



# ROMAN FINDS GROUP

ISSN 1748-8435 (print)

Datasheet 9

## Romano-British glass bangles by Tatiana Ivleva

### Introduction

Glass bangles are seamless ring-shaped adornments made of coloured glass (Fig 1). They are distinct artefacts that occur in Britain during the mid-first – late-second centuries AD. While the manufacture of glass bangles began in Late Iron Age continental Europe, the craft abruptly disappeared from the continent in the early first century AD, at the time of the Roman conquest of northwest Europe (the main published continental corpora are Haevernick 1960; Gebhard 1989; Wagner 2006; Roymans and Verniers 2013). However, bangles re-appeared in Roman Britain possibly as a result of Roman invasion in AD 43. Much more research is required to confirm the connectivity between Late Iron Age and Romano-British bangles, especially because bangles differ in their design. The Romano-British glass bangles have their decorations applied directly onto the surface. Continental bangles had their surfaces modified while the glass was still hot, by the addition of peculiar shapes (eg knots, horizontal and diagonal lines, squares and waves). It is clear, however, that in Roman Britain the craft was very likely part of the longer-term developments in indigenous material culture in Britain during the transitional period from the Late Iron Age to Roman Empire. During this period, contacts with mainland Europe were on the rise.

### Typology

In 1938, Howard Kilbride-Jones published the first comprehensive and systematic typology of Romano-British glass bangles (1938), which is still used to catalogue new discoveries. The bangles have been divided into three main types, based on the colour of their glass core and the applied decoration (Fig 2).

Type 1 is heavy and has a core of translucent blue-green or sometimes milky white glass. It is coated with obliquely laid bands of coloured glass, usually in opaque yellow and red. Type 2 is a lighter type made of translucent blue-green glass, or sometimes cobalt blue. It is decorated with one or more horizontal cords of glass, usually made of twisted opaque white and cobalt blue rods. In 1988, Jennifer Price proposed to subdivide Type 2 into seven subtypes based on the number of the cords and the resulting patterns (1988). Type 3 is also light and



Fig 1 Complete glass bangle found in York. Yorkshire Museum, York. Accession no. YORYM HG8. Image courtesy of York Museums Trust: <http://yorkmuseumtrust.org.uk>:CC BY-SA 4.0

is decorated by trails with curved terminals, sometimes called pot-hooks. It is divided into ten sub-types based on the bangle's base colour and the colour of the applied decorations. Types 3A and 3B are undecorated, and are made in opaque white and opaque yellow; types 3C-J were made in colours ranging from opaque white to sage green and were decorated with 'pot-hooks' made in a variety of colours (Fig 3).

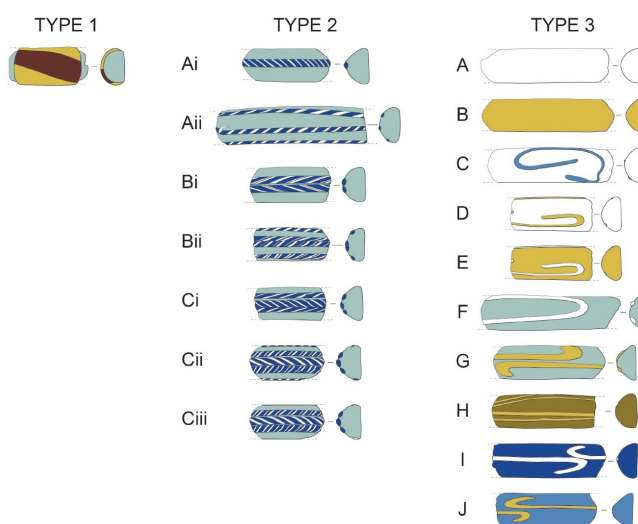


Fig 2 Typology of Romano-British glass bangles (drawn by V Herring)

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Fig 3 A fragment of the glass bangle type 3G from Selby, North Yorkshire (PAS SWYOR-2A4D36)

