

it quickly became apparent that the X-ray CT scanner allowed the structure of the wood to be seen quite clearly. Measurement off the photographs allowed the ring sequence to be obtained non-destructively.

The result was that one evening in July, about 40 timbers from the Billingsgate waterfront were taken to the Mount Vernon Hospital scanner centre. Some of these were further trial pieces and the rest were the planks. The timbers were all X-rayed in about 3 hours and the images were stored on disc to be processed at Picker's headquarters.

Limitations and successes

It appears that several factors affect the resolution of the image. The lower end of the machine's resolution of tree-rings is about 1mm, restricting the application of the technique to faster grown timbers. However, trees with all their rings over 1mm wide are not uncommon. Another important factor is the difference in density between the spring growth and the summer growth of a particular timber. All trees differ in this respect, but more important is the length of time and the conditions under which they have been buried. The medieval timbers from Billingsgate gave better contrast than the Roman timbers from Sipson.

The timber shown in Fig. 2 has no rings less than 1mm wide and has good contrast between the spring and summer wood. This is the first archaeological timber to be dated without optical examination of the tree-rings. From left to right across the photograph the rings go from AD 1105 to AD 1177. Another slice of the same tree ended with the heartwood/sapwood boundary at AD 1179. This gives an approximate felling date for the waterfront of between AD 1190 and AD 1235. These results and others will be provided for Jennifer Hillam at Sheffield who is dating the rest of the timbers from Billingsgate.

Future possibilities

I am not suggesting that this technique should be applied to many timbers as it is expensive and time consuming and will not successfully date all timbers

that can be dated by normal techniques. Only where it is impossible to obtain the ring sequence any other way can it be considered. It might be potentially most useful for turned objects such as bowls or for planked objects such as boats. The physical limitations are that the object should not be more than about 0.5m by 0.3m (20in by 12in) in cross section nor more than 3m (10ft) long.

When scanners were first produced they did not have the resolution needed for this sort of study. As the technology has improved they could probably be used now for about half the timbers excavated, the rest being too narrow-ringed for the resolution. The use of density plotting functions in the scanners allows the rings to be shown where it may otherwise be difficult. An example of such a plot is shown on the bottom of Fig. 2. The relative horizontal distance between the peaks on the plot is a measure of the ring widths.

Another possible use for such a machine is as a check on PEG penetration during conservation. It is always difficult to ensure that the PEG has reached the centre of an object and this has unfortunate results on its long term stability. The technique could be useful as a quick way of checking the results of conservation.

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Local Societies – amendments

THE THIRD SET OF amendments to the list of local societies (Vol. 4, no. 15, 403-4) is as follows:

Beddington, Carshalton & Wallington Arch. Soc. Sec. Miss M. Pugh, 57 Brambledown Road, Wallington, Surrey.

The Essex Society for Archaeology and History (formerly The Essex Archaeological Society) Membership Sec. Mr. R. W. Coleman, 23 Somerville Gardens, Leigh-on-Sea, Essex SS9 1DD.

Kingston upon Thames Arch. Soc. Sec. Marilyn Bellidori, The

Garden Flat, Argyle Mansions, 37 The Avenue, Surbiton, Surrey.

Nonsuch Antiquarian Soc. Sec. Mrs. P. Bedwell, 37 Seymour Avenue, Ewell, Surrey.

Change of address:

Islington Arch. & Hist. Soc. Sec. Peter Watkins, c/o Resident Clerks' Flat, Main Building, Ministry of Defence, Whitehall, S.W.1.