

## MANCETTER EXCAVATIONS 1977

### Tree-ring analysis

by Jennifer Hillam (February 1984)

Three oak timbers were sampled from the disused well on the west side of the earlier north-south service road. The well had served as a drainage and rubbish pit before it was sealed by a second service road in the 3rd century AD. The post and two planks (labelled 1, 2 and 3 respectively at Sheffield) were examined at the DoE Dendrochronology Laboratory in 1982.

The post was a complete trunk of radius 550-700 mm, with the bark attached. It had 20 annual rings (Table 1), sixteen of which were sapwood, and was felled in late spring or summer since its twenty-first ring was incompletely formed. Because of its short ring sequence, the sample was rejected for dating purposes.

The planks had been cut from larger, longer-lived oak trees. They may have been a metre in diameter, as their sapwood, and possibly an unknown quantity of heartwood, was removed when the timber was converted into planks. The samples had 98 and 162 rings. Allowing for the minimum amount of missing wood, the trees must have been at least 120 and 185 years old when felled.

The ring widths of samples 2 and 3 were plotted as tree-ring graphs or curves. The two ring sequences were found to be similar when they were compared visually. (A comprehensive guide to tree-ring dating is given in Baillie, 1982). Comparison using the Belfast computer programme (Baillie and Pilcher, 1973) gave a  $t$ -value of 6.4 at the position found visually. (A  $t$ -value of 3.5 or above indicates a match providing that the visual match is acceptable).

The two Mancetter curves were then compared with the following dated reference chronologies from the City of London (Hillam and Morgan, 1981): Roman London, made up from timbers from Watling Court, Thames Street Tunnel and New Fresh Wharf; New Fresh Wharf (St Magnus)/Seal House; and Peninsular House. Sample 2 gave consistently high  $t$ -values when its ring sequence covered the period 65BC-AD33 (Table 2), whilst the sample 3 sequence dated to 139BC-AD23. Taking the sapwood number in oak to be  $32 \pm 9$  (Baillie, 1982), the timbers must have been felled some time after AD56 and AD46 respectively.

The tree-ring widths of samples 2 and 3 are available from the author at the Sheffield DoE Dendrochronology Laboratory.

### Acknowledgements

The work was funded by the Ancient Monuments Branch of the Department of Environment.

### References

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- Hillam J. and Morgan R.A. 1978. Dendro dates from Sheffield. Current Archaeol 7(9), 286-7.
- Morgan R.A. and Schofield J. 1978. Tree-rings and the archaeology of the Thames waterfront in the City of London. In Dendrochronology in Europe, ed. J.M.Fletcher, BAR 551, 223-38.

Table 1: Details of timbers. Sample Nos. were given at Sheffield; sketches are not to scale.

No.	Function	Total No. of rings	Sapwood rings	Average width (mm)	Maximum dimensions (mm)
1	post	20	16	not measured	radius 550-700 with bark
2	plank	98	--	2.53	280 x 45
3	plank	162	--	1.58	320 x 75

Table 2: Summary of tree-ring dates and agreement values ( $t$ ). Roman = London Roman chronology (Hillam, unpubl.); NFW/SH = New Fresh Wharf/Seal House chronology (Morgan, 1978); Pen House = chronology from Peninsular House (Hillam, unpubl.).

No.	Date span	Felled	$t$ -values with:		
			Roman	NFW/SH	Pen House
2	65BC-AD33	after AD56	6.4	4.1	7.0
3	139BC-AD23	after AD46	4.9	3.3	5.6

#### MANCETTER-DENDROCHRONOLOGY

No.	Func-tion	No. of rings	Sapwood rings	Average width (mm)	Dimensions (mm)	Date span	felled
1	post	20	16 bark, felled summer	-	radius 5.5 - 7.0 (with bark)	-	-
2	plank	98	-	2.53	28 x 3.5 - 4.5	65BC-AD33	after AD56
3	plank	162	-	1.58	32 x 7.5	139BC-AD23	after AD46

Table: Tree-ring analysis of three timbers from the 1977 Mancetter excavations. The sample Nos. were given at Sheffield; sketches are not to scale. Sample 1 had insufficient rings for reliable dating, and the widths were not recorded. Samples 2 and 3 crossdated well with dated tree-ring chronologies from London.