required.

Most of the pedestals in the Museum show evidence of over-firing, having an off-white coating and a disintegrating fabric, which suggests that they operated in flue conditions. The bases often have a purplish tinge, also evidence of over-firing.

The remains of the local hearths that have been found, Late Iron Age ones at Peldon (de Brisay 1978) and Tollesbury (de Brisay 1978) and a Middle Bronze Age specimen at Fenn Creek on the Crouch (Wilkinson et al 1983, 1984, 1986) are of sufficient size to make feasible the production calculations given in Appendix 4 but do not enable a satisfactory reconstruction of the use of hearths and pedestals to be made. The original drawing for vessels poised on pedestals was that of Riehm (1961). His reconstruction, based on Swinnerton's excavation at Ingoldmells (1932), shows 48 pedestals supporting four vessels on a moderate sized hearth which could take seven, inferring that the full complement of pedestals may have been as many as 84, a number which leaves little room for a fire. Thus, the drawing does point to the idea that the hearths were flues since even a smaller number of pedestals would have made feeding of fuel under the vessel difficult. Instead, as in the mediaeval system, fires might have been lit in front of the vessels, and the hot gases drawn underneath them past the pedestals and up through a chimney to provide the draught. Flues must have walls to direct the draught and evidence of these was found at the three Essex sites and at Ingoldmells. At Peldon the hearth/flue floor was below the contemporary ground level as indicated by the rims of the clay tanks, suggesting that the common-sense practice of sinking the flue into the ground, here red earth, was used. Dr. Rodwell (1982) has discussed evidence that simple pottery kilns were already in use at the time of the Roman conquest and, if so, the salt-makers of the period would have been familiar with the advantages of the flue which would have allowed the fire to be moved from under the vessels to one side. Control of the firing would have become easier, access to vessels improved and the contamination of vessel contents by smoke, smuts and ash reduced.

Mrs. de Brisay found but one pedestal at Peldon and suggested that firebars resting on hearth/flue walls were used to support vessels instead. Excavated fragments of firebars show that they were fired bars of clay, usually rectangular in cross-section, thicker in the middle than at the ends so that the side view is that

of a low triangle. It is generally assumed that they acted as beams to support vessels and, if so, the term "firebar" given to them by the Red Hills Committee is a misnomer, for the O.E.D, defines a firebar as one of the iron bars of a grate, that is, it supports a fire; perhaps support bar would be a better term.

The lengths of the bars, deduced from the incomplete specimens in the Museum, vary from about 20-40 cm. and are too short to span the Peldon, Tollesbury and Fenn Creek hearth/flues without intermediate supports.

It is possible that a central prop such as a pedestal in the centre of the hearth was used in conjunction with pairs of the longest bars, the ends of which would have had to have rested on the rather weak arms of the Ts. A use for the smaller bars then has to be decided, for small hearths perhaps?

Similar bars are found in Romano-British kilns for supporting pottery but not all of them have the distinctive triangular shape of the Red Hill variety. A modern engineer would approve the shape since it puts the strength where it is needed, in the middle, but early salt-makers had no knowledge of the theory of beams and it is strange that they went to the trouble of making such a shape when a parallel-sided beam of adequate thickness would have done equally well for supporting evaporating vessels which formed an evenly distributed load. One should perhaps look for explanations and here are some suggestions.

It is normally assumed that the bars were used apex downwards so that the flat upper surface provided a good seating for the vessels but if they were set apex upwards the vessels would have rested almost on point contact, allowing the flue gases to circulate more freely under the vessel and give better heat transfer. Because the weight of the vessels and sea-water (my estimate is about 60-70 kg.) would have placed great stress at the point of contact, even though it was the thickest part of the beam, the apex was often trimmed off to provide some degree of load distribution. This suggestion implies that each vessel rested on an arrangement of four bars. It also implies that the salt-makers were quite good at finding practical solutions to the problem of breaking firebars. It is interesting to note that, at an inland Roman site, Middlewich, there is direct evidence that bars were used convex surfaces uppermost (Bestwick 1975).

The ends of bars were usually cut off square and this was probably because thin pointed ends would have been the weakest parts of the beam. Although cutting off the weak parts shortened the bar, what was left was *a stronger beam. This feature tends to confirm the assumption that bars were used as beams supported at the ends.

Reader commented on the friable nature of the briquetage from the Hill, Goldhanger X, (1884, p.175) attributing it to the sand in the clay used. Later writers have tended to emphasise this whereas examination of the material from various sites in the Museum shows that the fabric is sometimes of very respectable hardness, at least equivalent to a decent brick. Mention has been made of some vessel sherds with a good red colour, firm fabric and no sign of over-firing. The majority of firebars have a similar quality, with the exception of those from Goldhanger 10, which are all friable, and it is tempting to link the two types of briquetage to a low temperature part of the process. For example, if the supposed vessel sherds which are flat, fairly thin and sometimes have two made edges at right-angles were tiles, they might have been laid on the slopes of the triangular bars resting, apex uppermost, over collecting vessels, in sets so that they resembled a series of pitched roofs. Wet salt scooped from the evaporating vessels could then have been placed on the tiles so that the drainings would have trickled down the slopes and fallen through the cracks between the tiles into the vessels to be re-used.

Alternatively, the tiles could have been replaced on the bars, apex down, so that they formed a salt-drying floor over a low temperature flue. The problem is that no such flue has yet been identified positively although sites at Mucking (Jones 1977) and Canvey Point (Johnson 1982) have been suggested.

Compared with other forms of briquetage, wedges are rarely found and, obviously, the salt-making process did not require many of them. Mrs. de Brisay thought that they might have been inserted in the walls of the flues to act as supports for drying vessels as in Brittany (Wilmer, Appendix to Reader 1908,, p.210) but the almost complete lack of flues makes this impossible to verify. They are similar to pottery kiln furniture.

The use of "pinch-props" as packing pieces has already been suggested and these indeterminate and often broken items of briquetage were probably also small pieces of clay used as luting to stop up chinks in the evaporation assembly. If the theory that the evaporation vessels formed the top of a flue is correct, certainly there would have been gaps between them to be closed to conserve heat.

Dr. Rodwell suggested that the superstructure of the hearth/flues incorporated quantities of turf and soil

which became red earth on being fired. This seems very reasonable and, if the superstructure included a chimney, the volume of material would be all the greater.

One of the Hills which Reader excavated, Goldhanger VIII (1910, p.69), was unusual in that it exhibited two levels of different dates, one on top of the other. The lower, earlier level appeared to be a normal Hill with red earth, briquetage and little pottery, but the upper level contained very little briquetage and a considerable quantity of Romano-British pottery, animal bones and oyster shells, indicating a later occupation during the Roman period. No fewer than seven flues, long and narrow, were found set in pairs cut into the red earth, associated with the upper level. If the flues were used for salt-making (there is no proof that they were, Reader wondered whether they might have been cooking places), some change in technology is indicated. The obvious one is the introduction of lead pans which would account for the lack of briquetage. A single large pan heated by each pair of flues might be beyond the capability of Romano-British technology and a series of smaller pans, similar in size to the earlier briquetage vessels, resting directly on the fired clay walls of the flues seems more likely. One flue of each pair may have been used for evaporation and the other for drying.