## Distribution and chronology

Initially, Romano-British glass bangles were studied and understood as a uniquely Scottish phenomenon and Kilbride-Jones believed that these artefacts represented a wholly new tradition in glass craftsmanship in Roman Iron Age Scotland. This view has its origins in the fact that when Kilbride-Jones collected and 'brought together as many as possible, if not all, of the known specimens of glass armlets found in Britain' (1938, 366), most of his examples were of Scottish provenance, notably from Traprain Law in East Lothian. Since then this view has been corrected on many occasions. Robert Stevenson first made minor amendments in the mid 1950s and twenty years later in 1976, as he added specimens that were found after the publication of Kilbride-Jones's paper (Stevenson 1953–55 & 1976). Stevenson's publications showed that bangles were not only present in areas of Scotland or northern England, but were also widespread to the south (Stevenson 1976, 45). This was further confirmed by Jennifer Price, who analysed the distribution of glass bangles found in East Yorkshire up to 1988 (see distribution map of the bangles based on 1988 inventory in Ivleva 2016). Finds of glass bangles in the south of Britain (eg at the legionary fortresses of Usk in Wales, Kingsholm and Leaholm in Gloucestershire), in early Flavian contexts have provided credible evidence for the origins of glass bangles in southern Britain. Their arrival to northern Britain was directly connected with the movements of the conquering Roman army (Price 1995).

Since the last inventory of glass bangles known in Britain by Jennifer Price (1995), the number of glass bangles identified and recorded by the present author has almost tripled. The distribution is focused on the north-east of England, with the majority being found in Yorkshire, Durham and Northumberland (Fig 4). The bangles clearly follow the line of Hadrian's Wall, but are also quite pre-

dominant north of the wall in south-east Scotland. The new evidence collected by the present author also points to bangles being prominent in Cumbria, and in south-west Scotland (eg in Dumfries and Galloway). The identification of bangles from North Lincolnshire and Lancashire is of significance, as it demonstrates the wide distribution of the craft and the fashion of wearing bangles (Evans 2007).

The earliest glass bangles found in Britain are from Claudio-Neronian contexts in the south and are of Type 2. This means that Type 2 is the earliest type produced in Britain, in contrast to Kilbride-Jones, who saw Type 1 as pre-Roman and, thus, the earliest one. The key characteristics of the earliest Type 2 bangles are their translucent blue-green or occasionally cobalt blue bodies, decorated with one or three widely spaced cords twisted clockwise applied to the apex. Previous research suggested that the use of these cords originated from the cords decorating a particular type of British bead – so called Guido type 9 (Price 1988, 353; Crew 1989, 51; Price unpubl & 1995, 103; Hoffmann 2003, 42). These annular beads have bichrome cords in a wide variety of colours, and are found in Britain between the first century BC and the first century AD. The focus of distribution of these beads is the Somerset and Bristol Channel area: the same region has a high concentration of bangle pieces dated to the pre- and early-Flavian period (Price 1990; Hoffmann 2003, 43; Foulds 2017). Yet, many continental beads, as well as some bangles dating to late-first century BC, have similar corded decorations, suggesting that the idea for twisted cords may not in fact originate in Britain (Haevernick 1960, 29; Gebhard 1989, 179; Zepezauer 1993, 8; Bride 2005, 109, no 34; 121-22, nos 73, 75 and 76; 150, no 245).

It is likely that bangles of Type 3 began to be manufactured in northern Britain around AD 60, when the Roman army crossed the Humber river into Yorkshire. Perhaps these new types developed to accommodate the tastes of the local communities residing in the area. The slow decline of Type 2 bangles followed, and they are nearly absent from Antonine period sites in north-east England and south-east Scotland. Glass bangles completely disappear from Britain at the turn of the third century AD, possibly as a result of changing fashions, which preferred bangles made out of black shiny materials such as shale and jet (Allason-Jones 2011, 2).

## Production

There are no Roman literary sources describing the method of forming seamless glass rings, but a medieval treatise (*On Divers Arts*) provides a clue as to the technique (Duckworth *et al* 2016, 138). Also, various ethnographic studies on glass bangle making in Nigeria, Nepal and India, and experimental research carried out by French scholars on Late Iron Age continental bangles indicate that the winding and stretching technique was most likely used (Fig 5; Korfmann 1966; Rolland *et al* 2012; Rolland & Clesse 2014; see also video resources references).

The production of glass bangles by winding and stretching requires two iron rods or pontils. Inside

