# A Medieval Fishery on Whittlesea Mere, Cambridgeshire

# By GAVIN LUCAS

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EXCAVATION at the site of two medieval fishing platforms on the edge of Whittlesea Mere in Cambridgeshire recovered a substantial assemblage of fish remains, pottery and lead weights. Although no structures survived due to peat shrinkage, distribution patterning of the finds enabled a reconstruction of activity and deposition on the site through time. These interpretations can also be placed in a wider context of medieval fisheries and fish consumption with particular reference to this part of the Fens.

Whittlesea Mere was once one of the largest lakes in Britain, its maximum coverage in the winter extending over 1200 ha and host to fishing and regattas in the last century. Originally thought to have formed in the Bronze Age (c. 1400 B.C.). radiocarbon dating now suggests a late Iron Age/early Roman date (c. 100 B.C.-A.D. 100).<sup>1</sup> It remained as a lake until it was drained between 1849 and 1853 resulting in severe peat shrinkage markedly illustrated by the Holme Fen Post.<sup>2</sup> During the 1976-77 season of the Fenland Survey Project, two sites were observed on the southern side of the former Mere as slight mounds with abundant, dense artefact scatters.3 Site 2 consisted of two adjacent mounds, both less than 0.5 m high and the larger (Mound 1; TL 2500/99600) c. 40 m in diameter, the smaller (Mound 2; TL 2470/9990) c. 30 m diameter. These have been identified as Carter's Cote and Price's Cote respectively from a 1781 map, the word *cote* here denoting a landing stage or fishing platform (Pl. I). They later became the subject of a field investigation by Dr C. French, then of the Fenland Archaeological Trust, when in 1991 a rigorous programme of fieldwalking and excavation recovered large quantities of pottery, lead fishing weights and other artefacts.4

<sup>&</sup>lt;sup>1</sup> H. Godwin and Vishnu-Mittre, 'Studies in the Post-glacial History of British Vegetation. XVI. Flandrian Deposits of the Fen Margin at Holme Fen and Whittlesey Mere', *Hunts. Phil. Trans. Royal Soc.* 270B (1975), 561–608; D. N. Hall, *The Fenland Project, Number 6: The South-Western Cambridgeshire Fenlands* (East Anglian Archaeol. Rep., 56, <sup>1992</sup>). <sup>2</sup> H. Darby, *The Draining of the Fens* (Cambridge, 1956).

<sup>&</sup>lt;sup>3</sup> Hall, op. cit. in note 1, 30–2; fig. 15, sites 2 & 3.
<sup>4</sup> C. A. I. French, Assessment of the Excavation at Holme Site 2, Cambridgeshire (Fenland Archaeological Trust, 1992);
C. A. I. French, 'Excavation at Holme Site 2, Cambridgeshire', Fenland Research, 7 (1992), 60–61. The archive and responsibility for publication was handed over to the Cambridge Archaeological Unit in 1992.



#### ARCHAEOLOGICAL INVESTIGATIONS

#### FIELD METHODOLOGY

The fieldwork involved a two-phase operation of intensive surface survey followed by trenching (Fig. 1). Due to the artefact-rich nature of the site, particular attention was paid to the retrieval of artefacts from the ploughsoil. Fieldwalking and a metal detector survey was conducted on a 5 m grid, while ten litre bulk samples for macro-botanical and micro-faunal remains were taken on a 10 m grid. For the second phase, the main areas of both mounds and the edge of the former mere were machine stripped, Mound 1 in a series of c. 0.25 m spits to a depth of 1 m to allow controlled artefact retrieval which was enhanced by a dry-sieve sampling programme on a 10 m and 20 m grid of each spit. Machining stopped at the I m depth because *in situ* tree stumps appeared as the peat became damper. For environmental information, a deep sondage was excavated in one of the trenches to a depth of -5.2 m OD where the fen deposits still continued down below the water table and samples for pollen, plant macro-fossil, diatoms and insect analyses were taken (see Appendix 1). The Sphagnum peat at this level continued down for at least one more metre (from probing) below the water table. From Godwin and Vishnu-Mittre's work, a depth of c. -8 m OD could be reached before the underlying solid geology is reached.5

A primary issue was the geomorphology of the mounds and how exactly they formed; three basic interpretations can be envisaged with corresponding implications:<sup>6</sup>

1. They are the result of organic and other waste material accumulating through dumping off the edge of structures. In this case one might expect the finds density distribution to reflect the mound contours and for earlier material/pottery to lie near the core of the mounds; furthermore any structural features such as a platform would have lain to the side of or between the mounds which formed through dumping off the platform edges.

2. They are constructed mounds raised above the wet marsh edge/shoreline of the lake (i.e. terps), built up through a combination of consolidation and occupation. One might expect, in such a situation, both earlier material near the core of the mounds as with the above and further evidence for construction from the stratigraphy.

3. They represent the ghosts of timber or brushwood platforms which trapped lake silts beneath and around them thus creating soil mounds which survived the decay of the platform. In this case one might expect any cultural material or waste to lie off the edge of the mounds and some possible remnant structures (especially if of timber) within the mound.

<sup>&</sup>lt;sup>5</sup> Godwin and Vishnu-Mittre, op. cit. in note 1.

 $<sup>^{6}</sup>$  A fourth possibility is that the mounds reflect the underlying natural; however this seems unlikely given the depth of peat to underlying geology (c. 8 m) and the relatively small size of the mounds; over such depth it is unlikely the mounds would have such distinctiveness.



Holme 2 Area of Investigation



#### MOUND STRATIGRAPHY

No features or remains of wooden piled structures were found in any of the trenches, although trenching was not conducted between the mounds so it is not known whether features such as timbers may have survived here. Moreover, the stratigraphy of both mounds clearly showed nothing but layers of peat formation (see Appendix 1). Examination of the stratigraphy of these peat deposits, however, showed that any structural elements would not have survived. On the edge of the

now dried-out mere and at the eastern end of the excavated trenches, the surviving upper peat overlies the shell-rich, calcareous marl infill of the former mere. As this material is known to have begun to accumulate no more than 2,000 years ago, the medieval fishing sites investigated here would have been constructed on and within the overlying peat. As the upper peat in this part of the fenland has shrunk by at least 3.5 m since the 1850s to the present thickness of c. 30–40 cm, any organic or wooden structural remains will have disappeared with the desiccation and deflation of the upper peat. As this field was not converted to arable land until 1941 and as ploughing has never disturbed any wooden piles or planks (T. Mitcham, pers. comm. to C. French), it is suggested that the site was already destroyed by peat shrinkage by this time.

#### DISTRIBUTION ANALYSIS

Given the lack of any structural evidence, further interpretation of the site relies solely on the artefact distribution patterns. It presents an interesting case study of what such patterning can reveal although in this instance the same postdepositional processes which erased any structural remains will also affect the distribution of finds and these have to be taken into consideration. In short, the peat shrinkage will have inevitably compressed much of the vertical dimension leaving lateral variability as the chief source of any analysis. Moreover what vertical distribution there was (as recorded by spits over Mound 1) is unreliable as the finds from lower levels had apparently moved down through shrinkage cracks in the peat.

