The Excavation of a Prehistoric Saltern at Hogsthorpe,
Lincolnshire

Betty Kirkham

SUMMARY
a A salt-making hearth, dating to around the sixth century BC, was cut into the side of a boulder clay mound laid down at the time of the last Ice Age. The disturbed state of the lowest hearth level, however, prevented us from adding further to our knowledge of salt-making techniques, although some new briquetage forms were recovered.
b Alluvium overlying the hearth showed that the area was severely flooded, and salt making came to an end.
c By the Romano-British period, conditions had become dry enough for agriculture, which resulted in the fragmentation and scattering of upper levels of briquetage and plough marks being cut into the boulder clay mound.
d Probably after the third century AD, further flooding caused the site to be abandoned.

LOCATION
Hogsthorpe lies 1½ km from the east coast of Lincolnshire, due west of the village of Chapel St Leonards, and 8 km north of Skegness, Grid Ref. TF 533 718. The locality in that part of Chapel St Leonards now called Trunch Lane is still known to old inhabitants as Hogsthorpe Sea. The village of Hogsthorpe, like several nearby villages, sits on top of one of the many mounds of boulder clay laid down during the Ice Age. The main part of the village lies 5 m above O.D., although the saltern site was no more than 1.7 m above O.D.
Hogsthorpe is not mentioned in the Domesday Book although it appears in The Book of Fees as ‘Hog’s Thorpe’.

DISCOVERY
The first detailed description of a Lincolnshire salt site was made by S. Maudson Grant in 1904. Detailed excavation of other sites has been undertaken more recently by H. H. Swinnerton, F. T. Baker, and B. B. Simmons.
The sites excavated by H. H. Swinnerton and F. T. Baker at Ingoldmells were exposed on the shore at mid-tide level due to unusual tidal action, by which they were much damaged prior to excavation. Similarly the ones excavated by B. B. Simmons farther inland at Helpringham had been damaged by arable farming.
During the past twenty years the writer has made a study of the drainage system of Hogsthorpe, Ingoldmells and Addlethorpe, which involved new drains being cut through many saltern sites too deep to be visible on the surface. Salterns have also been damaged recently by dredging work on existing drains which scatters the spoil on the surface of the adjacent fields. It proves impossible, however, to excavate those in the sides of the drainage channels due to their being two metres below the present ground surface, and because digging into the sides of the drain would have caused serious slippage and blocking of the waterway.
Fragmentary evidence, though carefully recorded, emphasized the need to find a saltern site undisturbed since prehistoric times and in such a position that excavation was possible. By this means it was hoped to ascertain the positions during use of the many forms of baked clay supports and vessels.
Having plotted many of these sites on a map, it was...
noticed that they began to form a pattern from which it
could be deduced where other sites might be found. The
problem resolved itself in 1977 when land drain pipes were
being laid by machine in a field where it was thought saltern
sites might be found. The landowner, Mr F. Simpson,
kindly allowed access to the field so that a watching brief
could be kept. In places the machine cut just low enough to
bring up small fragments of briquetage from the top of
shallow saltern mounds, and it was known from
examination of these exposed in nearby main drains that
salterns usually show up as shallow mounds, less than one
metre deep at their deepest point and with their apex
anything between one and two metres below the present
ground surface. On this first attempt at finding mounds by
following the field drainage machine, no less than five were
found in one field. With this new method of location, a
watch was kept on other field drainage systems in the area.

At this point it would seem necessary to clarify the names
of the various water courses so far as they are commonly
understood in this part of Lincolnshire. A drain is a water
course which is on average ten to fourteen metres wide at
the top of its adjacent banks. It is that part of the drainage
system of the marsh which carries out to sea via pumping
stations the run-off of water it receives from the ditches or
dikes.

A ditch or dike is a watercourse, usually marking a field
boundary, which is on average two to three metres wide at
the upper adjacent banks. It is connected eventually to a
drain.

Land drains are pipes, used in a system of under-
draining, either of earthenware or plastic, which are laid
underground across fields at approximately fifteen metre
intervals. They are laid in trenches thirteen centimetres
wide and varying from one to one and a half metres in
depth. These are known as field drainage trenches and in
turn feed into the ditches or dikes.

In November 1977, whilst walking field drainage
trenches south-east of Hogsthorne, a handful of small
fragments of briquetage was found in 'Cradle-Bridge
field'. It was noticed that, for a distance of ten metres to
the north of the briquetage fragments, the spoil was almost
pure sand; all other trench spoil in the field was brown soil.
Permission was obtained to put down a trial trench in the
area of the upcast sand.

