ANCIENT MONUMENTS LABORATORY

REPORT
1872

SERIES/No CONSULTANT

AUTHOR Ruth A Morgan Dec 1975

TITLE SOUTH WITHAM
Lincs Dendrochronology

South Witham, Lincs. - dendrochronology.

Ruth A. Morgan Dec. 1975

One timber from a twelfth century mill structure at South Witham was submitted for dendrochronological analysis; the beam (SN 1568 629) was of oak (Quercus sp.) and formed a roughly split and hewn trunk which was rectangular in cross-section. The pith remained but all the outer sapwood had been lost or trimmed off. Seventy four annual growth rings proved to be measurable along the 11cm. radius, the rings averaging 1-2mm. in width, yet fluctuating from year to year. The plotted curve of the growth pattern thus appeared suitable for cross-dating.

Several contemporary individual or mean curves are available from various parts of England and Western Europe which have already been dated by dendrochronological methods. One mean curve of 163 years from excavated timber in York has been tentatively dated to A.D. 1196, and another from waterfront excavations on the Thames in London is almost identical to the West German reference curve (Trier area) by which it is dated to A.D. 1021-1179 (originally determined by J.M. Fletcher). These and other as yet unpublished curves were compared to the curve for the South Witham timber both visually and by means of a computer program which objectively measures the level of similarity between two curves.

Reasonable matches occurred with South Witham, York and London which placed the final measurable ring of the South Witham curve in A.D. 1137; computer correlation values were 60.3% with York and 65.1% with London. For three reasons, the final estimated date of A.D. 1160 - 1170 can only be tentatively proposed at present:

1. Dating can be achieved with a higher level of certainty

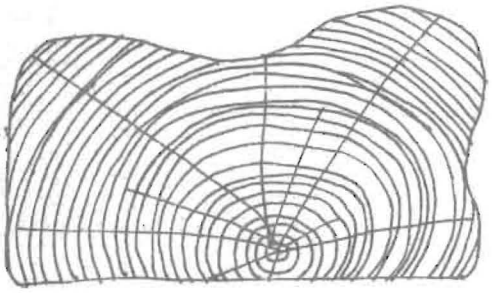
when using a mean curve based on several timbers from different trees rather than on one timber.

2. Comparative material in England is as yet dated by means of the German master curves until such time as a reference curve extending back from the present day can be established using English material from various regions. In the north, matching of curves is proving particularly difficult.

3. The actual felling date of the timber can be ascertained quite accurately only if some sapwood remains on the outer edge of the timber; sapwood retains a uniform width of about 25 growth rings and allows an estimate to within $\pm$ 5 years of the felling date. In the absence of sapwood, an unknown quantity of heartwood has also been lost or removed, as in this case. However, assuming the sapwood boundary to be very close to the final measurable ring, the South Witham timber would have been felled in about A.D. 1160-1170; the actual date could be later but is unlikely to be earlier than this.

South Witham - annual ring width values for timber SN 1568/629. 0.1mm.

	1	2	3	4	5	6	7	8	9	10
0	7.0	12.0	12.0	13.0	8.0	6.0	5.0	7.0	9.0	15.0
10	12.0	15.0	18.0	19.0	17.0	19.0	18.0	14.0	19.0	13.0
20	12.0	13.0	12.0	9.0	16.0	20.0	13.0	10.0	11.0	12.0
30	18.0	9.0	14.0	15.0	21.0	19.0	15.0	9.0	9.0	13.0
40	12.0	11.0	10.0	18.0	15.0	17.0	15.0	20.0	16.0	14.0
50	13.0	16.0	14.0	18.0	16.0	14.0	13.0	8.0	7.0	10.0
60	12.0	14.0	13.0	15.0	13.0	10.0	11.0	12.0	12.0	12.0
70	13.0	14.0	9.0	12.0						



dimensions: 17 x 9cm.

radius 11cm.