However, the lateral variability in distribution of the major find categories does reveal some interesting clustering (Fig. 2); the pottery, for instance, clearly concentrates on the southern mound (M1), in particular along its south-eastern edges. The animal bone displays a similar pattern though it is slightly better represented on the northern mound (M2) and by the southern mound appears to cluster a little to the east, i.e. nearer the lake shore than the pottery. The lead fishing weights once again show the same broad distribution pattern though their focus lies a little to the north of the pottery. The fishbone, although only sampled across part of the site, also appears to follow the same distribution. Breaking down the pottery by date (Fig. 3), it is clear that the southern mound has material only from the 15th century. It appears then, as if the northern mound was either not being used to dump pottery until the 15th century or was simply not there before that date. The 18th- to 19th-century pottery (4 sherds) is probably background material unrelated to the mounds.

#### IMPLICATIONS

Two issues are raised by the analysis of the stratigraphy and finds from Holme Fen, one regarding their interpretative role for the mound formation and the other their wider significance in terms of activities on the site. For the first, it is quite clear that despite the peat shrinkage, the continuous nature of the peat deposits across



FIG. 2 Distribution plots of major finds categories

the mounds strongly suggests that they are not constructed features (case 2, e.g. terps) but mounds formed from either organic and other waste accumulation (middening) or decayed timber/brushwood platforms (cases 1 and 3). Looking at the distribution patterns of the finds which clustered fairly tightly along the eastern edge of the southern mound, fringing the lake shore, it is clear that their densities do not correspond with the mound contours and therefore the two are probably unrelated. This makes their interpretation as middens (case 1) unlikely, unless one





18th/19thC Pottery n = 4

FIG. 3 Distribution plots of pottery by date

views the mounds as composed chiefly of decayed organic waste; yet this requires very special pleading for a separation of waste not encountered within the known midden area which is a mix of pottery, animal bone, fish guts and lead weights. This leaves only the possibility of decayed brushwood/timber platforms (case 3), which corresponds well with the notion of the midden lying on the edges of the mound.

A second issue, beyond the formation of the mounds, is that the high concentration of artefacts requires interpretation in terms of their very presence. If there were just (primarily) the weights and fishbone, one might be tempted to regard this as a lakeside activity area, perhaps for repair of nets, gutting fish etc.; however, the presence of pottery and animal bone in the same locale suggests rather that this was also a domestic midden. Indeed, the very presence of such finds on what was ostensibly nothing more than a fishing platform is rather odd, and it must surely suggest that in fact people were living on the site rather than solely fishing from it. It could have been used as a dump by a nearby settlement (the nearest is the village of Holme), but why bring refuse all that way and why there, to a place being used for fishing? The most parsimonious explanation is that the site was being inhabited (perhaps only seasonally) by those engaged in the fishing. By this theory, a dwelling was probably located at the western end of the southern mound with another structure being built on the northern mound in the 15th century. Both mounds probably ceased to be inhabited in the 17th century.

#### THE POTTERY ASSEMBLAGE by DAVID HALL

The pottery consists of 2,497 sherds weighing 23 kg. Most of the material (context 1) derives from ploughsoil and has been reduced to small fragments of average weight 3.5 g. Occasionally the sherds were very small, of average weight 1.5 g (context 1, square 2502/9965). The undisturbed sherds of context 2 were much larger, of average weight in the range 24-27 g. The material is predominantly 13th- to 14th-century with smaller amounts of 15th- and 16th-century date, and a quantity of early 17th-century material.

#### Methodology

Each sherd of pottery from the 5 m grid squares was marked with a unique number and stored individually in paper bags. Every sherd was examined and a fabric and date (to the nearest century) assigned as far as possible. A list of these data is in the archive (List A). The number of sherds assigned to each century was counted up for every 5 m square, and a list prepared for the whole site. This list is archive List B and was used to plot sherd distributions. All significant sherds were selected for further study. These comprised all the rims, a few bases and all exotic sherds, which were mostly body sherds of non-local glazed jugs and imported vessels.

Only the selected sherds were further studied for detailed analysis of fabric and form, it being assumed that all major and significant fabrics and forms would be adequately sampled by this 9 per cent 'best' selection of the total. It was obvious from these sherds that reconstruction of significant proportions of vessels was impossible. Apart from the difficulties presented by the small size of context-I sherds, it was clear from the complete rim collection that only a small percentage of any one pot was present (usually one rim sherd only); rarely did two pieces of rim fit. It was therefore pointless to go back to the bulk of the context-I sherds to search for fitting pieces. Any success in achieving the fitting of small sherds of context I would be completely superseded by information provided by the large and useful fragments discovered in context 2.

All the 233 selected sherds were identified for fabric type, forming archive List C. The data are summarized in Table 1. Significant sherds for illustration were taken from context 2 (Fig. 4).

										Fabric	s						
	Bı	B2	Br	$\mathbf{C}_{1}$	$C_2$	Eı	E2	G	Н	Lı	L2	S	U	OSW	SW	OTH	RB
Context 1	28	3	8	12	7	9	2	23	7	15	19	5	6	10	5	2	2
Context 2	$\rightarrow$	<u> </u>	$\rightarrow$	-	-	<u> </u>	-	_	<u> </u>	-	-	-	-	-	_	-	$\sim$
large sherds	14	-	-	5	-	***	: <del></del>	-	2	3	13	3	$i \leftrightarrow i$	2	1	3	$\sim - 1$
small sherds	4	-	I	2	-	2	2	1	1	ī	8	_		2	100	I	-
Total	18	-	1	7	-	2	2	I	3	4	21	3	-	4	I	4	-
%	25	-	I	10		3	3	1	4	6	30	4		6	I	Ĝ	-
Grand total	46	3	9	19	7	II	4	24	10	10	40	8	8	13	6	6	2
% (n = 233)	20	I	4	8	3	5	2	10	4	8	17	3	3	ĕ	3	3	_
% (By main fabric)	21		4	11	-	7	-	10	4	25	-	3	3	6	3	3	

TABLE I

## Fabric list

Fabrics were given simple codes for rapid temporary labelling during analysis. There were:

- Dark and black with fine sand, possibly from Blackborough End. BI
- B<sub>2</sub> Oxidized buff and pink version of the same.
- Br Brill.
- CI Red or pink oxidized Colne.
- $C_2$ Dark or grey reduced Colne.
- Eт Ely oxidized buff or pink.
- E2 Ely reduced grey or dark.
- G Grimston.
- Н Grey coarse sandy ware, possibly from Higham Ferrers.
- Lı Grey reduced Lyveden with large shells, often leached out from the surface leaving small holes.
- Pink or buff oxidized Lyveden with the same holes. L2
- OSW1 Fine Orange Sandy Ware, Essex type, possibly Colchester or Hedingham.
- Pı Brill.
- SI Stanion.

These fabrics, described in more detail are:

Brill-Boarstall, Bucks.

Pinkish buff ware, fragments of jugs with green speckled lead glaze.7

Colchester, Essex Fine orange sandy ware, often decorated with a white slip.8

Ely and Colne, Cambs Coarse wares containing white grits and some sand. Colne is slightly finer than Ely.<sup>9</sup>

#### Grimston, Norfolk

Sandy ware, normally reduced grey but can be oxidized to a pink or red. Decorated with applied strips often covered with iron.<sup>10</sup>

#### Hedingham, Essex

Orange sandy ware with 'mica' dusting; clear or green glaze, and sometimes white slip decoration.11

#### Lyveden, Northants

Fabric, usually oxidized, containing grit or shelly inclusions, often leached out. Decorated with applied yellow strips often grill stamped.<sup>12</sup> The fabrics from Holme, predominantly grey, had surfaces with most of the shells leached out leaving large holes. The leaching is likely to have occurred post-drainage (i.e. after c. 1650) with oxidation of sulphides to sulphuric acid and consequent drastic lowering of the pH. The pH may have affected the colour, since grey forms of Lyveden are unusual.

