

**A German stoneware drinking jug, probably from the 15<sup>th</sup> century**



Unbroken items of British pottery from the medieval period (up to around 1500 AD) are scarce objects and on the rare occasions when they come up at auction they sell for correspondingly high prices. They were made of earthenware, which is quite fragile, and they naturally tended to be used until they were broken. In fact most tableware in the middle ages was wooden, and the British pottery of that time was mainly jugs and cooking pots. However, in Siegburg in Germany around 1300 AD the potters started producing fully vitrified stoneware, which was more robust and didn't need to be glazed to be leakproof. This was the first fully vitrified stoneware to be made in northern Europe and it changed the market for pottery. It became very popular and exported widely, including to Britain, and prompted other potters in Germany, across northern Europe and, eventually, Britain to produce stoneware in order to compete. Near the end of the medieval period in Britain there was a major shift away from using wooden dishes and drinking vessels to using pottery instead for tableware. It has been said that this was mainly driven by a reduction in the cost of pottery compared with wooden tableware, but it seems likely that the arrival of German stoneware at this time encouraged the change.

The pot in the picture above is 19 cm tall and was made in Siegburg, probably before 1500 AD. It is difficult to be precise about its date as the styles of Siegburg pots did not change greatly between 1300 and 1500 AD. Although it is shaped like a small jug, its size indicates that it is for drinking. This was a common shape for a pottery drinking vessel at the time and

such pots are often referred to as drinking jugs. The base has a crimped 'pie-crust' finish, made by pinching the corner between the wall and the base. This was usual on Siegburg pottery until around 1550 and quite a common way in medieval times of strengthening this position and widening the base in a decorative way. These finger marks are quite an evocative point of contact with the original potter – my fingers fit snugly into the pinch marks on this pot, thumb underneath and index finger on top. Archaeologists have analysed the finger imprints on the bases of many Siegburg pots to identify variations in technique. Interestingly they found that about 10% of the pots were made by left-handed potters, which is broadly consistent with the underlying prevalence of left handedness in the population.

There are spiral marks running up most of the wall, which are seen on all early Siegburg pottery – presumably created during the finishing of the pot and considered a decorative feature. There is no glaze on the pot, but there is a slightly shiny orange flashing on one side caused by the impact of the flame in the kiln. One of the most attractive features of this pot to me is the way that the shape of the flashing reflects the contours of the pot's form – it is easy to visualise the flame licking the surface of the pot during the firing. The other side of the pot has a patchy grey surface, indicating a sooty reducing atmosphere in the final stages of firing.

#### A brief note on stoneware

Almost all commercial tableware nowadays is stoneware and most studio potters use stoneware clay, but the story of how stoneware came to replace earthenware in many parts of the world is not often told.

First a little science: At high enough temperatures some components within a clay will start to melt and fill the gaps between the grains of clay with a fluid which becomes glassy when it cools. With most natural (i.e. not blended) clays this melting happens quite quickly and a pot will collapse under its own weight at these temperatures. Gases may also be generated at high temperatures which will form large blisters or 'bloats'. In a few natural clays, especially if they have low iron content, this melting takes place more slowly, over a wider temperature range, so they don't immediately collapse. If the kiln can achieve the necessary high temperatures then pots made from these clays can have a lot of this glassy component (i.e. they are 'vitrified') and a low porosity. Once cooled they are robust and hard-wearing and, if porosity is low enough, they don't need a glaze to be leakproof; they are stoneware.

Before the days of specially blended clays, to be able to make stoneware you had to be lucky and have access to suitable deposits of stoneware clay. You also had to have good kilns which could reach 1200°C or higher. The Chinese were the first to achieve this around 1500 BC, firing low iron clays to around 1200°C and producing pottery with a hardness approaching that of modern stoneware. This remained an elite product for a long time and it was not until about 600 AD that stoneware became used for everyday pottery in China. From China, the knowledge to make stoneware spread to Korea and then to Japan in the 4<sup>th</sup> or 5<sup>th</sup> century AD. In the 10<sup>th</sup> and 11<sup>th</sup> century the Islamic world succeeded in making fritware, which can be classed as a stoneware, in their attempts to copy Chinese porcelain.

