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Ancient Monuments Laboratory
Report 55/87

# THE IDENTIFICATION OF WOOD FROM ARTEFACTS EXCAVATED BY THE D.U.A. AT LONDON SITES: BILLINGSGATE MARKET LORRY PARK/ LOWER THAMES ST. EC3, 1982.

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Summary

Charred and waterlogged wood samples from 96 artefacts, mainly from the medieval and post-medieval periods, were examined and identified using comparative anatomical methods.

The results indicated that while species native to Britain were utilised for most items several woods originated from Europe, the Mediterranean region and S.E. Asia.

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WOOD IDENTIFICATION OF ARTEFACTS FROM BILLINGSGATE MARKET LORRY PARK/LOWER THAMES STREET EC3 1982

## Introduction

Waterlogged wood samples including 3 of charred wood were prepared for examination. The carbonised samples were air-dried and pressure fractured to expose transverse, tangential longitudinal and radial longitudinal surfaces. These were mounted in plasticine on microscope slides and examined using an epi-illuminating microscope.

Much of the waterlogged wood was in a very poor structural condition with considerable cellular collapse. Fungal hyphae and spores were present in many samples. This material was frozen prior to sectioning to give added support.

Thin sections were taken, using a razor blade, in the transverse, tangential longitudinal and radial longitudinal planes. These were mounted in 50% glycerine on microscope slides and examined using a light microscope. Cell morphology and wall details were compared and matched with authenticated reference material.

## Results

The samples were found to be similar in structure to named reference material as follows:

Con 1153 AN 5904 post-medieval - Quercus sp, oak.
Con 1193 AN 1591 post-medieval - Fagus sp, beech.
Con 6945 AN 5841 - Quercus sp.
Con 4208 AN 5950 - Quercus sp.
Con 3077 AN 5952 - Quercus sp.
Con 6980 AN 5848 - probably immature Quercus sp but could not rule out the possibility of Castanea sp, sweet chestnut as there are no broad rays visible in the sample.
Con 7005 AN 5867 - Quercus sp.
Con 1053 AN 5894 post-medieval - a conifer, probably Pinus sp, pine.
Con 2090 AN 4793 - Taxus sp, yew.
Con 2209 AN 2347 - Quercus sp.
Con 1153 AN 5889 post-medieval - Quercus sp.
Con 1153 AN 5892 post-medieval - Corylus sp, hazel.
Con 6829 AN 5864 - family Rosaceae subfamily Pomoideae which includes Malus sp, apple; Pyrus sp, pear; Crateagus sp, hawthorn.
Con 1535 AN 2264 post-medieval bung - Alnus sp, alder.
Con 5285 AN 5865 - possibly Prunus sp, cherry and blackthorn.
Con 1668 AN 2319 medieval handle - Buxus sp, box.
Con 1263 AN 2274 - Fraxinus sp, ash.
Con 4458 AN 5888 - 12 fragments - 7 Quercus sp and 5 Fagus sp.
Con 5595 AN 6043 - 2 fragments Quercus sp.
Con 3363 AN 5935 - Fagus sp.
Con 494 AN 5845 post-medieval - partially charred - Pinus sp (sylvestris group).
Con 5588 AN 5879 medieval stake - structure very collapsed, possibly Quercus sp but it is not possible to confirm.
Con 5627 AN 5885 medieval - Quercus sp.
Con 1535 AN 5873 medieval - Ulmus sp, elm.
Con 1808 AN 6045 medieval - Picea sp, spruce or Larix sp, larch. It is not possible to separate these by anatomical methods alone.