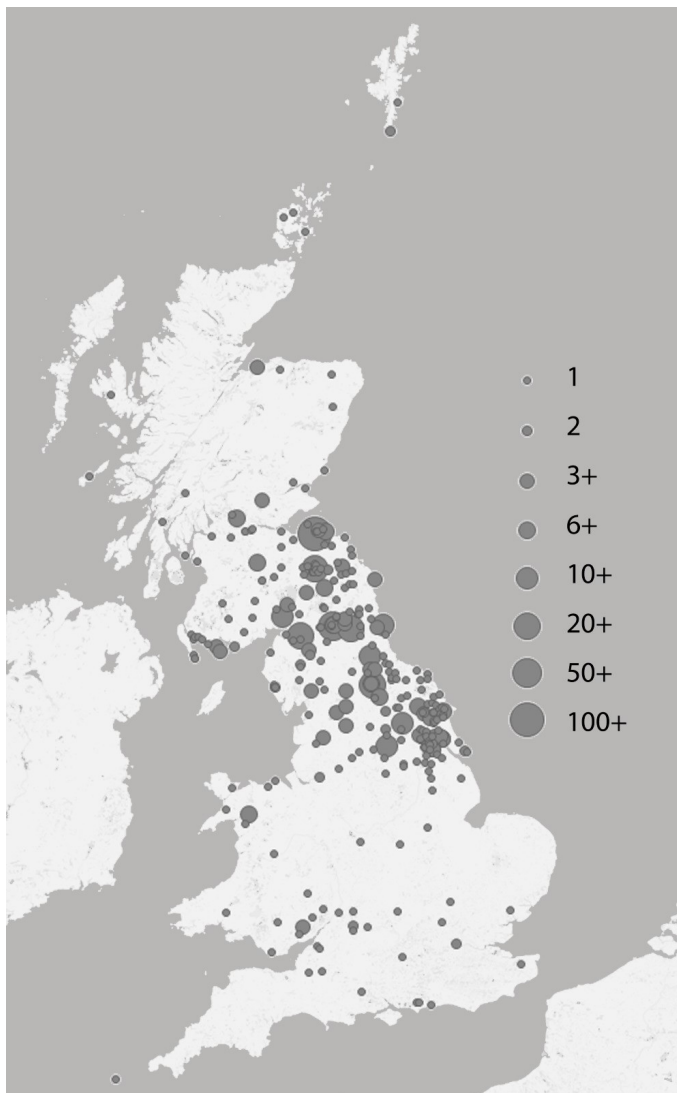


Fig 4 Distribution map of glass bangles (map made with © OpenStreetMap contributors software)

a furnace, glass melted in a crucible is first wound around an iron rod. The constant spinning of the rod produces a rounded object that at this stage resembles a bead. Because of the constant spinning and continuous reheating of the 'bead' on the rod, a small opening forms in the middle into which a second rod is inserted. The 'bead' is then further enlarged by stretching and manipulation of the two rods. In the end, the object is sufficiently widened, and a more or less symmetrical seamless object is created.

This technique is supported by the visual analysis of *c* 500 Romano-British glass bangle fragments, which all exhibit the diagnostic features associated with the winding and stretching production:

- iron scales embedded onto the inner surface from its contact with the iron rods
- elongated gas bubbles trapped inside the bangle body, which originally were circular but stretched because of the spinning
- internal folds seen in the cross-sections, indicating the glass was wound around the rod in the first stage of production.

The last step in the production consists of the application of decoration. Usually marvering is reported as a way to file down the twisted glass cords and

monochrome rods. In this technique, the hot outer surface of the bangle with decoration is pressed against a cold and smooth surface to allow the decoration to submerge into the hot glass matrix. However, there is no sufficient evidence that marvering was necessary. Once the decoration is applied onto the apex and/or sides of the bangle, heat alone is sufficient to transfer the decoration into the body of the bangle: the longer the bangle is in contact with the heat the deeper the decoration sinks (Ivleva 2016; *cf* Bertini *et al* 2014 online supplementary material).

In order to produce a simple undecorated glass bangle, an experienced artisan requires only one minute. For the bangles with decoration, experimental evidence suggests a maximum of ten minutes of production time, if the twisted cords were pre-made. This suggests an extremely quick manufacturing technique and possibly an industrial scale of production.

We do not know exactly where in Roman Britain the objects were produced as no large-scale manufacturing sites are presently known. A possible exception may come from the unexcavated site at Thearne (East Yorkshire), which provided circumstantial evidence for the location of a possible glass bangle workshop (Campbell 2008). The site has produced pieces of twisted rods pinched at one end, known from decorations on Type 2 bangles, as well as half-manufactured glass bangles. Other production centres have been assumed at Traprain Law and Corbridge, based on the high concentration of bangle fragments. However, annually-conducted excavations at the Roman fort at Vindolanda yield two to three new additions every year, especially when Hadrianic levels are excavated. The number of bangles found there currently stands at 74, but this does not mean that Vindolanda had a bangle workshop. The large number of bangles found there is indicative of what one should and could expect to find at any given military site on and near Hadrian's Wall. Indeed, while large quantities of bangles found on or near Roman military sites in northern England hint at the association of the craft with the military, excavations of Roman forts and adjacent civilian quarters have not yet revealed any evidence for the manufacturing of glass bangles. Tools needed for the production of glass bangles, such as pontil irons, pincers, and tongues, could easily be carried long distances. The small, wood-fired furnaces needed to manufacture glass bangles can be built relatively easily, but they also leave no trace when demolished. It may be that the craft was practiced by itinerant craftspeople travelling between forts, rural settlements, and urban centres, working for a couple of months before setting off to other places.