SURVEY BY AUGER

As the farmer had requested any excavation to be kept
as small as possible it was decided to accept the offer of a
survey by auger in order to determine the extent of the
briquetage. The survey indicated no great depth of
briquetage, but a spread of it, oval in shape and at least
twenty-two metres long. It was noticed during the survey
that all the briquetage was very fragmented and evenly
mixed with very dark sandy soil. The uniform
fragmentation caused some puzzlement at this stage being
totally unlike any other site examined by the writer.

THE EXCAVATION

A seven metre square was marked out and excavated on a
grid system. The line of the north, with A1 being the datum post from which all levels
were taken, to be afterwards related to Newlyn (Fig. 4).

Over section AD1—AD5 and EH1—EH4 the plough
soil and brown marsh clay (Horizons 1 and 2) were
removed down to the briquetage layer (Horizon 3), which
sloped gently down to corner A5. There was a distinct drop
two centimetres beyond a line running from A3.5 to
C5. Beyond this line the briquetage layer continued at a
lower level.

From our auger survey we were aware that the thin layer
of briquetage rested on a bank of light fawn clay and sand.
Removal of the briquetage showed it to be fragmented over
the whole area and spread in a layer of between ten and
twenty centimetres in depth.

Below the briquetage level, in the light clay (Horizon 4),
which in places was covered with a thin layer of sand, there
appeared a series of dark marks forming a criss-cross
pattern in plan. These proved in section to be V-shaped
slightly asymmetrical grooves, filled with the same
material as the briquetage layer. The grooves were thirty
centimetres apart in each direction. Another set of grooves
running parallel with these in both directions was clearly
visible.

Two possible explanations for these grooves were
considered, that they were impressions of some kind of
hurdling, and that they were plough furrows. The material
filling the grooves was the same as the briquetage layer we
had removed, and there was no trace of organic material
which would have indicated hurdling. Comparison with
remains of hurdling and timber trackways described in
Somerset* left us in no doubt that the grooves were more
probably plough marks, similar to the Bronze Age
examples at Gwithian, Cornwall. Interpretation of
the grooves as plough marks also explains the very fragmented
state of the briquetage. Sherds of Romano-British pottery
within the briquetage layer indicated ploughing in that
period. In section DE4—DE5 below the briquetage level,
were signs of extensive burning and much larger pieces of
baked clay recognizable as pieces of hearth wall.

At this point we were asked by the farmer to fill in the
excavation for some months as he had decided to plant the
field with potatoes.
Fig. 4 Site plan and section showing plough marks in relation to hearth.
The excavation was resumed in September 1978, when section CE4—CE5.6 was cleared to the base of the briquetage level. Here a layer of clean light fawn clay covered much larger pieces of briquetage and baked clay, together with much granulated charcoal and carbonised wood. The briquetage included many previously recorded forms, but also some not previously found on any of the other sites examined by the writer.

The known forms were hand-bricks (Fig. 5, 7), pieces of broken hearth wall with fingerprints showing how the wet clay had been pressed into position, and trough fragments. In one place there were many flat pieces of baked clay, two centimetres thick, with fingerprints on one side and grass, grain and small seed impressions on the other. Some had a white deposit on the side with fingerprints, some had a white deposit on both sides. The majority of these were found lying superimposed one upon the other, sloping downward in a south-easterly direction, like a pile of plates slipped to one side. These gave the impression of having been part of some kind of covering over a structure of pans supported by hand-bricks which had been undermined in some way.

Shapes not previously found by the writer on other local sites examined were:

1. Half a fire-bar, similar to those found on Essex saltern sites (Fig. 5, 5).
2. Lumps of baked clay having an impression into which the end of the fire-bar fitted neatly (Fig. 5, 2, 4 and 6).
3. Pieces of baked clay looking from one side like a hand-brick with the usual finger impressions and having on the other side a round groove. The groove ran vertically along the side of the object as if it had been pressed round something (Fig. 5, 8).
4. The bottom half of a vessel with a hole in the base (Fig. 5, 3).

Other finds included small sherds of grey ware in horizon three. These were similar to the normal Romano-British pottery found in the district.