Con K53 AN 5896 post-medieval - family Salicaceae which includes Salix sp, willow and Populus sp, poplar. It is not possible to separate these genera by the anatomical structure.
Con 1153 AN 5899 post-medieval - carbonised wood - Carpinus sp, hornbeam.
Con 1153 AN 2155 bung - probably family Salicaceae.
Con 1274 AN 1196 - Pinus sp (sylvestris group).
Con 1153 AN 5903 post-medieval - possibly Castanea sp or Quercus sp.
Con 770 AN 1777 post-medieval - probably Pinus sp.
Con 1153 AN 5890 post-medieval wedge - Quercus sp.
Con 494 AN 5870 post-medieval - Charred wood - Fagus sp.
Con 5269 AN 5863 - Quercus sp.
Con 1153 AN 5887 post-medieval - Quercus sp.
Con 6980 AN 5838 - very collapsed and compressed, possibly Quercus sp.
Con 1153 AN 2153 peg - very poor condition possibly Corylus sp, hazel but could not rule out Alnus sp, alder.
Con 4068 AN 2774 medieval hollow tube - Sambucus sp, elder.
Con 5772 AN 5859 - Quercus sp.
Con 5303 AN 2809 medieval bung - a metal deposit over the surface of the sample prevented a transverse section being taken so a tentative identification only can be given of Alnus sp.
Con 1808 AN 5925 barrel stave - oak.
Con 3137 AN 2666 - medieval bowl - Fraxinus sp.
Con 1535 AN 2257 post-medieval bung - Family Salicaceae.
Con 1389 AN 1606 post-medieval - Fraxinus sp.
Con 919 AN 1641 post-medieval bung - family Salicaceae.
Con 1625 AN 2256 post-medieval bung - rather bad condition, probably Alnus sp.
Con 3533 AN 2724 medieval - Pinus sp (sylvestris group).
Con 770 AN 1778 post-medieval - Pinus sp (sylvestris group).
Con 2244 AN 5951 - Quercus sp.
Con 1153 AN 5905 - post-medieval - Alnus sp.
Con 1535 AN 2259 - post-medieval bung - Quercus sp.
Con 2515 AN 2261 medieval handle - Corylus sp.
Con 1123 AN 2263 post-medieval - Fagus sp.
Con 1153 AN 2154 bung - this sample is composed of corky cells similar to those in the bark of Quercus suber, cork oak.
Con 1623 AN 2265 post-medieval bung - Fraxinus sp.
Con 770 AN 5837 post-medieval - Quercus sp.
Con 1535 AN 2258 post-medieval bung - family Salicaceae.
Con 3120 AN 2469 medieval probably Quercus sp.
Con 3137 AN 2669 medieval - some structure obscured by fungal spores but probably Sambucus sp.
Con 2897 AN 2395 - medieval handle - possibly family Salicaceae but condition of sample too poor to confirm.
Con 3248 AN 2775 medieval - Alnus sp or Corylus sp, structural condition too poor to be more positive.
Con 3521 AN 4868 - Quercus sp.
Con 2276 AN 2213-3 frags - Quercus sp.
Con 312 AN 5880 medieval - Pinus sp.
Con 770 AN 1780 post-medieval - Pinus sp (sylvestris group).
Con 3561 AN 2447 medieval stopper - possibly family Salicaceae but condition too bad to confirm.
Con 1780 AN 2361 medieval - Pinus sp (sylvestris group).
Con 582 AN 1610 post-medieval barrel stave - Quercus sp.
Con 3394 AN 2584 medieval - Taxus sp, yew.
Con 1780 AN 2365 medieval handle - Fraxinus sp.
Con 1193 AN 1585 - Fagus sp.
Con 2699 AN 2764 medieval barrel - Quercus sp.
Con 919 AN 1694 post-medieval - Quercus sp.