At another Hill, Langenhoe III, Reader found a hole in the London clay beneath the red earth of the mound, 15 ft. by 10 ft, with a maximum depth of 2 ft. (1908,. p.172). He said that such holes commonly occur in the saltings, presumably inferring that it was natural. However, one possible use for the hole would be the solar concentration of the sea-water to produce a strong brine for subsequent artificial evaporation. It is of reasonable size for a sun-pan and it is in the London clay which is where a pan of that date ought to be. More such pans may lie beneath the alluvium but excavation would be a problem.

In order to control the supply of water to the pan a sea-wall would be necessary. Reader found evidence that the sea-wall at Goldhanger VIII was of Roman origin (1910, p.76) so that walls of this date are not unknown.

The above discussion of the Red Hills has centred on local examples because a wider review of salterns elsewhere in Essex and further afield would have confused the author - if not the reader. It is evident that salt-making methods and equipment varied according to locality even if the principles remained the same. In addition to the local differences in briquetage mentioned above, more wide-spread variations are found. The example in the recent British Museum exhibition, Archaeology in Britain, was not at all like our coastal material in form or fabric and vessels found at Droitwich (Rees 1986) were tall and circular, shaped like a vase. Sane supposed salterns may not be what they seem. For example, Gurney (1982) has indicated that some Fenland sites were related to other activities involving hearths. These uncertainties will perhaps be resolved as more sites and artefacts are reported.

Finally, the purpose of this article has been to put forward the idea that the ancient methods of salt-making in Essex resembled more recent techniques in principle. The functioning of the Iron Age equipment and the details of the process remain obscure and must await further investigation. I hope this brief review will assist those who undertake it.

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Appendix 1

As some land-lubbers are, quite reasonably, unaware of the vagaries of tides, I make no apology for stating that tides flow in and out approximately twice every 24 hours and that the spring tides are the high ones which occur approximately every fortnight, the neaps being the low ones in between. Although high springs occur in the Spring, they also occur in the Autumn, and the tide's appellation does not derive from that of the equinox.

Appendix 2

Typical Composition of Sea-water in Order of Increasing Solubility.

Chemical Name	Common Name	% weight in Sea-water	% of total Solids
Calcium Carbonate	Limestone	0.012	0.34
Calcium Sulphate	Plaster of Paris	0.126	3.61
Sodium Chloride	Salt	2.723	77.87
Magnesium Sulphate	Epsom Salt	0.225	6.43
Calcium Chloride		0.077	2.20
Magnesium Chloride		0.334	9.55
Total Salts		3.497	100.00
Water and Residuals	96.503		
Grand Total		100,000	100.00

Appendix 3

Estimate of Red Hills Production

Assume that they served an area roughly that of Essex and that the population was 100,000. Recent estimates of Britain's total population in the Roman period vary from 500,000 to 2 million. Salt will have been consumed not only at the table and in cooking but also in preserving, tanning and by animals. According to Bloch (1976) a reasonable average in antiquity was 20 gms. per day per head, which we will take as a maximum. The body needs about 5 gms. per day which we will take as the minimum.

The estimated requirements for 100,000 people are: Maximum. 100,000 x 20 x 365 gms/year = 718 tons/year. Minimum. 100,000 x 5 x 365 gms/year = 179 tons/year.

Appendix 4

Estimate of Total Hearths Required

Assume that a hearth like that at Peldon could take a maximum of four evaporating vessels, interior dimensions 80 cms. x 30 cms. Total evaporation area is 4 x 80 x 30 = 9,600 sq. cms.

The following table gives evaporation rates by experiment and production rates from the above area by calculation, for 100 day operation, in summer only.

Salt water temperature	50-55C	80-85C	Boiling
Rate of evaporation (level drop, cms/hr.)	0.26	1.05	4.50
Rate x 9,600 (ccs./hr.)	2496	10080	43200
Equivalent salt (ton/100 days) (3%)	0.18	0.71	3.06

From these tonnages, the numbers of hearths needed to produce the maximum and minimum requirements given in Appendix 3 are:

Salt water temperature	50-55C	80-85C	Boiling
179 tons/year	994	252	58
718 tons/year	3999	1011	234

The number of recorded Hills is just over 280 so that the figures suggest that a fairly high evaporation temperature was needed to give the output required, on the assumption that the number of hearths in operation at any given time was unlikely to be more than 100-200.

WINTER MEETINGS 1985/1986

THE ANGLO-SAXON CEMETERY AT SPONG HILL, NORFOLK 21st October, 1985
Catherine Hills, B.A., Ph.D., F.S.A. Department of Archaeology, Downing Street, Cambridge

The multi-period site in the middle of N. Elmham parish, near a Roman Road crossing of the river Wensum was the first Saxon cemetery to be completely excavated (1972-1981). It was first noted in the early 18th century by workmen finding urns. More recently, distinct crop marks were observed. Partly because of increasing plough damage, it was decided to excavate.

The cemetery is 5th and 6th century date but finds of all earlier periods occurred. Outside the cemetery were post holes of huts and larger Saxon buildings. There were probably about 3,000 persons buried. A few graves were in discernable round barrows and it is likely many more must have had mounds. Very little bone survives. Finds included brooches, amber and glass beads, shield bosses, spear heads and a sword scabbard. Most had pots which may have contained food or drink. Especially interesting was a complete bronze bowl and metal fish-shaped mounts from a shield.

Some of the cremations had remains of more than one person in the urn, and there were instances of two or more urns in one hole.

There was a great variety of pots - decorations included cordons, stamps and linear patterns. A few had line drawings - one showing dogs or wolves hunting a stag.

Some finds seem to have been burned in the original cremation. Other finds seem to have been buried later. Gaming pieces, miniature shears, etc. were found, but almost no silver. The sites used for the cremations were not discovered.

Graves with brooches of the early migration period were clustered together. Later pot types were outside this group. Stamps on some were found on more than one pot, showing that some potters had more than one specimen of their work in the cemetery, and the vessels were similar to those being produced in Germany.

A fine pot lid with a seated man on it was a very unusual find. One stamp impressed a runic inscription.

Inhumations started in the 6th century and, with the arrival of Christianity in the 7th century, the use of the cemetery was abandoned.

It was observed that the "richest" graves were the mounded ones and the most ambitious ones had satellite burials.

The most spectacular finds can be seen in Norwich Museum.

AERIAL ARCHAEOLOGY IN THE WELSH MARCHES 28th October, 1985
Chris Musson, B.Arch., Clwyd-Powys Archaeological Trust

The impact of aerial archaeology on Great Britain has been much less in Wales than in the rest of the Country, being chiefly confined to the coast and the midland borders. Great contributions - especially in studying Roman sites - were made by St. Joseph and David Wilson - but Cambridge unfortunately ceased operating in Wales about twenty years ago. Regional trusts are now beginning to fill the gap left by this withdrawal.

Chris Musson's area extends from Prestatyn in the north to the head of the Swansea valleys in the south. Much of the area consists of deeply eroded pre-Cambrian rocks and, because of geological and climatic factors, moisture deficiency is not such an important factor as in England. In modern times the Dee, Severn and other valleys have been intensively farmed and much of the archaeology lost.