## Function

The traditional interpretation of glass bangles is that they were arm ornaments worn by females, but it is possible that these artefacts were used for a variety of purposes in Roman Britain. In spite of their relative uniformity in types and manufacturing technology, Romano-British glass bangles do not show a high degree of similarity in sizes. They were not produced according to a 'one size fits all' principle and their internal diameters vary



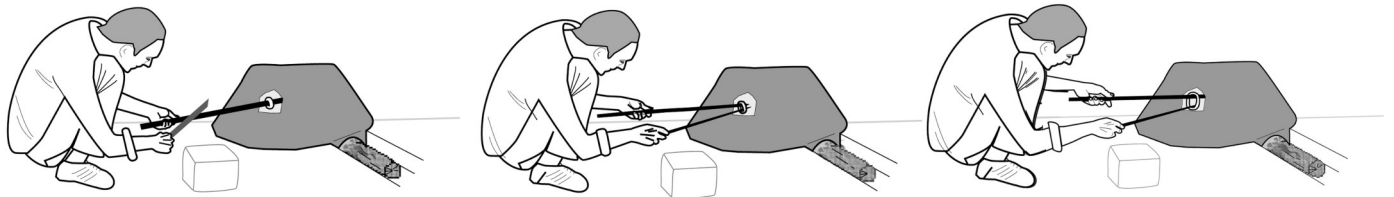


Fig 5 Winding and stretching technique used in the production of glass bangles (drawing and © J Rolland, adapted from Rolland & Clesse 2014, fig 1)

considerably in size, showing three strong size groupings: around 40–45 mm, another around 55–65 mm, and a third at 70–90 mm (Fig 6). Given that the same size groupings exist for bangles made of shale, jet, and coal, some scholars have suggested that these sizes represent objects for children, women, and men respectively (Hunter *et al* 2018, 211, 213, illus 162). That the glass bangles with large diameters were worn on the upper arm is a more likely explanation following the frequent discoveries of complete glass bangles of 70–90 mm internal diameter in osteologically sexed female graves dated to the Later Iron Age period on the continent (Krämer 1985; Gebhard 1989, 136–7). At the same time, the size variability could indicate that the bangles were used for specific purposes, ranging from pendants on necklaces, to hair-rings, to acting as decoration for horse equipment (Stevenson 1976, 53; Hoffmann 2003, 42).

A series of tests were carried out to establish which of these functions the objects could potentially fulfil (Fig 7; for more details see Ivleva forthcoming a and b). During the tests authentic-looking replicas were used, hand-made by the glass artisans Stéphane Rivoal and Joël Clesse from Silicybine Verre (France), and by Connor Garton from Gartonglass (UK).

The wear of a reconstructed glass bangle with similar dimensions to ones from Roman Britain (63 mm internal diameter) has shown that the most

comfortable way of wearing it while performing various activities is on the lower arm and not at the wrist. A bangle of smaller size was tried as a hair ornament, to restrain hair gathered into a ponytail. When the hair was gathered into a bun, and held in place only with hairpins, the volunteer felt it to be insecure; when the bangle was added as a restraint, the hairstyle stayed in place very well and, according to the volunteer, the bun felt strong, solid and fixed. In addition to their possible use in arranging human hair, the bangles may also have been used to decorate the manes of horses and ponies. To test this hypothesis two glass bangles were used to decorate a horse's mane that was gathered into a knot between the animal's ears. The bangles sat comfortably, were clearly visible and gave a vibrant appearance to the horse's forelocks.

Experiments can validate various functions but also disprove others. For instance, to wear a large glass bangle of 85 mm internal diameter around an ankle of an adult was impossible, as the object could not pass over the heel. The possibility that the smaller sized bangles were made to decorate necklaces as ring-pendants does not seem likely for the Romano-British ones as they were decorated with cords or trails on the outer surface. If the rings were hung down as pendants, the decorations would not show well, and the undecorated (and clearly worked) inner surface would have been visible.