From the hearth area an unidentified charred substance bearing grain impressions was removed. The grain was
identified by Mr R. C. Alvey as *Hordeum sp.*, and hulled and possibly two-rowed barley. The latter still had a part of its awn and rachis attached. The length of the grain was 5.5 mm and width 3.2 mm.

At the base of horizon three was a flint blade flake (Fig. 5.1). The flint was examined by Dr P. Phillips, who described it as having been retouched on the dorsal face, at the bottom of the right side, and on the ventral face on the bottom and centre of the right side. In both cases the retouch is quite steep, and cuts through a previously patinated, slightly discoloured, surface. In colour it is 'bright brown' and according to *Revised Standard Soil Colour Charts, 1970* (2nd edition), Secretary of Research Council for Agriculture, Forestry, Fisheries, Ministry of Agriculture and Forestry, is Hue 7.5YR, 5/6-5/8. The sides are very sharp, and could have been used for cutting.

Removal of all hearth material showed the hearth to have been cut back into a clay bank. Underlying the clay bank in this area was a quantity of glacial erratics.

**RADIOCARBON DATE**

A sample of burnt soil from the lowest level of the hearth area was submitted to Harwell and a reading was obtained of 2490 bp ± 80 (HAR-3092) (540 bc, uncalibrated).

**GEOLOGY**

D. N. Robinson

The hummocky Middle Marsh landscape of boulder clay in east Lincolnshire was created by the last or Devensian Glaciation. After the initial advance of the ice up to the Wolds there was a period of melting followed about 2,500 years ago by a second advance, the limit of which is marked by the alignment of mounds in the Hogsthorpe area. Erratic stones in the boulder clay demonstrate the origin of the ice from Scotland, northern England and Scandinavia.

The hummocky landscape of boulder clay with outwash sands and gravels left by the melting ice formed an extensive area eastwards as the Northsea land. With an ameliorating climate in the post-glacial period, the vegetation developed from tundra through pine to oak forest, intersected by eastward moving streams. By c. 5,500 BC the sea had refilled most of the North Sea basin as far as the lines of morainic hills between Holderness and north Norfolk. The change to a wetter climate combined with more rapid sinking of land relative to sea level led to a deterioration in land drainage and the formation of peat in hollows of the forest which smothered the roots of the trees and entombed both stumps and trunks as they fell.

In the Bronze Age the sea encroached still further, flooding through the Holderness-Northsea moraines to deposit layers of saltmarsh clay in lagoon-like conditions round the Hogsthorpe hummocks. Towards the end of the Bronze Age and into the Iron Age the land began to rise slightly relative to sea level, generating fresh-water marsh, intersected by tidal creeks. Where these creeks were adjacent to hummocks which still protruded through the layers of marsh clay deposits, ideal conditions existed for salt-making sites. Around the 6th century BC there was a sudden deterioration of climate to cool and wet, with consequent fresh-water floods, which ruined the salt-making sites, and caused eventual production of a thin peat in the low-lying areas.

Post-Roman subsidence and transgression of the sea resulted in deposits of up to two and a half metres of marine clays, which covered the hummocks and both Iron Age and Romano-British occupation sites, to form the flat Outmarsh.

**SOIL ANALYSIS**

J. D. Robson

A soil monolith was taken from the site. The profile is complex and shows several different stages of development. The following comments relate strictly to pedological development.

Starting at the base: reworked reddish Devensian till (boulder clay) apparently has an occupation surface as shown by the presence of carbon fragments. The till is slowly permeable and the soil would be liable to seasonal waterlogging (winter and early spring) in most years as the coarse soil pores became water filled. Above the occupation layer is a thin deposit of clayey stoneless alluvium. This alluvium, in turn, is under a thick layer of material of markedly contrasting texture containing briquegme fragments and distinct sand grains. This texture is atypical of alluvium and probably can only have been derived directly or indirectly from the thin loamy or sandy drift cover that normally overlies the till. The presence of a low mound sitting above the first alluvial level is a possibility. The colour and organic matter distribution suggests that the 76-95 cm layer may have been cultivated, at least in part.

The grey and strong brown mottled silty clay above is characteristic of large tracts of east Lincolnshire and gives a commonly occurring soil. The presence of some sand grains in the lower part of the silty clay suggests that part of the underlying occupation layer was stirred up during deposition of the alluvium.

**Description of Horizons**

1. Dark brown to brown (7.5YR 4/2) silty clay; moderately developed medium subangular blocky structure; rare rounded chalk stone; calcareous (added lime); clear boundary.

