Dating of oak timbers from Old Bridge Street, Kingston-upon Thames

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June 1984

Timbers from the old bridge at Kingston-upon-Thames were excavated in 1982. Timber N A comes from phase 2 of the bridge where it was used to revet the foundation of a rebuilding in stone. The remaining timbers are all piles from the revetments around the north starling (N B) and the south starling (S I, IV, VI, VII, VIII, IX) of an earlier free standing pier (phase 1). Samples from these timbers were examined at the Sheffield Dendrochronology Laboratory in 1983 and 1984.

The phase 2 timber, N A, had 84 rings of which the last 18 were difficult to measure accurately because of knots. Piles, N B and S I, had 124 and 118 rings respectively but the remaining piles had shorter ring sequences (Table 1). The widths of the latter proved impossible to measure accurately because each sample had a band of 3-6 narrow rings which could not be resolved. The piles (S IV, VI, VII, VIII, IX) were obviously contemporary but successive attempts to measure their ring widths produced different results each time. The samples were therefore rejected for further analysis, but the timbers will be kept for future reference.

The ring pattern of N B was compared with that of S I. They appeared to crossmatch when the outer ring of N B was 16 years later than that of S I. The computer comparison (Baillie & Pilcher, 1973) gave a t-value of 3.9 for that position. (A value over 3.5 indicates a match if the visual match is acceptable.) The N A ring sequence did not match with N B or S I.

The N B and S I ring widths were averaged to give the N B/S I mean curve (see Appendix 4/4). This was tested against various dated reference chronologies (Table 2). S I matched well over the period AD 996-1113, whilst the outer ring of N B was 16 years later, its ring sequence dating to AD 1006-1129. None of the timbers had sapwood rings, so it is impossible to give accurate felling dates. Studies on timbers from London and Lincolnshire (Hillam, unpubl) indicate that the minimum number of sapwood rings is not likely to be less than 13 (95% confidence limits). S I and N B are unlikely therefore to have been felled before 1126 and 1142 respectively.

The phase 2 timber was compared with all available reference chronologies including those listed in Table 2, but no reliable crossdating was found. Its ring width data, plus those from N B and S I, are set out in the Appendix.

Acknowledgements

References

Baillie MGL 1977   Dublin Medieval Dendrochronology, <u>Tree Ring Bulletin</u> 37, 13-20.

Baillie MGL & Pilcher JR 1973   A simple crossdating program for tree-ring research, <u>Tree Ring Bulletin</u> 33, 7-14.

Becker B 1981   Füllungsdaten Römischer Bauhölzer, <u>Fundberichte aus Baden-Württemberg</u> 6, 369-86.

Fletcher JM 1977   Tree-ring chronologies for the 6th to 16th centuries for oaks of southern and eastern England. <u>Journal Archaeological Science</u> 4, 335-52.

Hollstein E 1980   <u>Mitteleuropaische Eichenchronologie</u>, Zabern, Mainz. 273pp.

Table 1: Details of the timbers. None of the samples had sapwood rings; sketches not to scale. Asterisks – ring sequence may contain errors.
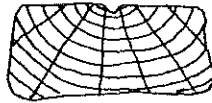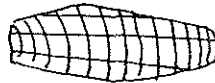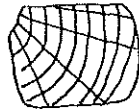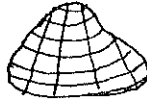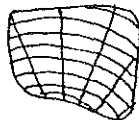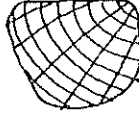
sample no	no of rings	average ring width (mm)	sketch	maximum dimensions (mm)
Phase 2				
N A	66+18	2.1		290 x 130
Phase 1				
N B	124	2.0		240 x 140
S I	118	1.9		390 x 170
S IV	50*	2.7		160 x 160
S VI	53*	3.2		240 x 180
S VII	65*	2.6	KNOT	160 x 140
S VIII	60*	2.9		190 x 150
S IX	58*	2.5		150 x 150

Table 2: Summary of t-values.