The Berwyns, however, a divisive range with a harsh landscape, has a vast number of cairns of all types, still being discovered. One pair of cairns revealed not only Bronze Age but Neolithic use, with dwellings. Bronze Age dwellings, outside forts, are almost non-existent so far. In the Clwyd-Powys area 180 pre-historic forts are now known, ranging from Old Oswestry, which rivals Maiden Castle, to a mass of small ones down to 30 metres diameter. Many are multivalate and inturned entrances are typical. Forts are not always on highest sites and may be overlooked from higher ground.

Among later sites are several Roman marching camps and then Offa's Dyke - here, aerial photography has revealed at one part a quarry ditch running by the Dyke.

There are a great many castle sites from the Middle Ages, many now represented only by earth works, though some e.g. Llangollen Castle, constructed in a hill fort, show some stone remaining.

Not much is evident of field boundaries, communications and settlement sites and, what there is, is only visible from the air. One fascinating slide showed early field boundaries, not of ditches, but of a series of many pits.

The Iron Age sites produce very little pottery; sometimes fragments of Roman pottery are found on them. Some of the newly discovered sites are being excavated wholly, or in part, to establish their date and purpose; the Royal Commission in Wales has no way of doing aerial photography to help them produce an adequate catalogue of ancient monuments in the Principality and depends heavily on the Trusts in this task.

THE ROMAN VILLA AT WINTERTON, LINCOLNSHIRE 4th November, 1985
Roger Goodburn, B.Sc., F.S.A., Institute of Archaeology, Oxford

The Villa is sited in a fold of the hills not far from the Roman ferry site on the River Humber. The area is in the midst of a great number of villas and farmsteads.

Over 1,000 villas and Roman farms are known in the United Kingdom but their economic position has been little explored so the excavations at Winterton were dissected to find how their economic position related to the district they dominated. The 2nd century remains overlie an earlier building with circular features, Iron Age in style, but built in stone by Roman farmstead owners. To the east of this were found 1st century Iron Age pottery and overlapping circular features (timber building).

The main 2nd century villa began as a winged corridor villa with an 'L' shaped bath house in which were life size figures painted on plaster. Alterations and additions continued into the 4th century.

The original buildings were added to, to provide a courtyard, roughly rectangular, over 200 feet wide with a gatehouse. This yard was metalled and rutted, evidently the villa was a working farm as well as a “country house". (Earlier investigators had found mosaics - not of high quality - showing Ceres and Orpheus).

Two of the added buildings were large aisled halls with stout end walls but long sides of mere infilling. The massive roofs must have been carried mainly on the posts (in one building resting on stone bases) which divided the aisles from the nave. Domestic apartments occupied the corners, farming activities including corn drying kilns in the nave, in one case. The other was for living accommodation and had a bath suite. This building had the mosaics referred to previously.

One corn drier had been built on a large scale but evidently was ineffective as it had been repeatedly reduced in size.

Outside the original "domestic" yard another yard was developed with a 3-post gateway. Here were many coins and small objects lost in a farmyard mire. A third aisled hall had been used for a cattle byre. These halls resembled the 17th - 19th century farm buildings of northern Europe.

Water supply came from a crude conduit to the house, water holes, and one well set in a 12 foot square, 6 foot deep construction. The sides of the well were supported by adze trimmed oak planks, probably from one tree, with a stone lining inside.

A network of ditches and fences occupied one area - timber had been used prodigally. The later days of the Villa showed a turn to animal husbandry. There are hoof marks in alluvial soil. The 20,000 bones recovered are mainly of deer, sheep and cattle (few pigs).

There were some casual burials and a surprisingly small villa cemetery (5 graves) with no grave goods. Here, burials took place with the head to the east. At some distance was a separate good grave with oolite stone.

Perhaps, because of changing economic conditions, the Villa went into a slow decline, the stone robbed

away, and other articles carried off so there is a poverty of artifacts left for excavators who have found ox goads, mattocks, and a 4th century antler hoe.

PHOTOGRAPHY ON THE 1982/1984 EXPEDITION TO QASAR IBRIM 11th November, 1985
Tony Bonner, Colchester Archaeological Group

The speaker, over a period of several years, has joined the party excavating the site of the hill town of Qasar Ibrim, mow on the shore of Lake Nassar. The earliest town was settled in the New Kingdom period and occupation continued until the early 19th century. Because of the entirely arid climate there, organic matter survives of very early date.

Qasar Ibrim is notable as being the most southerly place of Roman building. On the hills "inland" are several outposts of a garrison. Finds of the period include many amphora sherds and a pile of stone balista missiles. "Tavern Street" has a building decorated with carvings of grapes and of an amphora.

A cathedral existed from the late 8th century together with some tombs of church dignitaries, one of which has been opened and contained a body (semi-mummified due to the arid climate). The alignment suggests this pre-dated the cathedral.

The site became a place of pilgrimage and the cathedral walls show innumerable scratches where pilgrims scoured out dust to take away as charms. With the advance of Islam the place became a mosque in 1560. About three miles away are carvings of footprints pointing to the cathedral and considered to be of Meroetic times.

Betty Crowfoot, the party's fabric expert, had a great range of specimens to consider including some early silk, probably from China. So much fabric was found that she could eventually use fabric for dating deposits. Of particular interest was a small container with religious quotations in it. Designed to be used as an amulet, the practice can still be seen in Egypt to this day. The vast number of other organic finds included baskets, a cloth hat, mats etc, and, in a pit in a temple, one hundredweight of millet seeds. With Christian burials were two bouquets of millet sprays. Our speaker took 3,500 photographs for the expedition and had to resort to ingenious methods to produce prints as he had no electricity. He showed slides of prehistoric rock carvings on the opposite side of the Valley of the Nile which proved how - in very early times - the landscape had been much more fertile, for they showed animals which required a much moister climate to allow them to exist.

THE HISTORY OF COLCHESTER ENGINEERING 18th November, 1985
Andrew Phillips, B.A., B. Ed., Colchester Institute

In the late 19th century Colchester became celebrated for its engineering. The foundations were laid in trades, such as the millwrights, ancillary to agriculture. 1850 saw the number of windmills at its peak, there were also housemills and a treadmill at the Hythe used in loading and unloading ships. With the use of auxiliary steam engines, some mills kept going late, even into the present century. The Clubb family - still represented in the town - built the milling machinery at Middle Mill and the advanced annular windmill at Boxford. Windmills actually in the town were working at Butt Road, Mill Road and Greenstead Road.

Colchester had the first iron foundry in Essex: founded in 1792 it lasted until after World War I and was situated behind the present Williams and Griffin store. The pillars (1819) in front of the Fire Office were probably cast there.

Around 1805 Coleman built a foundry at the Hythe. The railings round the Natural History Museum were made there. Coleman lived in the house, now the Scheregate Hotel, and built east side of Abbeygate Street. He had the Abbeygate foundry behind his house, where he made a great variety of castings, most notably the castings for North Station Road bridge over the river Colne. He moved to Chelmsford where he made the first steam ploughing tackle. Another iron founder produced the fine iron gates for the Town Hall - now on the east side of the building.

