



**Illus 1** This map shows the distribution of *t*-values for correlations between French chronologies and the master barrel chronology (a chronology composed of the three separate barrel chronologies). The highest correlations are with chronologies from Troyes (9.1), Cluny (6.64), Amiens (6.58) and Laon (6.52) (*t*-values over 3.5 are considered significant).

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# A tale of three tuns: a 12th-century French barrel from the High Street, Perth

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## Introduction

Since the Roman period when coopered barrels were first manufactured they have been used to transport all manner of goods around Europe. They often ended their lives as linings for wells and are a relatively common feature of many urban Roman and medieval excavations.

As most barrels will have had a long life before their final re-use in the well the archaeological value of a tree-ring date from the staves is lessened, and it is further reduced as the sapwood will usually have been trimmed from the stave. Their analysis can provide valuable *termini post quem* dates for well construction but the value of tree-ring dating barrels probably lies more in the evidence they can provide for trading networks. By comparing the tree-ring sequences with locally derived chronologies from all over Europe it is often possible to provenance the wood, thereby identifying trade connections. For instance, in Scotland only one other barrel, from the Gallowgate in Aberdeen, has been dated, providing a *terminus post quem* date of AD1335 and indicating that it was probably fabricated in the second half of the 14th century AD (Crone 2001). Dendro-provenancing demonstrated that the barrel had come from northern Poland, probably as part of the first wave of trade between the East coast Scottish ports and the eastern Baltic ports which had started soon after the Sound between Denmark and Sweden had opened up to shipping (Ditchburn 1988, 165).

## The barrel from the High Street, Perth

During excavations in the High Street, Perth in 1975 a barrel (Accession No A05-0003a-r), which had been used as a well lining, was recovered from some of the earliest deposits on the site. It was recorded and conserved, and now forms part of the collections at Perth Museum and Art Gallery. As part of a programme to re-examine the earliest phases of activity on the site and determine whether there was evidence for pre-burghal

settlement in Perth (Hall and Hall forthcoming—timbers from the earliest deposits were sought for dendrochronological analysis. As the barrel came from Phase II it was considered a suitable candidate and was analysed along with a group of other structural timbers (Crone 2000).

## Sampling

The barrel staves had already been conserved in acetone rosin for display purposes and so sampling had to be non-intrusive. The end of each stave was finely sanded to clarify the ring-pattern and then the surface was swabbed with acetone to remove rosin from the large springwood pores. Layers of silicon rubber were then applied to the end of each stave and allowed to harden before being peeled off. The resultant cast 'captured' the tree-ring pattern for measurement in the laboratory. Eight of the eighteen staves were sampled in this fashion and the successful dating of the barrel can be taken as a measure of its efficacy.

## Results

All the stave sequences produced very good visual and statistical correlations with each other and an internally robust chronology, BARRELX8, 158 years long, was constructed. Initially, this chronology could not be dated against any existing chronologies from Britain and Europe. It was argued that the barrel might indeed date to an earlier period for which there are currently no well-replicated, local chronologies available, native Scottish chronologies only extending as far back as the early 10th century (Crone 2000).

Recently, new tree-ring data has become available which has now made it possible to date the High Street barrel and to identify its provenance. A chronology from a barrel excavated on the Guildhall site in London (Bateman 2000) had been dated against chronologies from northeastern France to AD 998–1128 (Ian Tyers pers comm). The Guildhall barrel produced significant correlations with the Perth barrel chronology (see Table 1), dating the latter to AD 964–1121.

Table 1 Statistical correlations between the barrel chronologies.

	Ribe	London	Perth
Ribe	–		
London	12.03	–	
Perth	9.84	9.34	–

A further trawl of European data produced another barrel, this time from Denmark, whose history of investigation was similar in many respects to that of the Perth barrel. The barrel from Ribe had been excavated in 1963 and had lain in a museum for many years (Orla Hylleberg Eriksen pers comm). It was analysed in the early 1990s and the resulting chronology matched weakly with English chronologies, dating it to AD 963–1147. However, it correlated very strongly with the Perth and Guildhall barrels (Table 1), suggesting that they had all come from the same general region.