Con 5998 AN 3707 pin - probably Cedrus sp, cedar or Abies sp, silver fir but the condition of the sample is very poor.
Con 1628 AN 2146 post-medieval handle - family Salicaceae.
Con 2446 AN 4872 vessel - Alnus sp.
Con 2278 AN 2781 medieval hollow tube - structure obscured with fungal spores, probably Sambucus sp, but could not rule out Prunus sp cherry or blackthorn.
Con 6246 AN 5871 medieval - Pinus sp (sylvestris group).
Con 2987 AN 2397 medieval grooved cog or bead - Fraxinus sp.
Con 2577 AN 3507 antler base with hole drilled horizontally and filled with a wooden peg - Acer sp, maple and sycamore.
Con 54/67 AN 3032 medieval - Pinus sp (sylvestris group).
Con 2284 AN 2354 medieval - Fraxinus sp.
Con 4045 AN 2583 medieval bowl - Alnus sp.
Con 2938 AN 2413 medieval wooden stopper - probably Acer sp, but condition very poor.
Con 3394 AN 2601 medieval - Buxus sp, box.
Con 2854 AN 1971 roll of bark - morphologically this is very similar to birch bark (Betula sp) but the condition if such that it is impossible to confirm anatomically.
Con 4456 AN 2758 medieval - thin board - Family Dipterocarpaceae with the closest match to Anisoptera sp.
Con 2505 AN 2340 bowl - Acer sp.
Con 2012 AN 2151 bowl - Fraxinus sp.
Con 1153 AN 5886 post-medieval - Quercus sp.
Con 4964 AN 4001 - Fraxinus sp.
Con 4420 AN 5853 medieval - probably Quercus sp.
Con 2941 AN 2760 medieval bung - Taxus sp.
Con 4371 AN 2797 Roman writing tablet - Fagus sp.
Con 6246 AN 5871 medieval - Pinus sp.
Con 2941 AN 2760 medieval bung - a conifer (softwood) but the condition is too poor to identify to a genus.

## Discussion

This site has yielded wood samples representing over 20 genera. They are listed below.

### Genera native to Britain

Acer campestre - field maple.
Alnus glutinosa - alder.
Betula spp - birch.
Buxus sempervirens - box.
Carpinus betulus - hornbeam.
Corylus avellana - hazel.
Crataegus spp - hawthorn.
Fagus sylvatica - beech.
Fraxinus excelsior - ash.
Malus pumila - apple.
Pinus sylvestris - pine.
Popular spp - poplar.
Prunus avium - cherry.
Pyrus communis - pear.
Quercus spp - oak.
Salix spp - willow.
Sambucus nigra - elder.
Taxus baccata - yew.
Ulmus spp - elm.

Genera introduced or imported as timber
Abies spp - fir.
Acer spp - sycamore and maple.
Anisoptera sp.
Castanea sativa - sweet chestnut.
Cedrus spp - cedar.
Larix spp - larch.
Picea spp - spruce.
Quercus suber - cork oak.

Some closely allied genera are so similar in structure that it is not possible to separate them by anatomical methods alone and difficulties arise in identification. For instance, this applies to the subfamily of family Rosaceae (Malus, Pyrus and Crataegus) and family Salicaceae (Salix and Populus). Similar problems occur in some softwoods as with Picea and Larix both of which were introduced from N Europe.

Two other conifers, Cedrus native to the mounains of Atlas and Lebanon and Abies from N Europe, are usually separated anatomically by minute cell wall features such as the shape of the tori in the tracheid pitting. However, in archaeological samples infiltration by fungal hyphae and breakdown of the cell walls often obscures such small details.

Quercus and Castanea, both members of the family Fagaceae, which are very similar in most respects differ in that while Castanea has only uniseriate rays Quercus has uniseriate and multiseriae rays. However it is possible for very immature Quercus to have only uniseriate rays; also when sampling small fragments from a large piece of material it is possible for the fragment to originate from an area between two broad rays therefore giving the impression of being uniseriate. Although Castanea is a valuable timber it is used relatively infrequently in comparison to Quercus, hence the caution in naming the two samples from this site.

The suberised cork cells in the bark of the mediterranean cork oak, Quercus suber produce a waterproof material very suitable for use as bungs and stoppers. This species has been exploited throughout history for this property.

An interesting inclusion in the samples from this site is a member of the family Dipterocarpaceae. This family native chiefly to Indomalaysia has many important timber trees. The genus Anisoptera has 13 species in Assam, SE Asia and Malaysia.