About this time Catchpool had the High Street foundry and got Army contracts - see the massive railings around the barracks.

Paxman - the most notable name in this connection - became foreman and had an important part in

developing portable steam engines but soon left and set up for himself in front of the present "old library". This was a great success and Paxman "saw off" the other foundries in the town except the High Street one. Eventually he moved to the Standard Works and sold his former one to Arthur Mumford - a "gentleman engineer"; Paxman had started as a craftsman. A notable product of Mumford's was the ironwork for "Jumbo", the water tower (except the tank which he had from Newcastle). The fine staircase inside the tower testifies to his skill. In the 90s he turned to making water tube boilers. He developed engines for yachts and then for Royal Navy craft and London County Council fire vessels. About the same time a new man, Bear, made a vast range of products from penny farthing cycles to motor cars. He produced, too, lathes and sewing machines.

MILAN, CAPITAL OF THE ROMAN EMPIRE 25th November, 1985
David Andrews, B.A., Ph.D., County Archaeological Section, Chelmsford

Dr. Andrews opened his talk by a brief description of Milan's site - a relentlessly flat one - at the western end of the Po plain. Signs of prehistoric occupation have been found and it must always have been a nodal point for routes but little is known of it before it appeared in Roman history as a Celtic "town". When pressure started from the north, the Romans occupied it as a defensive measure. They abandoned it during the Punic wars but re-occupied it in 197 B.C. and, in due course, it became a Colonia, it prospered as a supplier of arms etc. to the Army. With the division into areas of responsibility under Diocletian, it became a centre for the court in the west, until the 5th century invasions of the Goths, when the court moved to Ravenna and Milan was sacked. Later, the town revived somewhat under the Lombards but did not have great importance until the Middle Ages. Recent excavations have been well funded to cover the areas before the Cathedral where an underground railway station was to be built. There had been previous explorations of the City's past elsewhere and fragments locating the supposed Forum and other public buildings, together with street plan, had been found. Little upstanding Roman work survives except in four churches and - at the Archaeological Museum - a part of the defences. Of these, the Church of St. Lorenzo, outside the walls and on what had been the portico bordered road to Rome, centrally planned and with two apses, is the most interesting.

The great Cathedral is the successor to two churches, one mainly under the present building and one under the piazza. The excavations were difficult as the site was penetrated by many cellars so the stratigraphy of several little surviving "islands" had to be correlated. The processing of finds has been a very slow job but it seems little was found pre-1st century B.C.

The history of the site seems to have been that first there were buildings represented by stake holes, followed by more substantial ones along a road; these were shown by slots for beams.

Then, in the time of Tiberius appear, especially in the north section, a complex of buildings and a paved road (with public buildings later - reflecting the arrival of the court). Following this, was a period of destruction - a "black earth" phase with only shanty buildings. However, this may be only a part of the scene as the excavations may cover merely ancillary buildings relating to unknown substantial buildings.

Stone used had been brought from the Alps, so later Roman buildings used much recycled stone from earlier constructions.

The Renaissance brought a great building programme; at this time most of the many cellars were constructed. These buildings were mainly in brick.

A TOUR OF HISTORIC HARWICH 2nd December, 1985
Robin Looser, The Harwich Society

Mr. Looser introduced the subject with a brief history of the town. Though Roman remains were found at Beacon Hill, there is no recorded occupation - even in Domesday Book - until the Middle Ages, although the Anglo-Saxon Chronicle records a fierce sea fight against Danes at the time of Alfred. The town's first charter is in the time of Edward II and, in 1340, Edward III sailed thence with a fleet to battle. Queen Elizabeth - after a visit - said "A pretty town, and once nothing". It came to some importance during the 17th century Dutch Wars when Pepys was M.P. and naval ship building began, (The "Rupert" 1666). A relic of this is the treadmill crane capable of raising 25 tons, with two 16 feet wheels, now moved to Beacon Hill.

The town had a phase of prosperity - described by Defoe (1724) with the packet boat service to the Continent. The stage coach service to London was cut from one and a half days in 1748 to 9 hours in 1800. In the Napoleonic Wars the Redoubt was built and soldiery added to the population, but the town then entered a period of decline, assisted by the decay of its industries, and accentuated by the disastrous flood of 1953. Since then the numerous period houses have been restored and the town has regained its attractive appearance.

The biggest historic feature is the Redoubt - the only one north of the Thames. It is in a concealed position at Beacon Hill and accommodated 240 men with living quarters, hospital, three cells, a kitchen etc. - even a "library". Water was supplied from a well. The armament originally consisted of ten guns, later replaced by three bigger ones which commanded the entry to the Haven ports. On the top were four platforms from which supplies could be raised or lowered; access was by drawbridge. By degrees, the military abandoned the fort and it became overgrown with trees, shrubs, rubbish, until a Trust was formed to renovate it. In the course of this one of the 19th century three large guns was found buried in the great dry moat; it weighs 10 tons and, after great efforts, now is back on the Redoubt. Probably the other two are still buried in the moat. It is a muzzle loader but has a rifled barrel (1865).

Other features of old Harwich are the picturesque early light houses and beacon lights, the former Navy Yard, (now a busy commercial undertaking), the quay with interesting Victorian buildings, and the memorial to the Mayflower which began its famous voyage from Harwich under Captain Jones. He was a local man and his house still stands. He was twice married in St. Nicholas Church, where his children were baptised. The Church has several features from an earlier building and is interesting as a 19th century building which uses cast iron pillars to produce a graceful, light interior.

[There is a good account of the town in Arthur Mee's "Essex"].

SCIENCE IN ARCHAEOLOGY 20th January, 1986
Dr. John Evans, Director of Chemistry, North East London Polytechnic

This lecture, a wide ranging survey of modern methods in archaeology, opened with a brief review of aerial photography, including satellite photographs. The speaker explained how the thermal effects shown in colour from one known site can help to identify similar sites in the same area. Passing to magnetometer methods, he emphasised the need to beware of carrying metal on the user's person.

Resistivity methods can be rewarding but have practical difficulties - they are labour intensive, the leads to instruments easily get entangled and cattle, brambles, etc, are often obstructive. Carbon dating has improved in recent years and at Oxford there is a superb, but expensive, instrument which requires only very tiny specimens for study. Dendrochronology has been improved by using X-Ray photographs to show rings. Slides were shown to show pit props (from Roman copper mines in Spain) which contain metallic copper particles. X-Rays are now used to show what is in clay-ferric oxide nodules, or the voids left when all the metal has been corroded away, leaving their original shape in the nodule.

Such methods have explained why tacks from Punic ships contained 98% copper and 2% antimony and would have been useless - the tin from the originally bronze tacks had been dissolved away. C.A.T. scanners can be used, similarly, on mummies, avoiding the need to unwrap them. Electron microscopes have been used to identify organic residue on pots, the origin of hairs, and in pollen analyses, as also in mortar analyses. As very minute specimens are used, it is difficult to assure they are representative. Similar difficulty can arise with analyses by spectroscopic emission.