#### Stanion

Pink corky surface with many small holes; grey core has white grits/limestone, possibly leached Stanion Ware. Stanion, lying 8 km from Lyveden, produced pottery in a similar fabric but with finer shells and some sand. The material found at Holme may be from Stanion. In many respects it resembles some of the Ely wares but these have white flint grits that are not leached out like the oolitic grits of the East Midland fabrics.

7 R. Ivens, 'Medieval Pottery from the 1978 excavations at Temple Farm, Brill, Recs. Bucks., 24 (1982), 144-70; E. Jope, 'Medieval Pottery Kilns at Brill, Buckinghamshire: a preliminary report on excavations in 1953', Recs.

E. Jope, 'Medieval Pottery Kins at Drin, Buckinghamsine, a preminary report on excavations in 1935, save Bucks, 16 (1953), 39-42.
 <sup>8</sup> J. P. Cotter, 'The post Roman pottery from excavations', in *Excavations at Colchester 1971-85* (Colchester Archaeol. Rep., 7, forthcoming); C. M. Cunningham, 'The medieval and post-medieval pottery', 358-80 in P. J. Drury, 'Aspects of the origins and development of Colchester Castle', Archaeol. J., 139 (1982).
 <sup>9</sup> D. N. Hall, 'The Pottery', in M. Alexander, *Excavations at Forehill, Ely* (forthcoming); B. Robinson and P. Spoerry, A Late Medieval Pottery Kiln Dump at Potters Lane Ely, 1935 (forthcoming); K. Watson, R. H. Healey and T. Malim, 'Medieval Kiln Site, Old Church Lane, Colne, Cambridgeshire', Medieval Ceramics, 18 (forthcoming).

<sup>10</sup> S. Jennings, Eighteen centuries of pottery from Norwich. (East Anglian Archaeol., 13, 1981); M. Leah, The Late Saxon and Medieval Pottery Industry of Grimston, Norfolk: Excavations 1962-92 (East Anglian Archaeol., 64, 1994). <sup>11</sup> R. M. Huggins, 'Excavation of a Monastic Forge and Anglo-Saxon Enclosure, Waltham Abbey, Essex,

1972-3', Essex Archaeol. Hist., 4 (1972), 97-110. <sup>12</sup> J. M. Steane, 'Excavations at Lyveden 1967', J. Northampton Mus., 2 (1967); A. Webster, 'Pottery Report', in

J. M. Steane and G. F. Bryant, 'Exacavations at the Deserted Medieval Settlement at Lyveden, Northants', J. Northants Mus., 12 (1975), 60-95.

### Reduced (grey) sandy wares

These are 15th-century forms, and can be later. No source identified, but kiln wasters are known at Barton Bendish and Grimston, Norfolk,<sup>13</sup> Higham Ferrers, Northants and elswhere.14

#### Blackborough End

Hard, coarse sandy ware with very occasional white grits. Sometimes lighter colours occur. Thin, with knife finishing. Probably from Blackborough End, Middleton, Norfolk, about 30 km distant.

The fabric distribution of all selected sherds is given in Table 1. The codes are as above plus U = unknown, SW = stone ware, OTH = 'other'. All the fabrics from A to U are medieval, mostly of 14th-century date, but some can extend into the 15th century. The orange sandy wares (OSW) include all fabrics so coloured: some are medieval but most are 16th- and 17th-century. The late wares merge with coarse oxidized fabrics, Glazed Red Earthen Wares (GRE). Many of the 17thcentury sherds are body sherds from pancheons, frequently glazed dark brown. The 'other' column of Table 1 includes 2 late Stamford Wares, 1 Babylon (17thcentury) and I Nottingham Ware (salt-glazed). In Table I calculations, the two Roman sherds are not included in the total or percentages.

It can be seen that overall the assemblage is dominated by dark sandy fabric (B, 21%), and by material from Grimston (G, 10%) and Lyveden (L, 25%). These three sources account for 56% of all the sherds, with Colne and Ely together providing another 17%. This distribution is much as would be expected with local sources being dominant. Lyveden is 25 km distant and most of the rimsherds are from jugs and cooking pots, with only sherds of the decorated striped jugs present. Grimston, although further away, travels considerable distances throughout the region. The fine sandy fabric type B is similar to Blackborough End material but is unlikely to have come from there. Blackborough material is probably of too early a date, and all B fabric is coarse and would not travel far — it would not be expected to be more dominant than vessels from nearby Grimston which produced a finer ware. Throughout the country it has been found that only fine decorative wares travel over great distances. A local source, so far unidentified, is likely for the B fabric. It also occurred at Parson Drove near Wisbech at a similar level (26%).<sup>15</sup>

Some of the material identified as 'Grimston' is likely to be Ely copies of Grimston. In particular the illustrated sherd (Fig. 4.12) had a Grimston-type fabric but the stabbed decoration is not known on any published Grimston material although it is familiar at Ely. The grey sandy fabric may possibly be from Grimston. It does not look exactly like the material from Higham Ferrers, which is later (mid 15th-century) than most of the group of pottery. The 14th-century date of the Holme medieval material is the likely reason for the absence of Higham kiln

<sup>13</sup> A. Rogerson, 'A Medieval Pottery production Site at Barton Bendish', Norfolk Archaeol., 40 (1987), 127-30; date revised from 14th to 15th century (pers. comm., 1996).

D. N. Hall, 'Medieval Pottery from the Higham Ferrers Hundred', *J. Northampton Mus.*, 10 (1974), 38–58.
 D. N. Hall, 'The Pottery' in J. Pollard *et al.*, 'Excavation of a Medieval saltern at Parson Drove, Cambridgeshire' (forthcoming).

products. They would otherwise be expected since Holme and Higham both belonged to the Duchy of Lancaster estate and were administered together in the 15th century (see the group of account rolls from the 15th century returned in the Higham Ferrers bundle, e.g. PRO DL 29). A strong Northamptonshire trade connection is confirmed by the dominance of Lyveden products from Rockingham Forest.

These East Midland links contrast with Cambridge where East Anglian sources, especially Essex, are dominant. At Holme the OSW and GRE are not firmly identifiable as Essex Wares, but are the more ubiquitous GRE with presumed local sources, probably Ely, in the 16th and 17th century. Of the fine wares from greater distances Brill forms 3% of the total of selected sherds and 0.1% of all the sherds. Imported stone wares amount to only 6 sherds which is 3% of the selected sherds in Table 1, but this is the grand total for the whole collection, and so represents 0.1% of the total. All six are body sherds:

- <2315> Raeren jug rim, 16th-century; from 2490/9975
- <2520> Raeren body; from 2495/9955
- <6460> uniform fine brown speckles ?Cologne; from 2470/0005
- <6741 > Two Raeren body sherds with fine matt glaze, early 17th-century; from 2490/9995
- <4124> Body sherd of grey Siegburg; from 2525/9960

<2980> Nottingham

The illustrated pottery (Fig. 4)

Lyveden fabrics

1. Pink cooking pot, nearly all the shell grog leached out leaving some large holes in a generally corky surface, thumbing on upper surface. As Steane and Bryant 1975 fig. 11.g;<sup>16</sup> sherd 10647, fabric L2, fits sherd 10665; from 2515/9960 10.