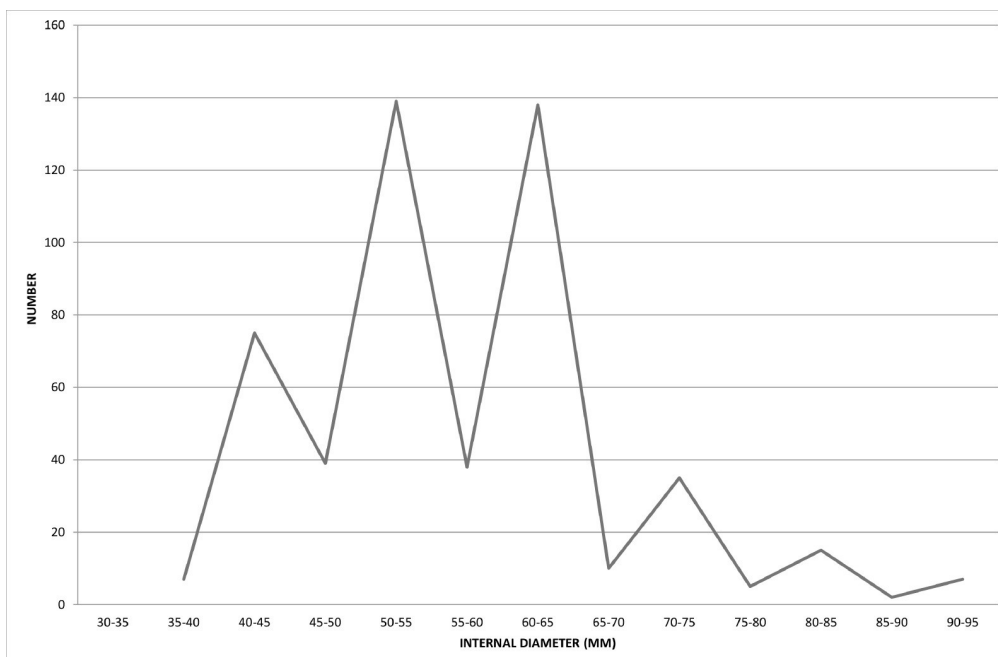


Fig 6 Internal diameter range of the Romano-British bangles (sample size c 500 fragments)



Fig 7 Replicas of glass bangles produced by the technique described and used in the experiments to test various functions

## Social significance

Glass bangles are usually considered to be delicate and exquisite objects, but the quick manufacturing technique identified through experimental archaeology suggests that they may have been mass-produced, widely available and easily accessible products. Contrary to popular belief, Romano-British bangles were not high-status or unique items of jewellery worn by the upper classes of Romano-British society and native elite. Instead, they were popular across all levels of the population. While we still find clearly made-to-order items (especially Type 1 bangles), a large proportion (Types 2 and 3) was quite crudely made.

Different regions also show variability in the treatment of bangles. For instance, glass bangles from native settlements in Northumberland tend to be found at the doors of huts or the terminal ends of ditch enclosures and may represent their use in foundation or abandonment deposits (Allason-Jones 2009). Type 1 bangle fragments found north of the Firth of Forth in Scotland almost all show re-use. On many military settlements across northern England many fragments were found as stray finds or come from refuse pits and ditches, suggesting that bangles were consumer objects easy to throw away once broken.

What is clear is that Romano-British glass bangles were versatile objects and were ubiquitous features of life in the province. They were used for various purposes by a range of people living in military forts, but also in urban and rural settlements.

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## Video resources

Late Iron Age continental glass bangles produced by experimentation:  
<https://www.youtube.com/watch?v=IoW19SkpxLY>  
[accessed 2nd July 2018]

Nigerian glass bangle manufacture. Film by Lesley Lababidi, 2015: <https://nomad4now.com/articles/bida-glass-bangles-and-beads/> [accessed 2nd July 2018]

YouTube channel by the author on Romano-British glass bangles: [https://www.youtube.com/channel/UC0NkR\\_I0jcvVRPPyQ44Wsg](https://www.youtube.com/channel/UC0NkR_I0jcvVRPPyQ44Wsg) [accessed 2nd July 2018]

## Internet resources

[www.romanglassbangles.com](http://www.romanglassbangles.com) [accessed 2nd July 2018]

<https://archeoglass.jimdo.com/> [accessed 2nd July 2018]

## Acknowledgements

I am grateful to the Roman Finds Group who generously funded the illustration of Romano-British glass bangle typology. This research on glass bangles was funded through the European Union's Horizon 2020 research and innovation programme under grant agreement No 657309 in the framework Marie Skłodowska-Curie actions. I am grateful to Lindsay Allason-Jones for the comments and suggestions to improve the first draft of this datasheet. All errors made are my own.