Next, the speaker referred to the growing interest in slags from mineral extraction. These are dense, and, as the ratio of slag to metal is about 10%, can occur in vast quantities. But slags formed adventitiously by fires in buildings are light and ashy. The speaker is especially interested in identifying organic residues by chromatographic separation, where the various ingredients are separated by solvents in a glass column or on a plate. Residues in vessels, lamp oils, colouring matter in mummy cases or wall paintings, material used as adhesives (such as beeswax), have all been identified in this way.

DOMESDAY BOOK: THE UNWANTED BEQUEST 27th January, 1986 A.C. Wright, A.M.A. Curator, Southend Museum

Mr. Wright began by emphasising the great mass of data in Domesday - (2-3 million facts, all entered briefly in Latin). Essex, Norfolk and Suffolk (Little Domesday) are dealt with in a more detailed way than the other counties which were more heavily edited. It is likely that the whole survey was completed in one year, an extraordinary feat. It is not a work of art but one of utility.

Like the Bayeux Tapestry, many myths have grown up about it, and the speaker's special point was the view widely expressed that the units of measurement - "hide", "acre", etc. widely varied in size across the country and referred to a "fiscal hide" of now indefinite size. He points out that a land owner might well have holdings in widely separate districts and would expect his steward to have them all expressed in a uniform measure. Also, William would not have set his clerics - civil servants - the task of collecting a lot of meaningless statistics.

There were, naturally, differences of perception in land use from hundred to hundred; land which might be described in one hundred as rough pasture might be regarded as meadow or even copse in another and the commissioners wrote down what the "locals" described. In some cases e.g. Eastry Hundred, Kent, held by Archbishop Odo, they were suspicious and checked by recording what the occupiers of his lands told them.

Mr. Wright contends that the Domesday acre was virtually the same as the modern acre and also the same as the earlier "Tribal Hidage" and "Burghal Hidage" acre. Mr. Wright has produced great statistical support for this belief and has confirmed that the Hide was 240 acres, and also that the arable area in each Hundred was constant for a great length of time, though there was a tendency, after the institution of Danegeld tax, for the area returned by farmers as arable to be reduced to the actual area of productive ploughland.

Using 240 acres per hide, the area of land in a Hundred regarded as woodland, plough, swinewood, etc. was very close to that recorded by Chapman and Andre, as was the number of mills, thus showing the rural landscape remained little altered over centuries.

It is quite impossible to record here the vast amount of work Mr. Wright has put into this painstaking research and it is greatly to be hoped it will be published in the near future.

HADDENHAM, CAMBRIDGESHIRE 3rd February, 1986
Chris Evans, Department of Archaeology, Downing Street, Cambridge

The site concerned is in the peat fen near the Bedford levels. Owing to drainage schemes and changes in sea level, there have been great changes in the landscape - the surface is now .4 metres in some parts below the 1867 level. In early times, settlement was on gravel terraces or other gravel areas; these became peat covered in time with an increase in wetness but, in the present conditions, the peat is being removed by wind and ploughing, so excavation is desirable before the archaeology is ploughed away.

In the area described by Mr. Evans are numerous Bronze Age burial mounds on old River Ouse terraces and at least two Neolithic ones. Sites on gravel are sometimes revealed by aerial photography, others can be noted in the banks of drainage ditches when they are cleaned out.

The Central Research Area - a gravel one - had Bronze Age and Iron Age burials and the largest single ditched causewayed camp yet found in this country. The ditch had been made in 5 metre lengths separated by 2 metre causeways. Inside was a palisade ditch with corresponding interruptions. There had been a wide ceremonial entrance (with human skulls in the adjacent ditch). Originally a mid-Neolithic monument of display, later the area was used for mid Bronze Age house sites and a field system.

Being suitable for occupation the Bronze Age house sites were used in the Iron Age for later houses and, as the site was long undisturbed, the stubs of early Iron Age huts remained for the excavator to find.

The orientation of the Bronze Age houses was followed in Iron Age times. Careful excavations revealed the marks of Iron Age ploughing which had spread the rubbish from Bronze Age pits. Property lines had persisted for 300 years.

One large Iron Age house, destroyed by fire, had been replaced by two smaller ones. The drip ditch of the large one had circled the house so there must have been a bridge for access. The later houses had entrance causeways but the drip ditch, remarkably, did not discharge into the main ditch (in which were found well preserved skeletons of large birds - cranes, probably, - and stakes with axed facets). One house had a central fireplace with a bread oven on flues made of large pots. Vast numbers of Bronze Age and Iron Age sherds were found.

Occupation was at last discontinued as the site became wetter, but a Roman shrine on a Bronze Age barrow was replaced by a timber shrine whose post holes remain. Here were interments of carefully arranged goat and sheep bones, each with its own pots and, in some cases, with a coin set in the mandible. Eventually the Roman levels were dismantled and peat spread gradually over the site.

RECENT ARCHAEOLOGICAL SURVEY WORK IN SOUTH EAST SUFFOLK 10th February, 1986
J. Newman, Suffolk Archaeological Unit

The main object of the Survey in South East Suffolk has been to discover more about Anglo-Saxon Suffolk, especially around the Sutton Hoo site and its relationship to the area of the Saxon Kingdom. It is one of four such surveys in East Anglia and has been pursued for four years. It is not practicable to do this work over all East Anglia but the variety of geology in the surveyed areas are representative. Part of the South East Suffolk area, away from the coast is heavy clay, the coastal part is sandy, there are also districts of glacial gravels. The clay areas have many small streams and rivers, important in earlier times for barge traffic and supplying water to habitation sites, many of which are found in their valleys. Here also the clay is often eroded to expose more manageable lighter soils.

Work began at Rendlesham, given by Bede as a key site, though the Saxon "Palace" site is now covered by the present house. Hoo Hill, nearby, has a pagan Saxon cemetery, and there is a wide scatter of early Saxon and Ipswich mid-Saxon sherds. Excavation on a barn site gave a fragment of a Bronze shield confirming the Royal connection.

Next came an intensive survey of the fields at Sutton Hoo beyond the Birmingham University research area. Here there was a thin Bronze Age and Iron Age scatter but no early Anglo-Saxon finds. The main Saxon site in the parish is occupied by Sutton Hoo House. Two villages are mentioned in Domesday; one has not been located, the other (at Wilford Bridge) was never more than a hamlet and has a scatter of 7th - 13th century sherds. Several rather small sites (near Sutton Church, at Thetford Ward, Botley) have the same history; they do not show continuous occupation from Roman times.

Abraded sherds are difficult to date but there have been numerous metal finds by the Metal Detectors' Club which has been of considerable help archaeologically. Concentrations of metal finds are separate from sherd concentrations - the former being normally from destroyed cemeteries, the latter from habitation sites.

A large area is owned by the Forestry Commission. When land is replanted, field walking discovers not only sherds and metal remains but also earthworks. Mr. Newman especially mentioned a hitherto unknown barrow found in Forestry land.

There is a vast number of sites being found on the clay lands west of the River Deben and many of the old timber framed farmhouses have spreads of Saxon pottery near them. The distribution of spreads in the Remenham - Sutton Hoo area, however, suggest that this was a royal estate. The dedication of Remenham Church to St. Gregory is in accord with an early date in the conversion of the district to Christianity.