Reference chronology	N B (1006-1129)	S I (996-1113)	N B/S I mean curve (996-1129)
Britain (Baillie & Pilcher, pers comm)	3.8	2.6	3.9
Dublin (Baillie, 1977)	-	-	3.2
England (Baillie & Pilcher, pers comm)	3.3	3.5	4.1
South Germany (Becker, 1981)	4.5	2.2	4.3
West Germany (Hollstein, 1980)	3.8	2.7	4.5
Ref 6 (Fletcher, 1977)	5.4	4.7	6.2

KINGSTON
KINGNA
56

1	-	99	91	120	76	68	84	132	111	71	112
11	-	110	109	75	66	85	86	116	136	98	105
21	-	102	139	113	89	90	96	114	154	174	139
31	-	144	113	69	61	38	71	79	65	79	71
41	-	71	89	93	121	122	128	115	131	89	72
51	-	90	85	62	32	60	39	30	22	45	66
61	-	64	59	102	72	56	79				

COMMENT --   RATHER KNOTTY
         -   undated

WIDTHS OF LAST 18 RINGS NOT MEASURED

KINGSTON
KINGNB
124

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  1   -  170 221 244 183 176 114  87 110  72 110
 11   -   82 107 145 110 110 139 112 199 111 111
 21   -   97  78  49  71 105  62  95  93 110 116
 31   -  106 161  76  89 122 104  76  60  75 114
 41   -   75  87  67  74  76  64  82  96  79 119
 51   -   83  59 121  90  87 106  91 132 133 156
 61   -  103 156 146  94 117 133  84 128 106  76
 71   -  105  88  82  99 125  70 132 109  71 107
 81   -  106  94 112  65 102  90  92 113 114  85
 91   -  139 123  81  95 121  83  84  87  51  69
101   -   68  52  72  58  52  47  59  82  81  71
111   -   71  63  67  68  80  44  55  71  52  37
121   -   48  68  72  49
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COMMENT -   RINGS NOT ALWAYS READILY DISTINGUISHABLE FROM RING 70

-    AD 1006-1129

KINGSTON
KINGS 1
118

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1    -  107  92   57   80   75   57   77   91   96   84
11   -  105  90   78   112  84   74   70   126  99   108
21   -  94   113  115  91   95   96   108  112  119  83
31   -  97   79   94   96   90   79   63   62   46   63
41   -  80   91   63   79   74   77   61   73   51   73
51   -  101  89   51   65   43   56   90   74   65   85
61   -  76   50   83   72   76   60   74   81   89   59
71   -  86   83   83   68   82   77   67   82   77   63
81   -  92   65   48   67   67   60   51   92   68   84
91   -  88   65   58   53   59   75   77   83   76   74
101  -  89   66   81   68   116  88   96   88   98   101
111  -  102  71   119  72   105  103  90   120
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COMMENT -   RING 107 - SMALL VESSELS

         -    AD 996-1113

LONDON
KINGSTON SI NB
134

1	-	107	92	57	89	71	57	-	71	56	69
11	-	137	155	161	147	130	94	76	118	85	107
21	-	88	110	136	106	107	117	110	153	113	97
31	-	57	78	71	80	92	76	79	77	78	89
41	-	93	126	89	84	93	90	68	60	63	93
51	-	88	88	59	69	89	70	80	55	72	102
61	-	82	54	102	81	81	82	87	106	111	104
71	-	94	119	114	81	99	106	78	105	91	72
81	-	93	76	65	83	96	65	71	100	69	75
91	-	97	79	85	59	80	82	94	98	95	81
101	-	114	94	81	81	118	85	90	87	74	85
111	-	85	61	95	65	78	75	74	101	81	71
121	-	71	63	67	68	80	44	55	71	52	37
131	-	48	68	72	49						

INCLUDES SI & NB - AD996-1129   SI/NB mean curve