Comparison with other European chronologies has now identified this region as north-eastern France, roughly Burgundy and the Paris Basin (Illus 1). One of the staves in the Ribe barrel had retained a few rings of sapwood; using the sapwood estimate of 15–43 rings for French oak (Hillam *et al* 1987) we can calculate that the trees used in making the Ribe barrel were probably felled sometime between AD 1151 and AD 1179. As sapwood did not survive on either the Perth or Guildhall barrels we cannot calculate how many growth rings have been trimmed off. However, the addition of the minimum number of sapwood rings for French oak provides us with *termini post quem* of AD 1136 and AD 1143 respectively for the manufacture of the Perth and the Guildhall barrel. As allowance must be made for missing heartwood rings it seems most likely that all the barrels were manufactured sometime in the second half of the 12th century.

The few barrels that have been dendro-dated are mostly 14th-century and later, such as the Aberdeen barrel or the large group of 15th-century barrels from Raversijde, in Belgium (Houbrechts and Pieters 1999). At a recent conference of European dendrochronologists, information about other early barrels was elicited but none was forthcoming, leading us to believe that this group of barrels may be the earliest dated medieval examples known.

## Discussion

The 12th century saw a rapid expansion of economic activity across western Europe and the barrels were probably part of the increasing volume in trade at that time. As few documentary records of international trade survive for this period (Postan 1987, 206) these barrels provide vital material evidence for trading connections.

Given the region that the wood came from it seems most likely that the barrels carried wine. Wine was produced throughout Europe but by the early Middle Ages the commercial production of wine had become concentrated in a handful of regions, notably Poitou, Gascony, the Rhineland and Burgundy where a highly specialised viticulture was practised (Postan 1987, 172). The market for Burgundy wines lay mainly in northern Europe and barrels were carted from the region to the navigable tributaries of the Seine along which they were taken to the markets of Paris and Rouen (Pounds 1994, 397; Illus



Illus 2 Wine merchants. (Woodcut: unknown source; <http://www.pbm.com/~lindahl/food-art/>)

2). It seems most likely that the barrels were then exported out through Bruges (Ditchburn 2000, 154).

The trade in wine is unlikely to have ever completely ceased, even during the supposed contraction in commerce following the fall of the Roman Empire (McCormick 2002, 651), and some must always have found its way to Scotland, if only for liturgical use. Nevertheless, the presence of the new Anglo-French elite introduced into Scotland by David I and his heirs, will doubtless have increased the demand for wine in the 12th century, thereby stimulating trade and the growth of the Scottish economy (Duncan 1975, 509).

The expansion in trade across Europe also transformed the Scottish economy and provided an important source of royal revenue. Customs duties were imposed by the Scottish kings possibly as early as the late 11th century and these included, *inter alia*, 4d on a tun of wine (Stevenson 1988, 180). It is assumed that the wine was French—certainly wine was France's major export to Scotland by the 13th century (Stevenson 1988, 184); the Perth barrel now indicates which region was supplying at least some of this wine.

The French barrel adds to the assemblage of imported objects which have been found during excavations in Perth. These include pottery from Denmark, Germany and France, silks from Spain, pilgrim badges from Santiago de Compostella and jet objects which may have come from the Baltic (Hall and Chenery this volume), all testimony to the vibrant trading life of the medieval burgh.

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## Abstract

*A barrel found during excavations at the High Street, Perth, has been dated by dendrochronology. The barrel chronology correlated very strongly with chronologies from a barrel found in Ribe, Denmark, and with a barrel found at the Guildhall, London. Analysis indicates that this group of barrels was manufactured in north-eastern France, sometime in the later half of the 12th century. Given the origin of the barrels, it seems most likely that they carried wine.*

## Keywords

barrel  
dendrochronology  
wine  
trade

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