CRICKLEY HILL, AN OUTSTANDING PREHISTORIC SITE IN GLOUCESTERSHIRE 17th February, 1986
P.W. Dixon, M.A., D.Phil., F.S.A., Department of Classical and Archaeological Studies, The University of Nottingham

Dr. Dixon has been excavating for 17 years on this Cotswold site and has found 20 completely separated periods of occupation beginning with a number of bean shaped pits without artefacts or fire, followed by a causeway enclosure of about an acre with a double enclosure of about 3,000 B.C. producing Windmill Hill pottery. Some causeways were strangely narrow; the ditched parts of the enclosures had been refilled at various times and, when re-dug, had been progressively shallower. The banks had always been low; so far, three gateways have been located. Settlement was well organised with fences and enclosures. A notable

find was a Neolithic house site with post holes and hearth. The interior road led to a cobbled platform with two "ears" or cairns protruding. At the west end had been a little rectangular building with a burnt area outside. The trackway observed a little "spell stone" for many centuries and the only "finds" of pottery and flint were in the adjacent "ear". A shrine in a settlement is most unusual and the closest Neolithic parallel is at Tustrup (Denmark).

The Neolithic was not a peaceful period. The causeway ditches at Crickley with the corresponding palisade inside were defensive. In its final stage the settlement was destroyed by fire and a great number of leaf shaped arrowheads were found, chiefly in the occupation area.

In a hollow was a long mound with a circle at the west end which covered a site of a small building. Beyond this was a post hole (? a totem pole). Just to the east of the mound was a stone slab with burning on it and underneath, a collection of bones of farm animals. The whole of this area was confined by a groove with signs of brushwood fire. The date is uncertain - probably about 2,000 B.C. (c.f. Dartmoor sites) but the feature must be of a religious nature. The causeway camp was re-fortified in the Iron Age with a massive timber laced wall. There are three Iron Age phases - each ending with destruction by fire. Occupation sites were confined to the east end of the fort which was near the well engineered eastern gateway. Signs of numerous granaries were found. The earlier phase had rectangular houses, the last phase, a large round house.

This was succeeded by a number of Dark Age huts (one 5-sided) with a winding trackway between them and, further to the west, a timber framed building. Roman sherds were found in this phase. The arrangement suggests a chief and his men.

Later still, a 12th - 13th century long house has been found at the edge of the common.

The long occupation, with its numerous breaks, suggests that the position of this site must have had a great prestige value in the surrounding area, otherwise successive chiefs would have settled on other places instead of re-occupying this particular spot, as the Cotswold ridge is suitable in many places for such a purpose.

16th and 17th CENTURY DOMESTIC WALL PAINTINGS IN ESSEX 24th February, 1986

Mrs. M. Carrick, Kelvedon

Mrs. Carrick is making a study of these paintings and hopes to identify all known ones in the county. The painters of particular works are not known by name but she will endeavour to divide them into groups attributable to one artist, and hopes light might be thrown on the subject by studying painters' wills.

The paintings mainly date from 1575 to 1620 when many houses had chimneys built and floors inserted. A large number depict arcading, often with a pendant in the middle of the arch. One slide showed a pendant tassel very similar to another example three miles away.

Architectural features include painted studwork, panelling, ceiling joists, etc. A now destroyed Colchester example had an imitation (painted) staircase.

Mrs. Carrick referred now to lettering - beginning with a well painted example which had a very obscure significance. Another house had a text from a psalm over the fireplace and elsewhere a text from Deuteronomy.

An interesting picture of Jephthah's return showed his daughter's maids, but the daughter's place is suggested to be where the observer is standing. Other Biblical characters found are Elijah, Abraham and Isaac, Judith, Ester, etc. In true mediaeval style, the scene of Christ with the woman of Samaria shows Christ much larger that the woman, as he is the major figure in importance.

Some scenes have classical motifs and these often derive from Emblem Books - first used in England in 1586.

A particularly fine set of paintings in one house showed children carrying Bacchus upstairs, Bacchus with his leopard, goat, etc. - the whole series seem, to be from a book. The same house has a memento mori and a fire scene, said to be the Fire of London, but this is doubtful.

One house has two arcaded scenes, one of Aeneas carrying his father from burning Troy whence the smoke blows into the next part of the arcade where Geryon is depicted with a rabbit by him.

All these scenes are in private houses, not normally available to the public but Eastbury House, Barking, has a splendid series of paintings which can be seen - the Miraculous Draught of fishes (?) and a landscape with fishponds and a "Dutch looking" house.

JAYWICK, THE STORY OF AN UNOFFICIAL TOWN 3rd March, 1986
Colin Ward, Kersey Uplands

Between the beginning of this century and the second World War there were long times when farming became unprofitable on poorer soils and land could be bought for very low prices. In the coastal areas between Hampshire (e.g. Hayling Island) and Walton, the land often finished as "Plotland" where a plot could be bought for a few pounds. In Essex these areas lie south of a line through Stock and Walton. Cheap transport, more people with holidays, the cult of the "great outdoors" and often a wish to be part of a "property owning democracy", encouraged this development.

Though always on marginal land and often liable to flooding, the sub-standard buildings which grew up on plotlands were frequently upgraded in the course of years and, from being holiday homes, changed to retirement homes.

At Jaywick, Frank Steadman (born 1874), a surveyor, in 1928 acquired several hundred acres with the idea of building a normal housing estate, having been told by the authorities that drainage etc, would be no trouble; but when difficulties became apparent, divided the land up into small plots. He put in a concrete road, and, with convincing advertising in East London and elsewhere, sold the plots with a beach hut on each one for £50. The marine lake he promised failed as the water leaked back to the sea but the "summer residences" were popular and a freeholders' association flourished (in which George Lansbury's nephew was active). Steadman met the Association in 1932 and told them his side of the long running dispute with Clacton Council. He was strongly backed by Mr. Quick who printed his publicity matter and owned the "Clacton Times".

Steadman maintained his popularity with giving £300 towards the cost of laying on water, then a site for a church (to which he also gave a donation) and assistance for a club house and aid to other projects.

The question of responsibility for sea defences was always a hotly argued one - especially when the council defrayed the cost for the Butlin site but wanted the freeholders at Jaywick to contribute heavily for their sea defences. In 1936 there was a complex high court case over this matter. In spite of - or because of - the lack of amenities, there was always a very good community spirit at Jaywick with packed meetings of the Freeholders' Association and Ratepayers' Association. Gradually the plots were occupied more and more by retired folk and less used as holiday homes. In the Great Tide of January 1953, 35 people were drowned. After this sea defences began to be built.

Clacton Council, who wished the settlement to disappear, began to buy plots for £150-200 but only the more timorous left and a public enquiry resulted in a report supporting the "settlers".

The school population is now rising and the local authority has a more sympathetic attitude. Architects now quote the wide variety of D.I.Y, improvements to the dwellings as a "good example of structuring the built environment to suit the circumstances" and this – the largest "plot land" development on the Essex coast - is likely to have a settled future.