2. Grey (10YR 6/1) and strong brown (7.5YR 5/6) prominently mottled silty clay; strongly developed coarse angular blocky becoming prismatic with depth; ped faces greyish brown (10YR 5/3); stoneless; slightly calcareous becoming non-calcareous with depth; very porous; fine macropores; some relic platy structure within peat; abrupt boundary.

3. Dark grey to dark greyish brown (10YR 4/1.5) clay loam; moderately developed medium subangular blocky structure; common reddish brown (5YR 4/4) root mottles and red (10R 5/8) briquegme fragments; slightly calcareous; distinct sand grains present (contrast layers above and below); abrupt boundary.

4. Brown (7.5YR 5/2) ped faces, interiors mottled reddish brown (5YR 4/3) and grey (5YR 5/1) silty clay; moderately developed coarse angular blocky structure; moderately porous, fine macro-pores; stoneless; slightly calcareous; sharp boundary.

5. Dark grey (10YR 5/1) clay loam; weakly developed medium subangular blocky structure; common fine yellowish red (5YR 4/1) root mottles and black (5YR 2/1) inclusions of carbon; slightly stony; slightly calcareous; sharp boundary.

6. Yellowish red (5YR 5/1) and grey (N 5/0) mottled clay; weakly developed coarse angular blocky structure; common very fine pores, slightly stony, some reddish yellow (7.5YR 6/8) patches of weathered micaceous sandstone giving more loamy texture, slightly calcareous.

Soil colour chart: Munsell Color, Baltimore, Maryland.
POLLEN ANALYSIS OF HORIZON FOUR

Ian Shennion

Pollen types identified:

Trees: Three *Betula*, one *Pinus*, three *Ailms*.

Shrubs: One *Corylus*.

Herbs: Seven *Gramineae*, one *Cyperaceae*, one *Compositae-Senecio*, Aster type, one *Compositae*, Taraxacum type which was reworked, ten *Chenopodiaceae* which were reworked, six *Chenopodiaceae* which were not reworked.

Floating Aquatics: One *Lemma*.

Spores: Four *Pteridium*, eight *Filicales* (Fern spores).

Derived: Seven pre-Flandrian reworked spores.

Comments

'It may be tentatively suggested that there is evidence of quite rapid flooding compared with the accumulation of inorganic deposits at Bourne Fen and Chapel St Leonards Point, since the pollen concentration figures suggest a slightly greater sedimentation rate and the water is more likely to have been sea water than run-off from the Lincolnshire Wolds, and there is evidence of reworking of older sediments. No unequivocal marine taxa were recorded. No diatoms were recorded to assist the interpretation. Therefore the pollen and the diatom evidence does not disagree with your interpretation of a period of gentle flooding with marine influence. It does not however significantly strengthen it.'

ACKNOWLEDGEMENTS

I would like to thank Mr M. Blanchard, owner of the field, for permission to excavate, and Mr C. Taylor for backfilling the heavy clay soil in the final stages. To Dr and Mrs Anderson, who gave valuable assistance throughout the whole of the excavation, and without whose support this excavation would not have proceeded so far, I extend my most sincere thanks. To Christine and Tony Maxwell, Joyce and Alex McDonald and Derek Garrill I would like to express my gratitude for help with the digging. I would also like to thank: Andrew White for suggestions before the excavation; Jeffrey May for valuable assistance with the interpretation of the site, advice on plough marks and for reading and advising on my final text, and Richard Stoppard for final drawings of plans; David Robinson for help with geology and other assistance; Brian Simmons for valuable help and advice; Dr Phillips for describing and drawing the flint; Dennis Robson for the scientific soil analysis; Bob Alvey for his comments on grain impressions; Ian Shennion for pollen analysis of horizon four; Kay de Brisay for help and advice over many years; Kim Addy for drawings of briquetage; Michael Czajkowski for his auger survey; Michael Baddeley for discussion on soil deposition; Mrs E. H. Rudkin for introductions to so many helpful people and many other kindnesses; members of the Alford Drainage Board for help over many years; local farmers for access to their fields and drains, and my husband and son for loan of equipment and forbearance of my neglect of them during the excavation.

FOOTNOTES

5 de la Sauvagère, *Recherches sur la nature et l'étendue d'un ancien ouvrage de Romains appelé communément le briquetage de Marsal*, 1740-70.
8 J. May, *Prehistoric Lincolnshire*, Lincoln, 1976, p.184, Fig. 72.