AML Rep/1460, Site No ---

Fish bones from excavations in the cemetery of St Mary Bishophill Junior, York.

Andrew K. G. Jones

An Ancient Monuments Laboratory Report

An unusual layer comprising many thousands of small fish bones, mortar and plaster fragments was found lying on the floor of a Roman building in excavations directed by Mr L. P. Wenham. A roughly triangular area measuring approximately 125 X 180 x 210 cm was uncovered and a small sample (volume 4.2 litres) collected for detailed analysis. It was clear from the trench sections that the layer extended beyond the limits of the trench.

In 1963 a small subsample of the material was sent to the late Haakon Olsen of the Zoological Museum of Bergen, Norway, who identified the bones as the complete skeletons of either small herrings, Clupea harengus L., or sprats, Sprattus sprattus L. A brief note was published describing the find suggesting that it represented a fish processing site (Wilson and Hurst, 1963, 312). This has been quoted as a 'late Anglian or early Anglo-Scandinavian fish processing factory' (Hall, 1978, 34).

In 1982 a 100 ml sub-sample of the material was examined

and Olsen's observations were confirmed. After detailed study of the dentaries (lower jaws) it was concluded that approximately 75% of the bones were from young herring ranging in size from from 7 to 11 cm total length (see table 01). The remaining 25% were from sprats also of 7 to 11 cm total length. Bones from the head, vertebral column and fins, and scales indicated that at least 50 fish were represented in the 100 ml sample.

The vast number of bones present in the deposit made it impractical to identify all the material. Eight kinds of bone were collected to represent different parts of the skeleton (see table 01). Examination of the remaining material showed that the 100 ml sub-sample was typical of the deposit, although a single dentary from a young whiting, Merlangius merlangus L., was also identified.

The material collected from the excavation comprised the remains of approximately 2,000 fish. About one-twentieth of the excavated area was collected so it is reasonable to conclude that in the region of 40,000 fish were present within the excavated area and many more remain unexcavated.

Discussion

There can be little doubt that the deposit represents the remains of whole fish which were imported into York. Both the herring and sprat are marine shoaling fish and young occur in large shoals off the British coast. They are particularly

abundant on the Yorkshire coast during the summer months and enter estuaries to overwinter. Fine-meshed nets were almost certainly used to catch the fish.

The interpretation of this find as a late Anglian or early Anglo-Scandinavian fish processing factory deserves reconsideration. First, the date of the deposit is far from certain. The stratigraphic evidence indicates that the layer could have been laid down at any time from the late Roman period until the 10th century. (A sample of the fish bone has been sent for carbon dating, results are eagerly awaited.)

Secondly, the interpretation that the layer represents refuse from a `fish processing factory' needs closer examination. Discussions with Mr Wenham have revealed the basis for the `fish processing factory' hypothesis. He suggested (pers. comm.) that the bones were the remains of fish rejected because they were too small. The many small holes in the floor of the Roman building were thought to have been used to support drying racks for the larger individuals and that a gully cut into the floor was also in some way connected to fish processing.

Today young herring and sprat form shoals of similar sized individuals, and it is exceeding unlikely that a mixed catch comprising adult herring with young herring and sprat would have been taken. It is even less likely that such a mixture of fish would have been brought to York for drying. Mixed shoals of young herring and sprat often enter estuaries to overwinter (Wheeler

1979: 172). Small clupeid fish contain large amounts of oil and rapidly go rancid in Britain, particularly in the summer. Traditionally, they were preserved by salting or smoking, not by drying immature specimens. Fish processing and preservation usually occurs at the coast not in inland towns. Cod, Gadus morhua L., ling, Molva molva (L.), and saithe, Pollachius virens (L.), (all members of the cod family, Gadidae) are the species which are most often dried. Thus, it is most unlikely that the fish from Bishophill were about to be dried or that they represent the rejected fraction of a processed catch.

It is possible that the St Mary's find is the remains of a stock of preserved fish which for some reason was never eaten. Unfortunately, it is not possible to distinguish if the fish were brought to the site pickled or salted or if they were imported fresh.