CENTURIATION FOR COLCHESTER: A HYPOTHESIS 10th March, 1986
Tony Symes, Leicestershire

The speaker began by a brief account of Roman methods of settling discharged veterans on areas of land divided by a rectangular grid of access roads or tracks, the major ones being the Kardo Maximus with a general north-south orientation and at right angles to this the Decumanus Maximus. Between and parallel to these at four times 20 actus (i.e. 4 x 710 metres) were strong roads called Quintarii. The other dividing roads would be more like farm tracks. This Centuriation is most commonly found near a Colonia and is now more

easily identified in North Africa and Italy, but, so far, has not been located in Britain near any of the Coloniae.

Mr. Symes has concentrated his work on plotting the place names in "Street" on maps of this area using a computer and finding many of them falling in a pattern which would fit the quintarius lines of a grid such as that described above. He thinks he has found three such areas of Centuriation in the Colchester area. One is the area between the two recognised Roman roads north-northwest of Colchester (MR9042 and 9147) and the town itself, extending eastwards almost to the River Gipping. The second rectangular area lies between the upper reaches of the Rivers Colne and Stour (Halstead and Sudbury) and comes south almost as far as Tiptree. The third is in the Tendring Hundred, based on, and south of, the Roman road between Colchester and Mistley. The latter two areas have not yet been explored to the same degree as Area 1.

Mr. Symes considers that his theory gains support from stretches of existing roads and parish boundaries etc., which seem to follow the course of his quintarius boundaries. It is also noticeable that the three areas all cover the better land north of the London clay belt.

Following Professor Mann's estimate that just under half a legion's intake would survive to become veterans, and that many of these would then take a money payment in lieu of a land settlement, he cautiously thinks that about five and a half thousand soldiers taking up plots on retirement is about what one would expect from the probable number of legionaries involved and the area of land covered by this suggested centuriation. Mr. Symes recommends further reading:

(1) John Bradford - "Ancient Landscapes"
(2) Professor Dilke - "Roman Land Surveyors"

GROUP ACTIVITIES 17th March, 1986

As in former years the final meeting of the Winter Programme took the form of talks by Group members.

Mr. Russell reported on his observation of the Fire Office colonnade during recent repairs of damage caused by a traffic accident. The Colonnade consists of six freestanding cast iron pillars and two half pillars (one at each end) engaged in sandstone work. They were made close by and erected in 1820. Above each pillar is a capital carrying an entablature into which is fitted an almost cylindrical support for the work above it. The whole is tied into the main body of the building by timber beams which have rotted away at the outer end and the repair work has required very expensive scaffolding for a long period and much new timbering (now secured with stainless steel bolts). Mr. Russell praised the Guardian Royal Exchange for the great care and expense they have lavished on this splendid feature of the High Street. The bad state of the colonnade revealed by the accident might easily have led to its being demolished as a dangerous structure.

James Fawn then gave a pictorial history of C.A.G. since its foundation in 1957, using mainly slides from the large collection made by the late Peter Hulbert. Mr. Hull, first chairman of the Group, gave it an impetus by making available various small investigations round the town - notably in a drain through the Roman Wall opening into Vineyard Street.

Among the great number of "digs" illustrated, some of the more notable were the Ardleigh Ring Ditches and Iron Age house, the Crockleford Roman Road, two Roman Kilns (Lexden and Mount Bures) and two Red Hill digs (Osea Road and Peldon). These - and many others - can be found in the C.A.G. Bulletin.

This set of informal notes is produced as an 'aide memoire'. The reports have not been seen by the lecturers.
Ed.

THE TWENTY EIGHTH ANNUAL GENERAL MEETING OF THE COLCHESTER ARCHAEOLOGICAL GROUP HELD ON MONDAY 13th OCTOBER 1986 AT 7.30 pm.

Approximately 30 persons were in attendance.

1. MINUTES OF THE LAST ANNUAL GENERAL MEWING

The Minutes of the meeting held on 14th October, 1985 had been published in The Bulletin and copies of the Minutes had also been sent to all members. It was agreed that the Minutes should be taken as read and they were accordingly signed by the Chairman. There were no matters arising to be dealt with, other than those included separately on the Agenda.

2. TREASURER'S REPORT

A financial statement had been prepared by the Treasurer and had been circulated before the meeting to all members. It showed that there had been a deficit for the year of £31.18 and that, as at 13th August, 1986, the accumulated fund had been reduced to £86.44. The accounts and the Treasurer's oral report were accepted.

The Treasurer reported, with regret, that another deficit was expected in 1986-87 and this would further diminish the accumulated fund to a dangerously low level. He, accordingly, proposed - on behalf of the Committee - that the annual subscriptions for 1986-87 should be increased as follows:

		Existing	Proposed Increase	New
Individual:	Full year	£3.00	£1.00	£4.00
	half-year	£1.50	£0.50	£2.00
Family:	Full year	£5.00	£1.00	£6.00
	half-year	£2.50	£0.50	£3.00

The proposal was seconded and agreed.

3. EDITOR'S REPORT

Mr. Dennis Tripp conveyed Mrs. Kath Evans' apologies for her unavoidable absence. He reported, on her behalf, that the 1985 issue of The Bulletin published in 1986 had been a bumper edition and had attracted a number of favourable comments. Mr. Mark Davies said that the high quality reflected Mrs. Evans' work as Editor, a remark endorsed by Mr. Dennis Tripp from his own experience as a contributor. It was agreed that members' thanks to Mrs. Evans for all her work should be recorded.

The 1986 edition would be dedicated to the memory of Mr. Dick Farrands and would contain, as a principal feature, a paper on his work. Nevertheless, there would be room for other items and Mrs. Evans asked that anyone with a suitable contribution should let her have it by 30th November, 1986.

Mr. James Fawn suggested that, in addition to full-length articles, the Bulletin should include shorter items or even individual paragraphs in the form of 'Notes and Queries'.

4. RED HILLS BOOKLET

Mr. Mark Davies reported on the work that had been carried out by the Sub-committee over the past year. It was very much regretted that the booklet was not yet out, but the work had proved to be a great deal more than had been expected. The first, descriptive, part is now two-thirds complete and the second part, a gazetteer and bibliography, is virtually complete. It is hoped to complete Part I in the next few weeks and to publish the booklet in the early part of 1987.

Mr. Dennis Tripp, as Treasurer of the Kay de Brisay Memorial Fund, reported that the Fund's position at 13th October, 1986 was as follows:

Donations received		846.50
Bank interest		287.03
		£1,133.53
Less expenses:		
Drawings for booklet	£158.00	
Other	24.84	
		£ 182.84
		950.69
Represented by:		
Deposit account		947.03
Current account		3.66
		£ 950.69

5. GROUP ACTIVITIES

Mr. James Fawn reported on the group outings that had taken place in 1986 and on the archaeological work carried out by individual members.

He drew attention to the exhibition which had been arranged for display after the meeting in the main hall of the Castle, and which had been based on that prepared by the Group for the History Fair in June. He expressed the great debt owed to the Curator and staff of the Museum for their assistance and he paid tribute to the hard work of Mrs. Kath Evans and Mrs. Ida McMaster.

The Secretary referred to the notice which had been sent out with the AGM papers about the outing on 1st November to the British Museum exhibition 'Archaeology in Britain'. Although the closing date had been 6th October, he had received only six applications. He was prepared to extend the closing date to 20th October but he urged that members should consider taking part and should encourage others to do so too.