 Cooking pot with thumbed rim, leached, as Steane and Bryant 1975 fig. 10a.<sup>17</sup> Fabric L2; sherd 10664 from 2515/9960 10.

- Jug rim in fabric L2, sherd 16653.
- 4. Jug rim in fabric L1, sherd 2348.
- 5. Cooking pot rim, fabric L2, sherd 15635.

#### Grimston

6. Large jug and handle sherd, buff inside surface, and some pink outside. Stabbed decoration not paralleled in Jennings 1981 nor Leah 1994,<sup>18</sup> — possibly an Ely copy, although the fabric has few grits. Fabric G1, sherd 10686 from 2515/9965 10.

7. Buff internal surface, scales glazed half green and half brown, cf. areas Jennings 1981, fig. 19, 247.<sup>19</sup> Sherd 10626 from 2515/9960 10.

19 Jennings, op. cit. in note 10.

<sup>&</sup>lt;sup>16</sup> J. M. Steane and G. F. Bryant, 'Excavations at the Deserted Medieval Settlement at Lyveden, Northants', *J. Northants Mus.*, 12 (1975).

<sup>&</sup>lt;sup>17</sup> Op. cit. in note 16.

<sup>&</sup>lt;sup>18</sup> Jennings, op. cit. in note 10; Leah, op. cit. in note 10.



FIG. 4 Pottery (Scale 1:5)

8. Jug rim top with slight lip, grey fabric gritty, probably an Ely copy of Grimston. Sherd 7591 from 2510/9955.

9. Part of shield-shaped panel of iron slip scales, similar to Jennings 1981, fig. 18. 350;<sup>20</sup> buff internal surface. Three fitting sherds 10812-14 from 2530/1.

10. Stabbed rod handle, sherd 4109.

## Other fabrics

11. Stabbed strap handle of possible Stanion fabric; patchy light green glaze, sherd 4743 from 2530/9940.

12. Rouletted jug with buff surface, light green patchy glaze externally. Possibly Stanion fabric, sherd 10628.

13. Cooking pot rim in reduced fabric with buff external surface. Possibly fabric C1. Sherd 10681 from 2515/9965 10.

14. Cooking pot rim in sandy reduced fabric, sherd 1535.

15. Cooking pot in sandy buff fabric, sherd 10656.

16. Bowl in buff rather sandy fabric, sherd 7592.

17. Base with pinched decoration, fabric as no. 16, sherd 10661.

18. Incised decoration with patchy light green glaze; whitish coarse fabric, similar to Surrey medieval material.

19. Jug sherd in fine white fabric with very dense green glaze, probably developed Stamford Ware.

20. Similar to no. 18.

21. Jar rim in purple semi-vitreous fabric, with internal dense dark-brown iron glaze; 17th-century. Sherd 7639.

22. Jar rim in bright red fabric with clear internal glaze, probably from Ely, 17thcentury. Sherd 10627.

# THE LEAD WEIGHTS by VAL FRYER

Five hundred and thirty-eight lead weights and associated lead fragments were recovered from the site. The weights were divided into seven broad categories:

1. Strips and sheet — that is pieces probably awaiting subsequent manufacture into weights.

2. Rolled weights - of varying length, diameter and weight.

3. Part-rolled weights - possibly lost or discarded during manufacture.

4. Re-used weights — that is existing rolled pieces with evidence of unrolling and/or re-rolling for subsequent re-use.

5. Tubular and conical weights.

- 6. Other weights.
- 7. Fragments and other largely comprised of waste lead etc.

The rolled, part-rolled and re-used weights were further subdivided by size, that is small (less than 15 mm long), medium (between 15 and 35 mm long) and large (35 mm and above in length). All material was sent for conservation to the Institute of Archaeology, University College London.<sup>21</sup>

<sup>&</sup>lt;sup>20</sup> Jennings, op. cit. in note 10.

<sup>&</sup>lt;sup>21</sup> See Archive Conservation Report.

# 1. Strips and sheet

Eighty-eight pieces (16%) were noted. The majority are rectangular/sub-rectangular in shape. The thickness varies considerably from extremely thin to c. 1.5-2 + mm. Some pieces have cut edges, and some appear to have been hammered to an approximate shape. Some fragments appear partly rolled, but none of the rolling is done as systematically or as carefully as the rolled weights and it is possible that this may be the fate of a pliable material in the ploughsoil. Because of the similarity to the dimensions of the rolled, part-rolled and re-used weights, it is assumed that the strip/sheet fragments are pieces awaiting manufacture into rolled weights.

# 2. Rolled weights

One hundred and seventy-three weights (32%) were identified. The tightness of the rolling, the thickness of the sheet and the size of the central hole vary considerably. Forty-three per cent of the rolled weights are less than 15 mm long, 54% are of medium length and 3% are in excess of 35 mm long. A random selection was weighed showing that the small weights all weigh 10 g or less, the medium weights vary between 2.78 g and 40 g with an average of 20 g and the large pieces weigh from 10 g to 32 g with an average of 22 g. 'Crimp' marks are common. Some crimping appears to have been carried out using pincers or a similar tool, often leaving a semi-circular impression. The marks on S.F.8217 (cat. no. 7) indicate a tool with a patterned jaw or face. While some pieces do appear to have been deliberately clamped to the net by a crimped groove, in most cases it appears likely that crimping was a means of securing the last fold of the roll, as many crimped examples still have a large central hole. Other weights appear to have had the final fold 'knocked to' with an unknown implement although some of these marks may be subsequent. Nine rolled weights still contained traces of the net fibres, the majority of which appear to have an animal origin rather than the expected hemp fibres.<sup>22</sup>

# 3. Part-rolled weights

Twenty-five (5%) part-rolled weights were noted. All have at least one roll or fold and appear to have been intended for use as rolled weights. Weights range from less than 10 g to 30 g with an average of 17.5 g. All are of medium length with the exception of four small examples. It is assumed that these were pieces lost or discarded during manufacture.

# 4. Re-used weights

One hundred and forty-nine (28%) re-used weights were identified. Of these 36 (24%) are less than 15 mm long, 107 (72%) measure between 15 and 35 mm and six (4%) are over 35 mm in length. The weight ranges are the same as those for the rolled weights. All the re-used pieces are rolled weights which have been unrolled

<sup>&</sup>lt;sup>22</sup> See Archive Conservation Report.

and either fully or partly re-rolled. The lead appears 'stressed' and is often corrugated in profile. Re-used weights were also recovered from Fishergate, Norwich.<sup>23</sup> Crimp marks as described above were also noted on the re-used weights.

#### Tubular and conical weights 5.

Thirty-six (7%) tubular and five (1%) conical weights were recovered. The majority appear to have been cast although rare examples of rolled tubular weights were noted. As the latter were larger and heavier than the rolled weights they are included here. The casting of the majority of the tubular weights appears to have done using moulds or similar receptacles as the finish is generally very smooth and regular. The conical weights are very irregular and roughly finished and are of type II as identified by Steane and Foreman.24 The tubular weights vary from 15 g to 110 g with an average of 60 g and the conical weights range from 15 g to 65 g with an average of 46 g.

# 6. Other weights

Only two (0.37%) weights of other types were recovered. One (cat. no. 21) is a rectangular bar pierced at both ends,<sup>25</sup> the other (cat. no. 22) is spherical with a central perforation.