The fish may have travelled by boat to York as fresh fish and were fit for consumption on arrival. (If the fish had perished by the time they arrived in York they would have almost certainly been dumped in the river.) Considerable effort was expended to transport them to the site of St Mary's. While it is possible that they were deliberately dumped as an insult or practical joke, the enormous number of fish bones lying on the floor and in the gully may be consistent with fish processing of some kind. Evidence for the production of fish sauce in Britian during the Roman period has recently been postulated by Bateman and Locker (1982). Their description of the Peninsular House

site, London, has so many features in common with the Bishophill material that it needs consideration.

Bateman and Locker describe a drain with a contemporaneous joist and plank floor, dated to the mid 3rd century, overlain by a layer of silt, small bones and amphora sherds. The bones proved to be from young herring, sprats (none larger than 83 mm total length) and a few other species. The authors suggest that this find may represent the remains of a fish sauce factory, and they conclude that the finds provide 'more evidence for the decline of imported luxury goods and their replacement by cheaper local commodities' (ibid. 207) in the third century A. D.

In the Roman period fish (clupeid and other kinds) were transported long distances over much of Europe, in barrels or amphorae as salted or pickled fish. Amphorae containing large numbers of sardine, Sardina pilchardus (Walbaum), bones have been excavated from a Roman wreck at Randello, Sicily (A. Locker pers. comm.). At Pompeii, Italy, amphorae containing thousands of small fish of the Sparidae (sea bream family) have been recovered. Sparid bones haver also been recently recovered from the Roman well at The Bedern and at the General Accident Extension site at the junction of Tanner Row and Rougier Street (Jones forthcoming). These finds may be interpreted to indicate that there was considerable trade fish (probably preserved fish) during the Roman period.

Many classical writers describe the process whereby fish

were processed into fish sauces. Fish sauces, for example garum and liquamen, were produced in large quantities during by the Romans and used as flavouring for many dishes, both sweet and savoury. They were made from a variety of different species of small whole fish and the entrails of selected large fish. Anchovies were favoured, and it is possible that young herring (members of the same family as anchovy) were brought to York in order to manufacture fish sauce. During the period of Roman occupation quantities of fish sauces would almost certainly have been imported from the Mediterranean. It seems likely that by the end of the Roman occupation the taste for fish sauce was well-developed in York, while the trade routes to southern Europe were unreliable or non-existant. This may have prompted someone to produce fish sauces locally.

The main differences between the Peninsular House and the St Mary Bishophill Junior finds are: a) the fish were smaller; b) amphora sherds were present; and c) the London site was closer to the river. Nevertheless, the Peninsular House deposit suggests that a Roman or early post-Roman date may be appropriate for the St Mary Bishophill Junior deposit.

If the deposit is dated to the Anglian or Anglo-Scandinavian period the find is in many ways more interesting for it will be the first time that a deposit of this nature has been discovered. The pattern of fish consumption in post-Roman towns of northern Europe and Scandinavia appears to have relied mainly on species

which were locally available with the importation of some dried fish of the cod family and pickled herring. Finds of large numbers of young clupeids are as yet unknown from this period in Britain and neither historical sources or ethnographic studies have suggested that small clupeids were widely consumed during the Anglian or Anglo-Scandivavian Age.

Note

This report will be reconsidered in the light of the carbon 14 date which should be available in the next few weeks.

References

Bateman, N. and Locker, A. (1982). The sauce of the Thames. London Archaeologist 4/8, 204-207.

Hall, R. A. (1978). The topography of Anglo-Scandinavian York. p 31 - 36. In Hall, R. A. (ed.) Viking Age York an the North. Research report No. 27. Council for British Archaeology.

Wheeler, A. C. (1979). The tidal Thames. Routledge and kegan Paul.

Wilson, D. M. and Hurst G. D. Medieval Britian in 1961. Medieval Archaeology 6-7, 306-49.

Table 01

Fish bones from 100 ml of the fish bone deposit from L. P. Wenham's excavations at St Mary Bishophill Junior, York

Bone	left	right	total	Identification
Dentary	7	6	13	Sprattus sprattus L. (sprat)
	22	19	41	Clupea harengus L. (young herring)
Articular	45	43	88	Clupeidae (young herring and sprat)
Maxilla	-	-	155	Clupeidae
Otic bullae	-	-	126	Clupeidae
Ceratohyal	-	-	88	Clupeidae
Hyomandibular	-	-	80	Clupeidae
Cleithra	-	-	45	Clupeidae
Vertebrae	-	-	5120	Clupeidae