Independently of Chinese and Islamic developments, at various places in Europe some potteries were finding that the clays they used for earthenware could be fired successfully to higher temperatures to produce a more robust product. In Roman Britain, kilns in the New Forest and in Derbyshire were firing pottery to high temperatures (up to 1250°C) and producing pottery close to stoneware. The Roman kilns in these two areas were larger than most, providing room for the increased amounts of fuel and air needed to fire to higher temperatures. However, following the departure of the Romans the know-how to make such kilns appears to have been lost from Britain for several centuries.

The first truly vitrified stoneware to be made in northern Europe was made at Siegburg in Germany. They started making earthenware at Siegburg late in the 12<sup>th</sup> century AD and, as they developed their kiln technology, they gradually increased their firing temperatures, producing something close to stoneware by the middle of the 13<sup>th</sup> century, until they achieved fully vitrified stoneware by around 1300, when they were firing their kilns to 1300°C or even 1400°C. This progress has been tracked by archaeologists excavating the waste heaps of old potteries along the main pottery street of Siegburg.

By the 16<sup>th</sup> century stoneware was produced in a wide region across northern Europe, from Normandy to the Czech Republic. Archaeological studies of old kilns in Woolwich, London, have shown that potters there were attempting to make stoneware with imported clay in the middle of the 17<sup>th</sup> century. In 1672 John Dwight, at Fulham, received a patent following the first successful production of English stoneware. From this start, in time the British stoneware industry grew to dominate the world markets.

The switch in the market from earthenware to stoneware was not irreversible though. In fact the nascent stoneware industry in France was killed by the fashion for highly decorated tin-glazed earthenware. In the UK, Wedgwood's creamware took the market from the less refined salt-glazed stoneware and across Europe the luxury end of the market was taken over by porcelain – first from China and then later made in Europe.

It is said that there was no stoneware pottery in the Americas before Columbus. In the 1720s Andrew Duche in Philadelphia was the first potter of the colonists to make stoneware. Initially the British colonists in North America were supplied by cheap stoneware from England and there was little incentive to make their own. After the revolution this changed. The development of stoneware pottery in the US is a nice illustration of the geographic variation in the availability of stoneware clays. There are good deposits of stoneware clays in New York state, New Jersey, Pennsylvania and in a band across the southern states from South Carolina to Texas, but no stoneware clays at all in New England. Eventually stoneware industries did develop in New England by importing the clay from other states, but this was only economic for large industrial ventures. Smaller New England potters tried saving money by firing at lower temperatures and blending with the local earthenware clay, with the result that their 'stoneware' was often porous. In contrast, the country potters in the southern states successfully switched from earthenware to stoneware early in the 19<sup>th</sup> century (some, like Alabama, made only stoneware from the first days of colonisation). By the end of the 19<sup>th</sup> century stoneware had replaced earthenware for tableware and storage vessels across the US.

Another driver in the switch from earthenware to stoneware in the 19<sup>th</sup> century was the growing realisation that the toxic lead in earthenware glazes could leach into food. Stoneware glazes do not contain lead.

The early days of the studio pottery movement in Britain were strongly influenced by the British tradition of slip-decorated earthenware and Leach and Cardew both started out making earthenware. Leach switched over to stoneware in 1937 and Cardew held out until 1959. Eventually Cardew also changed to stoneware after receiving complaints from his customers that his earthenware vessels were leaking. Although his earthenware pots were glazed he struggled to prevent his glazes crazing.

Of course there are many parts of the world where stoneware clays are not available locally and where poverty makes the cost of importing clay and the extra firing costs prohibitive. The traditional earthenware pottery industries in these regions continued until they were hit in the 20<sup>th</sup> century by different competitors – cheap mass-produced plastic and metal tableware, storage vessels and cookware.

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