#### Fragments and other 7.

Thirty-seven (7%) pieces were identified. These consist of irregular and/or folded sheet fragments of varying size and thickness, waste lead, probably including casting residue, a possible fragment of rod or spoon handle (S.F.8109) and windowcane fragments (S.F. 8163 and 12207). The latter two are probably intrusive in the assemblage.

The evidence of 1-7 above suggests that the weights, some or all of which were probably made on site, had an optimum length and weight of 15-35 mm and 17.5-22 g respectively. Smaller weights were common but appear to have been less often re-used. Weights in excess of 35 mm long were very rare, either rolled or re-used. Rolled weights were predominant presumably because of ease of manufacture, attachment and re-use. Similar weights have been identified from pre-Roman Iron-age deposits at Glastonbury and Meare, Somerset,<sup>26</sup> 11th-century contexts at Fishergate, Norwich27 and the wreck of a 15th-century vessel at Blackfriars, London.<sup>28</sup> Although the tubular and conical weights may reflect a

<sup>23</sup> V. Williams, 'Non-ferrous Metal Objects', 14 in B. S. Ayers, Excavations at Fishergate, Norwich, 1985 (East Anglian

Archaeol., 68, 1994), fig. 9.4. 24 J. M. Steane and M. Foreman, 'Medieval Fishing Tackle', 137-86 in M. Aston (ed.), Medieval Fish, Fisheries and Fishponds in England (Brit. Archaeol. Rep. Brit. Ser. 182) (Oxford, 1988), fig.9.6-7.

<sup>25</sup> For parallels see ibid., fig. 15.21-27.

<sup>26</sup> Ibid., 162

<sup>27</sup> Williams op. cit. in note 23, fig.9.4-6.

<sup>28</sup> P. Marsden, 'Archaeological finds in the City of London 1967-70', Trans. London Middlesex Archaeol. Soc., 23 (1971), 1-14.

different use because of their greater weight, they are most likely to have been used in the centre section of seine nets, with the slightly lighter rolled weights being used in the 'sleeves' or 'wings'. The absence of any other form of fishing tackle, for example fish hooks, suggests that netting was the principal technique used in the Mere.

Discussions with experts currently engaged in various aspects of the fishing industry indicate that similar lead weights are still in use today. They also suggest that the length of the weights may possibly reflect the size of the net mesh although the main factors regulating net gauge include fishing techniques (for example, dragging or gilling), species size and available fish stocks. The numbers of weights used on a net is also subject to many variables, for example the buoyancy of the net floats, the weight of the net, the state of the water in tidal or riverine contexts and whether the netting is being done at the waters surface or on the bottom.

It is not clear how the techniques used on Whittlesey Mere (as reflected in the artefact assemblage) fit into the regional traditions outlined by Steane and Foreman,<sup>29</sup> as the latter concentrate on river rather than inland fishing, but the evidence suggests a similarity to seine netting as used in estuarine contexts.

#### Catalogue (Fig. 5)

Only the items selected for illustration appear in the catalogue below. A full list of the weights and other objects of lead can be found in the archive. Catalogue entries are ordered by type and small find (S.F.) number. All pieces are from context Ap/MD.

#### Strips and sheet

1. Rectangular. All edges cut. 31 × 25 × circa 2.5 mm. Weight 21.2 g. S.F. 12233

2. Sub-rectangular. Two edges possibly cut. Two edges hammered.  $31 \times 28 \times$  circa 1 mm. Weight 12.42 g. S.F.12234. The latter piece is possibly a completely unrolled weight awaiting reuse. There are possible faint crimp marks on one face although these may be subsequent.

#### Rolled weights

3. Medium. Very regular rolling. Heavy subsequent marking. 26 × circa 10 mm diameter. Weight 19.03 g. S.F.8065

4. Small. Very regular rolling. Possible crimping.  $12 \times \text{circa } 5.5 \text{ mm}$  diameter. Weight 2.13 g. S.F.8079

5. Medium. Regular rolling. Very heavy crimping.  $18 \times 7 \times 5$  mm Weight 2.78 g. S.F.8157

6. Medium. Regular but loose rolling. 17 × 20 × 7.5 mm Weight 14.21 g. S.F.8211

7. Small. Very loose rolling. Very thick sheet/strip. Heavy subsequent damage.  $15 \times 17 \times 12$  mm Weight 15.64 g. S.F.10183

8. Large. Very loose rolling with large central hole. Crimp marks from a tool with a patterned jaw or face. 37 × circa 11 mm diameter. Weight 36.15 g. S.F.8217

9. Medium. Loose rolling. Crimp marks.  $24 \times \text{circa 6}$  mm diameter. Weight 8.68 g. S.F.12231

10. Small. Very loose rolling. Thin sheet/strip. 11  $\times$  circa 6 mm diameter. Weight 1.60 g. S.F.10136

<sup>&</sup>lt;sup>29</sup> Steane and Foreman, op. cit. in note 24, 178.



Part-rolled weights

11. Medium. First roll completed. Possibly crimped. 37  $\times$  17  $\times$  8 mm. Weight 19.66 g. S.F.8135

12. Medium. First roll completed. Heavy subsequent damage. 29  $\times$  23  $\times$  6 mm. Weight 12.02 g. S.F.8164

### Re-used weights

13. Medium. Stressing. Corrugated profile. Possible crimp marks.  $27\times20\times6$  mm. Weight 9.48 g. S.F.8064

14. Medium. Corrugated profile. Crimp marks.  $26 \times 23 \times 7$  mm. Weight 17.71 g. S.F.10085

15. Large. Stressing. Corrugated profile. Possibly crimped.  $36 \times 31 \times 6$  mm. Weight 18.14 g. S.F.10178

#### Tubular and conical weights

16. Conical. Irregular profile. Irregular perforation.  $31 \times 25 \times 23$  mm. Weight 54.84 g. S.F.8146.

17. Conical. Irregular profile. Sub-circular perforation.  $31 \times 24 \times 21$  mm. Weight 62.4 g. S.F.8192

18. Tubular. Sub-circular section. Irregular perforation. Heavy subsequent damage.  $22 \times 23 \times 22$  mm. Weight 62.27 g. S.F.8204

19. Tubular. Square section with circular perforation. Possibly incomplete.  $21 \times 12 \times 12$  mm. Weight 13.69 g. S.F.8194

20. Tubular. Sub-circular section. Sub-circular perforation. An 'X' is cut on one face. 23 × circa 16 mm diameter. Weight 42.07 g. S.F.10181

#### Other weights

21. Sub-rectangular bar with two circular perforations.  $41 \times 20 \times \text{circa 7 mm}$ . Weight 46.06 g. S.F.8128

22. Spherical. Irregular perforation. Similar tool marks at one end as seen on S.F.8217 (cat. no. 7). Circa 19 mm diameter. Weight 27.28 g. S.F.10106

#### FISH REMAINS by BRIAN IRVING

Bulk sediment samples were sieved to 0.5 mm and the dried residues and vertebrate remains were sorted from them. Fifteen of the samples contained small mammals, birds and fishes, but approximately 99% of the assemblage consisted of fishes. All fishbone fragments were recorded and identified to the lowest possible taxonomic level and by comparison with modern reference material. A total of 1,204 fragments of fishbone were recorded from fifteen sorted bulk sample residues, though the amount of material in the samples was variable. A total of eight species was identified from the cranial bones, teeth and scales, while scale fragments and vertebrae of the Cyprindae were identified only to family level; these elements are similar across a range of species so identification to species is impossible.