6. ELECTION OF OFFICERS AND COMMITTEE MEMBERS

The Chairman explained that all the existing officers were prepared to continue. It was proposed, seconded and agreed that they should be confirmed in their respective offices.

As notified in the agenda, there were two vacancies on the Committee. The Secretary had received no nominations and none were received from the floor. The Chairman accordingly put forward the Committee's nominations, Mrs. Ida McMaster and Mr. Richard Shackle. Their appointment to the Committee was seconded and agreed.

The Chairman thanked the retiring members, Mrs. Margaret Merry and Mrs. Dinah Beckett, for all their work on the Committee.

7. APPOINTMENT OF REPRESENTATIVES TO OTHER ORGANISATIONS

The Secretary reported that all the existing representatives were prepared to continue. Their reports had been posted on the notice board. The current representatives are as follows:

Council for British Archaeology: Mr. Mark Davies

Colchester Archaeological Trust:	Mr. Vic. Scott
C.A.D.F.A.S:	Mr. Harry Palmer
Roman River Conservation Zone:	Mr. Alf. Doorne
Essex Archaeological and Historical Congress:	Mr. Tony Doncaster
Colchester Ranges Conservation Group:	Mr. Howard Brooks

8. OUTINGS FOR 1987

The Secretary put forward a suggestion of a weekend outing to York, perhaps in March 1987, to York, principally to see the Jorvic Viking Centre. In order to ensure the success of the outing and to minimise the cost, it would be organised in conjunction with the Friends of the Colchester Archaeological Trust. A show of hands indicated that approximately fourteen of the members present would be interested in the outing.

9. ANY OTHER BUSINESS

(1) Keep Colchester Castle Fund

Mr. James Fawn drew attention to the plan, mentioned in the letter convening the meeting, to raise the sum of £100 and hoped that members would contribute generously.

(2) Twinning

The Secretary reported that, as a result of a suggestion made by the Twinning Society, the Committee had recently written to organisations in Wetzlar and Avignon.

(3) Current Archaeology

The Secretary mentioned that copies of the 100th issue had been received for free distribution and were available at the back of the hall.

(4) Obituaries

The Chairman regretted that he had to report the deaths of Mr. Harold Edwards and Mr. R. Wysock-Crundall.

HAROLD J. EDWARDS, ESQ.

Further to the brief note in the minutes of the A.G.M. on the death of Harold Edwards, I should like to add the following. Harold Edwards became a member of the Group in its very early days, and was a regular attendee at all the meetings, as well as doing a considerable amount of work in the field. We used to cycle out, with his son Ben (now County Archaeologist in Lancashire) to Ardleigh when Felix Erith was excavating at Vinces Farm. Later when Kay de Brisay started her research on the Red Hills, Edwards accompanied her on many of the visits she made to all the sites in the district. He was an all round Antiquarian and had a very good working knowledge of the Dyke system in Colchester having walked all the dykes. His other interests were Trade signs and folklore. Ill health for the past few years made it impossible for him to attend lectures but, in the earlier days, like our other member, Dick Crundall who died recently, Edwards cycled to meetings in Colchester with great regularity in all weather. At one time he was a Vice-President.

A.B.D.

ADDITIONS TO THE LIBRARY SINCE SEPTEMBER, 1986

To encourage members to make good use of the library, we plan to publish annually a list of new books acquired.

The Roman Army - Webster G.
John Corbett, Pillar of Salt, 1817-1901 - Midddlemas B, and Hunt J.
Roman Britain - Salway P.
Lindow Man - the Body in the Bog - Stead, Bourke and Brothwell
The Sutton Hoo Ship Burial
The Salt Museum, information folder
Archaeology in Britain since 1945, eds Longworth I, and Cherry J.

Pamphlets
Lion Salt Works, Marston - Thompson J.B.
Nantwich Museum - Salt Making
Examples of English Handwriting, 1150-1750 - Grieve H.
Prehistory of the Somerset Levels - Coles J. and Orme V.
Goldhanger, an Estuary Village - Benham M.
Site Manual, Museum of London

COLCHESTER ARCHAEOLOGICAL GROUP

Winter Meetings 1986-1987

In the Lecture Room, Colchester Castle, at 7.30 p.m.

1986

13th October	ANNUAL GENERAL MEETING, Exhibition of Group Activities
20th October	THE LANDSCAPE OF SUTTON HOO, Dr. P.M. Warner, Homerton College, Cambridge
27th October	MAPS FOR NATURE CONSERVANCY, Robin Fenton, Peterborough
3rd November	THE PREHISTORIC LOGBOAT FROM HASHOLME, NORTH HUMBERSIDE Sean McGrail, B.A., Ph.D., F.S.A., M.I.F.A., Master Mariner
10th November	AERIAL ARCHAEOLOGY IN THE MIDLANDS, Robert Hartley, B.A. Leicestershire Museums, Art Galleries & Records Service
17th November	PREHISTORY IN NORFOLK, John Wymer, M.A., F.S.A., Field Officer for the Norfolk Archaeological Unit
24th November	THE BIRDLIP GRAVE GROUP - A CLOSE LOOK, Malcolm J. Watkins, B.A., A.M.A., Archaeology Director, Gloucester City Museums and Art Gallery
1st December	IRON AGE AND ANGLO-SAXON SETTLEMENT AT BURROW HILL, BUTLEY, EAST SUFFOLK, Valerie Fenwick, M.A., F.S.A.
8th December	CHRISTMAS PARTY

1987

19th January	THE HISTORY OF PAXMANS, Andrew Phillips, B.A., B.Ed., Colchester Institute of Higher Education
26th January	BANCROFT- PREHISTORIC FARM TO ROMAN VILLA, R.J. Zeepvat, Senior Site Supervisor for Milton Keynes Archaeological Unit
2nd February	ROMAN POTTERY AT COLCHESTER, Robin Symonds, B.A., Ph.D.
9th February	THE MESOLITHIC; HOW IT DOESN'T WORK, Robert M. Jacobi, M.A., Ph.D., Department of Archaeology, University of Lancaster
16th February	AIR PHOTOGRAPHY AND THE ARCHAEOLOGY OF BURIED LANDSCAPES; CURRENT WORK AND NEW DIRECTIONS, Rowan Whimster, B.A., Ph.D., Head of Air Photographs Unit, Royal Commission on Historical Monuments (England)
23rd February	SOME ASPECTS OF TIMBER-FRAMED BUILDINGS, D.F. Stenning, Conservation Specialist Advisor, County Planning Dept.
2nd March	CELTIC RELIGIOUS SURVIVALS UNDER ROME: AND DEITIES AND RITUAL SCENES ON THE POTTERY FROM THE COLCHESTER AND OTHER FACTORIES, Graham Webster, O.B.E., M.A., Ph.D., F.S.A., A.M.A.
9th March	IRON AGE AND EARLY ROMAN SILCHESTER IN THE LIGHT OF RECENT EXCAVATIONS, Michael Fulford, B.A., Ph.D., Faculty of Letters and Social Sciences, University of Reading.

Members - entrance per meeting 20p
Non-Members - entrance per meeting 50p