The assemblage is dominated by the remains of the Cyprindae (466 fragments), although only the roach *Rutilus rutilus L*. (40 fragments) was identified to species. The perch *Perca fluviatilis L*. (34 fragments), eel *Anguilla anguilla L*. (51 fragments) and pike *Esox lucius L*. (25 fragments) are represented by scales, vertebrae and cranial elements. Other species represented are trout/sea trout *Salmo trutta L*., three-spined stickleback *Gasterosteus sculeatus L*., bullhead *Cottus gobio L*. and burbot *Lota lota L*. all of which have four identified fragments.<sup>30</sup> The species represented are typical of the fens at the present time with the exception of the burbot, which is now thought to be extinct in the British Isles.<sup>31</sup>

Without exception the remains are from small individuals, with an approximate maximum total length (TL) of 10 cm. This observation is based on visual comparison with reference material of known length. No measurements were

<sup>&</sup>lt;sup>30</sup> See archive report for a summary.

<sup>&</sup>lt;sup>31</sup> P. S. Maitland and R. N. Campbell, Freshwater Fishes (HarperCollins, London, 1992).

attempted on the material as the bones were so small. Some fragments, five in total from different samples, have been in contact with heat; the evidence for this varies from white (calcined) to black surface damage. The general condition of the material however is good with little damage to the fragile cranial bones and scales. This good survival of fragile material suggests either quick burial with little aerial weathering or deposition on the lake bed where anaerobic conditions would ensure good bone survival. Bones from two contexts, however, show pitting on surface which is consistent with piscivore gut damage.32 No butchery or mastication damage was found.

The assemblage from the Holme Fen is interesting in a number of ways. An assemblage which has been subject to mixing and other taphonomic factors such as sediment desiccation (peat deflation) may not be representative of any given time-frame and may, at the coarsest level, consist of materials from a range of archaeological periods. This investigation has, however, established that preservation of all bone fragments is good. Other recorded variables (such as colour) are constant over all samples. This suggests that the bones are broadly contemporaneous and probably accumulated over a shorter time span than that provisionally envisaged by French.33 The species represented, eight in all, show a relatively low diversity. Other, older, archaeological sites from East Anglia have produced fish assemblages of moderate to high species diversity.<sup>34</sup> This is possibly a result of either low species diversity within Whittlesea Mere, or species selection. This selection may be human or, more probably, a product of prey selection by predatory fishes. Each possibility is considered in turn below.

#### Natural low diversity

The fish fauna of a large body of fresh water like Whittlesea Mere would normally be of moderate to high species diversity. The colonization of such a water body would have occurred naturally during the Holocene. At least 25 species of freshwater fishes regarded as natural Holocene colonizers have been recorded from East Anglia.<sup>35</sup> All of the species recorded from East Anglia would be capable of living within the mere. In order to achieve and maintain a high species diversity the environment must be stable over long periods of time. Written records show that this is not the case for Whittlesea Mere. The mere has completely dried out on a number of occasions and these events have been so catastrophic that evenitnesses report 'fish lying on the lake bed like snow drifts'.36 It would seem that these periods of drying out would sterilize the mere, which would then be subject to natural recolonization or artificial restocking.

<sup>&</sup>lt;sup>32</sup> B. G. Irving, Zooarchaeological and Palaeoecology of Middle to Late Pleistocene Ichthyofaunas from the British Isles, (Unpulished PhD thesis, University of London, 1995).

<sup>33</sup> French, op. cit. in note 4.

<sup>34</sup> Irving, op. cit. in note 32.

<sup>35</sup> Irving, op. cit. in note 32; A. C. Wheeler, 'The Origin and Distribution of the Freshwater Fishes of the British Isles', J. Biogeography, 4 (1977), 1–24.
 <sup>36</sup> J. M. Heathcote, Reminiscences of Fen and Mere (Old Soke Books, Peterborough, 1995[1876]).

Before the advent of 'sport angling', managed fisheries would concentrate on those species preferred at the table. Pike, during the Medieval period, were an important food fish, and any management of their habitat would include introduction of species on which they could prey. The pike is a piscivore and its diet includes, roach, perch and smaller pike. It is very unlikely, however, that both tench Tinca tinca L. and bream Abramis brama L. would be excluded from a fishery of this period in a mere of this size as these species could flourish alongside the pike fishery. Indeed bream, roach and chub were recorded from the natural death assemblage when the mere dried out in 1836.37

#### Natural prey selection

All of the specimens identified from the assemblage are small, being no larger than approximately 10 cm. This average size across the assemblages is striking and leads to the conclusion that some type of size sorting has occurred. The excavation at Holme Fen has identified the area as a fishing site. If pike were landed here then they would probably be gutted and cleaned at the water's edge. Within the gut of the piscivorous predators such as the pike are the partly digested remains of their prey.<sup>38</sup> This creates a fishbone assemblage of the type described above within a very discrete area which does not include the bones of the predator, as this would be taken elsewhere for consumption. Within a population of fishes there are discrete size classes, which correlate with age. In predators such as the pike, each size class of predator will take a distinctive size class of prey fish.<sup>39</sup>

#### Human prey selection

The estimated size of the fish in the assemblage from Holme Fen is very small. Small freshwater fish may have been eaten by peasants, but it is unlikely that their bones would have been discarded into the margins of the mere. A more feasible scenario is that the fish were used as bait to catch pike. The use of live and dead baits to catch pike is first discussed in English literature by Dame Juliana Berners in 1486, where both roach and herrings are described as the best baits when angling for pike.40 The finds of lead weights (whether for nets or rod and line angling) attests to the possibility that fishing may have been conducted from the shore. Inevitably when pike are caught with rod and line the flesh of the bait fish is ripped and semi-masticated and this may be a reason for discarding their bodies at the edge of the lake before fresh bait is attached to the line. Finally, some of the material is burned, but this is not necessarily as a result of human activity. Any fluctuations in lake levels may periodically expose the bone material to natural fires.

In conclusion, the assemblage may have accumulated as a result of gutting pike which were cleaned on the edge of the Mere. The consistent small size of the

<sup>37</sup> Heathcote, op. cit. in note 36.

 <sup>&</sup>lt;sup>38</sup> Irving, op. cit. in note 30:
 <sup>38</sup> Irving, op. cit. in note 32; B. G. Irving, 'Over-representation of Fish Remains on Archaeological Sites; The Effect of Piscivorous Fishes on the Bone Assemblage', *Circaea* (in press).
 <sup>39</sup> W. E. Frost, 'The Food of Pike, Esox lucius L., in Windermere', *J. Animal Ecology*, 23 (1954), 339–60.
 <sup>40</sup> J. Berners, *A Treatyse of Fysshynge wyth an Angle. The Boke of St Albans* (1486). Facs. ed. W. Blades (London, 1905).

individuals points strongly to such a conclusion. The species identified all form part of the diet of the pike,<sup>41</sup> and the surface pitted bones are also strong evidence for this. The complete drying out of the mere was probably very rare but fluctuations in level, possibly on an annual (seasonal) basis, would periodically expose submerged buried bone material to desiccation and burning by natural or manmade fires.

#### DISCUSSION

# DOCUMENTARY BACKGROUND

Historically, Whittlesea Mere was famous for its fishing<sup>42</sup> and several places called cotes are marked on John Bodger's map of 1781 which shows a southern promontory projecting into the mere along which are marked the present sites, Prices Cote and Carter's Cote (Pl. I). The pottery evidence from Holme Fen suggests the sites have origins in the 13th century and that Mound 1 (Carters Cote) is later joined by adjacent site, Mound 2 (Prices Cote). The date of these sites in relation to the documentary evidence suggests that they were probably established around the time of the transference of fishing rights from the manor of Glatton to Ramsey Abbey and that therefore the context of their use is best seen through the Abbey (see below).

In A.D. 657, upon the foundation of the Abbey of Peterborough, Whittlesea Mere is said to have been given to the abbey by the King of Mercia, Wulphere, but when the abbey was apparently destroyed in 870 by the Danes the mere reverted to the king.43 The abbey was refounded in the later 10th century whereupon it received a quarter of the mere, later increasing it up to a half. By 1086, other abbeys had acquired fishing rights, including Thorney and Ramsey. Landing stages are mentioned in the 1225-28 boundary descriptions and in 1306, the Abbot of Thorney is recorded as having five cotes around the Mere and five fishing boats.44 The monastic rights to the Mere were increased when in 1261, Richard, Earl of Cornwall, who held the manor of Glatton cum Holme within which most of the Mere lay, gave all his fishing rights to Ramsey Abbey.45

The economic history of Ramsey Abbey is well documented from the account rolls and it seems fairly clear that around the time it acquired fishing rights on the Mere, the Abbey was in the larger process of re-organization and acquiring new lands and increasing its income.<sup>46</sup> From the later 12th century there is a noticeable increase in manorial rents accompanied by new land holdings and rising prices, which continued up to the mid 13th century (including farmland in Holme, c. 1240). Much of this was an attempt to revive the Abbey after some of its land was

<sup>41</sup> Frost, op. cit. in note 39.

<sup>&</sup>lt;sup>42</sup> D. N. Hall and J. Coles, Fenland Survey. An Essay in Landscape and Persistence (English Heritage, London, 1994); C. J. Bond, 'Monastic Fisheries', in M. Aston (ed.), Medieval Fish, Fisheries and Fishponds in England (Brit. Archaeol.

Rep. Brit. Ser. 182) (Oxford, 1988), 69-112.
 <sup>43</sup> W. Page, G. Proby and S. Inskipp Ladds, Victoria County History of Huntingdonshire,111 (Oxford, 1936).

 <sup>&</sup>lt;sup>44</sup> Hall & Coles, op. cit. in note 42, 136; Page *et al.* op.cit. in note 43, 186.
 <sup>45</sup> Page *et al.*, op. cit. in note 43, 186.

<sup>46</sup> Ibid. note 45.

lost through alienation (i.e. the sell-off of rents) in the 12th century but it was also probably part of a wider period of economic growth between the mid 12th and mid 13th century.<sup>47</sup> It is in this 13th-century context of relative prosperity for Ramsey Abbey that the fishery at Holme Fen is possibly best understood (see below). However, the Abbey eventually fell into a deep and prolonged depression in the 15th century and after the Dissolution of 1538 the Abbey itself and some of its estates passed to the Cromwells.48 The overlordship of Glatton cum Holme passed to Sir Robert Cotton in 1611 (during which time the mounds probably ceased to be used as seasonal dwellings) and then to Mr Wells in 1752, whose grandson William was responsible for the draining of the Mere in 1849-53.49

### THE HOLME FEN FISHERY

Understanding the activities identified at Holme Fen archaeologically can be greatly enhanced by drawing on these wider documentary and historical sources; however several points need to be reiterated about the archaeological interpretation of the site. It seems clear, for example, that it has a domestic context to it, as inferred from the 'midden' material suggesting at least seasonal occupation of Mound 1. This may not be that unusual — buildings were associated with a riverside fishery at Witham in Lincolnshire<sup>50</sup> — but it does suggest that the people engaged in full-time fishing for Ramsey Abbey found it preferable to live on site.<sup>51</sup> Documentary sources record permission being given to construct a fisherman's cottage in Glatton Marsh beside the Mere in 1318, a place where, amongst other things, people could spread out and dry their nets and shelter from inclement weather.52

It certainly appears as if relatively large scale fishing and preliminary processing was being carried out from the site from the 13th century; analysis of the lead weights points to the production and repair of fishing nets on site. Since no hooks were recovered and the retrieval methods were of a high standard, it appears that netting was the main if not the exclusive form of fishing. This is supported by a 14th-century document which describes a variety of nets permissible on the Mere including polenets, swerenets, widenets, bownets, drages and tramailes.53 The two main kinds of weights (rolled and conical/tubular) suggest the use of seine nets, i.e. a long strip of net with floats at the top and weights at the bottom (see discussion of the lead weights, above).54 There are two principal forms of seine fishing, both most suitable for fairly shallow-water conditions: one where each end of the net is

<sup>47</sup> C. Platt, Medieval England (Routledge, London, 1978), 30-31.

<sup>&</sup>lt;sup>48</sup> J. A. Raftis, The Estates of Ramsey Abbey (Pontifical Institutute of Medieval Studies, Toronto, 1957), 292; Hall, op. cit. in note 1, 42. <sup>49</sup> Page *et al.*, op. cit. in note 43, 186–87. <sup>50</sup> A. J. White, 'Medieval Fisheries in the Witham and its Tributaries (Lincs.)', 309–27 in M. Aston (ed.), *Medieval* 

Fish, Fisheries and Fishponds in England (Brit, Archaeol. Rep. Brit, Ser. 182) (Oxford, 1988). <sup>51</sup> At the very least it may have acted as a deterrent to poachers, not implausible given the high value placed on

fish, especially pike, at this time; see discussion below.

<sup>52</sup> P. Middleton, B. Chambers, D. Clarke, E. Day, J. Gilbert, M. Long, S. Martin, K. Peach, A. Swift and L. Swift, Whittlesea Mere. A WEA Project (Providence Press, Ely, 1987), 7.

<sup>53</sup> Ibid. note 52.

<sup>54</sup> Also Steane & Foreman, op. cit. in note 24, 156-59.

towed by one of a pair of boats which gradually close together, entrapping the fish, and the other involving only one boat which drags one end of the net out into the water while the other is held fast on the shore: the boat sweeps a semi-circle thus enclosing an area which is brought together by two teams pulling in the net from the shore.<sup>55</sup> The latter is usually only suitable for sea fishing where the stretches of beach are long and wide enough; given the nature of the site at Holme and the marshy edges to the mere it is probably the first method that was employed there. Indeed just such a method is described in the last days of the Mere before drainage.56

Study of the fish remains from the bulk samples suggests that most were the discarded gut contents of pike which was the principal fish being caught (see above). Given the nature of the site, it is of course highly unlikely that consumption would have taken place there and, as the report suggests, remains of the primary catch would not be in evidence. The small species diversity and small size of fish (<10 cm) strongly support Irving's claim that these are the remains of pike-gutting, which were then taken off-site to the tables of Ramsey Abbey. It is worth attempting to place this archaeological evidence in a wider context and consider the dietary habits of the time so that this in turn can enable us to re-appraise the economic and cultural significance of the fishery.

### FISH CONSUMPTION IN THE MEDIEVAL DIET

Fish was consumed in a variety of ways in Medieval England and, as with any foodstuff, it must be seen in terms of cultural consumption rather than simply so much protein or kilojoules. Fish, for example, was often served in a tart sauce such as galentine but also in more elaborate recipes.<sup>57</sup> Recent interpretation on the role of freshwater fish in the medieval diet points to it being primarily an aristocratic food, given the association of fishponds with moated sites, castles, manors and monasteries.<sup>58</sup> Although Whittlesea Mere was a natural resource, one could argue that the ideological or symbolic value thus attached to freshwater fish through fishpond construction created the very context for intensive fishing of the Mere. The fact that it was so regarded must surely account for the amount of contemporary documentary evidence relating to the ownership and fishing rights of the Mere (see above).

The specific importance of fish seems to be due to the religious exclusion of meat twice a week (Friday and Saturday) as well as certain annual festivals such as Lent, and given the importance of animal consumption in the medieval aristocratic diet, fish was regarded as an essential component of a meal on a non-meat day.<sup>59</sup> Eel was among the cheapest fish and most likely to be consumed by the wider

<sup>&</sup>lt;sup>55</sup> The author has participated in this kind of fishing, off the coast in the Cape, South Africa; all in all the process took over an hour and about 20 people, though off-shore seine fishing is undoubtedly longer and more labourintensive than on a mere due to currents and the size of the area netted.

<sup>&</sup>lt;sup>56</sup> Peterborough Avertiser 23rd April 1887: quoted in Middleton et al., op. cit. in note 52, 8.

 <sup>&</sup>lt;sup>57</sup> T. Austin, (ed.), *Two Fifteenth-century Cookery Books* (Early English Text Society, OS 91, Oxford, 1888).
 <sup>58</sup> C. Dyer, 'The consumption of fresh-water fish in medieval England', 27–38 in M. Aston (ed.), *Medieval Fish*, Fisheries and Fishponds in England (Brit. Archaeol. Rep. Brit. Ser. 182) (Oxford, 1988), p.27.

<sup>59</sup> Dyer, op. cit. in note 58, 28.

Fenland population including the poorer classes; indeed eels were so common in the Fenland diet, particularly at times like Lent, that they were used as a form of currency to pay rent or tithes and were often counted in batches or sticks of 25.60 A mid 12th-century statute from Ramsey Abbey listing food prices shows 1,000 eels valued at 6s. 8d.61 Conversely, of freshwater fish it appears pike was the most highly priced, costing an artisan's weekly wage in the 15th century.<sup>62</sup> Known locally at the time as Hakides,<sup>63</sup> the pike was probably a luxury fish. It certainly appears as if some of the meres were well endowed with these fish. Ramsey Mere produced pike of 'extraordinary size'64 while the fame of Whittlesea Mere's pike continued into the 19th century when it was recorded as once teeming with these fish which included a record 52 lb (24 kg) specimen.65

Holme Fen is one of three archaeologically known medieval fisheries around Whittlesea Mere; two lie on the southern side of the mere, one of which is the present site, the other lies further east and is of a similar date (13th-century but also including later 17th-century material).<sup>66</sup> The third site lies in Yaxley on the N. side of the Mere and once again dates to the 13th-15th century and was excavated c. 1952 by Garrod but no records remain.<sup>67</sup> All three sites seem to be associated with domestic occupation but only the latter had any substantial building material identified. All three, having 13th-century origins, may well be part of a wider economic upturn of the time when increasing productivity and piecemeal land reclamation stimulated or was fed by rising demands in consumption which no doubt included fish.<sup>68</sup> The fishery at Holme Fen which appears to have specialized in pike — a luxury fish — must be seen in this context.

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# APPENDIX 1: A NOTE ON THE STRATIGRAPHY OF HOLME FEN By C. A. I. FRENCH

The deep sondage was used to take several column samples for various environmental assessments (plant macrofossils, insects, pollen, diatoms and foraminifera).

60 Darby, op. cit. in note 2, 31-32; C. Dyer, op. cit. in note 58.

64 Ibid.

<sup>65</sup> Heathcote, op. cit. in note 36, 40. The modern record is only 47 lb. (21 kg) while the average is closer to 30 lb. (14 kg): A. C. Wheeler, The Fishes of the British Isles and Northwest Europe (London, 1969), 166-67. 66 Hall, op. cit. in note 1, 31-32.

<sup>&</sup>lt;sup>61</sup> Raftis, op. cit. in note 48, 312. <sup>62</sup> Dyer, op. cit. in note 58, 33.

<sup>63</sup> Darby, op. cit. in note 2, 30.

<sup>67</sup> Hall, op. cit. in note 1, 22.

<sup>68</sup> Raftis, op. cit. in note 48, 74; Platt, op. cit. in note 47, 42-44.

The stratigraphy broadly consisted of the overlying, deflated peat/ploughsoil [001], a silt marl associated with the Mere [005], and then a reed peat [003]–[004], a silty clay [009] and a series of lower moss peats [010]–[013]. Contexts [006]–[008] were all natural fissures in the peat initially thought to be post-ghosts. The tables below (Tables 2–3) show these with associated radiocarbon dates. The lower moss peats are associated with the neolithic landscape; the pollen assessment suggested boggy conditions but within a mixed woodland. The silty, 'fen clay' layer is a marginal part of the marine transgression during the Bronze Age as suggested by an analysis of the foraminifera (indicating saltmarsh conditions) and insect remains (bog). The middle peats belonging to the later Bronze Age/Iron Age are associated with swamp and bog type pollen while the silt marl represents the Mere formation around the 1st centuries B.C./A.D. The upper peat/ploughsoil is the shrunken horizon originally formed over the medieval period and deflated during the drainage of the mid 19th century.

Context	Height (m OD)	Description
1	-1.63 to -1.96	ploughsoil; desiccated peat, possibly up to $4-5$ m of peat has been lost since drainage in the 1850s (Godwin 1978)
5	-1.96 to -2.09	calcareous silt marl with abundant freshwater molluscs; represents the edge of the mere; formed after 1995 $\pm$ 70BP (Q-2810)
3/4	-2.09 to $-2.87$	reed peat, becoming damper in lower half
9	-2.87 to $-3.27$	reduced silty clay with reeds; marginal fen clay; $3720 \pm 75 (Q-2811) - 3250 \pm 70BP (Q-2812)$
10	-3.27 to $-3.87$	black red peat
II	-3.87 to $-4.07$	moss peat, tan brown, waterlogged
12	-4.07 to -4.27	moss peat, medium brown
13	-4.27 +	moss peat, tan brown, with wood in situ at base

 Table 2

 PROFILE 4 FROM THE EDGE OF THE MERE

TABLE	3			
PROFILE 5 FROM THE WESTERN	('INLAND')	SIDE	OF MOUND	I

Context	Height (m OD)	Description
I	-1.35 to -1.66	ploughsoil
2	-1.66 to -1.76	pan of desiccated peat
3	-1.76 to $-2.12$	dark brown reed pear, becoming damper towards base
4	-2.12 to $-3.08$	black wood/detrital peat
9	-3.08 to $-3.29$	reduced grey silty clay with reed cases; $3720 \pm 75 (Q-2811) - 3250 \pm 70 BP (Q-2812)$
10	-3.29 to $-3.77$	black reed peat
11	-3.77 to $-4.29$	moss peat, tan brown
12	-4.29 +	moss peat, medium brown
-	-5.09	water table after one day