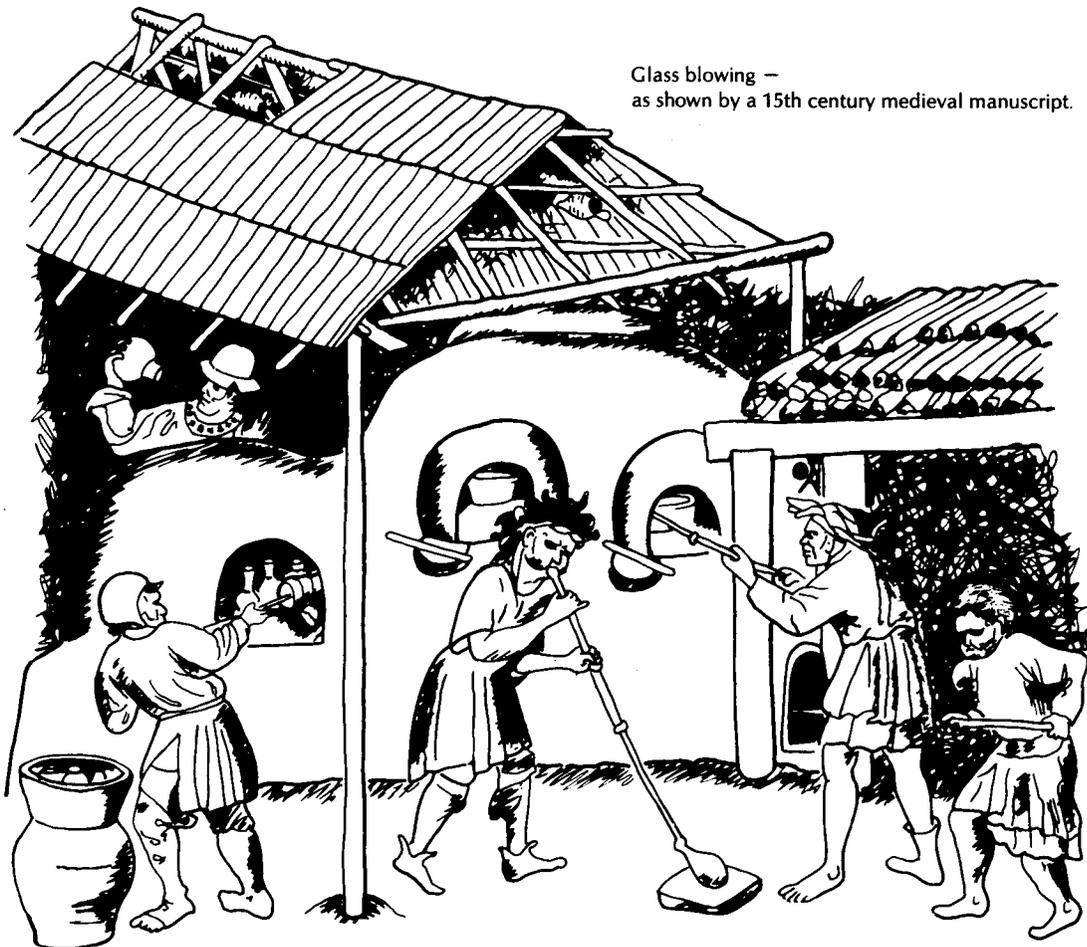




Dominic Tweddle



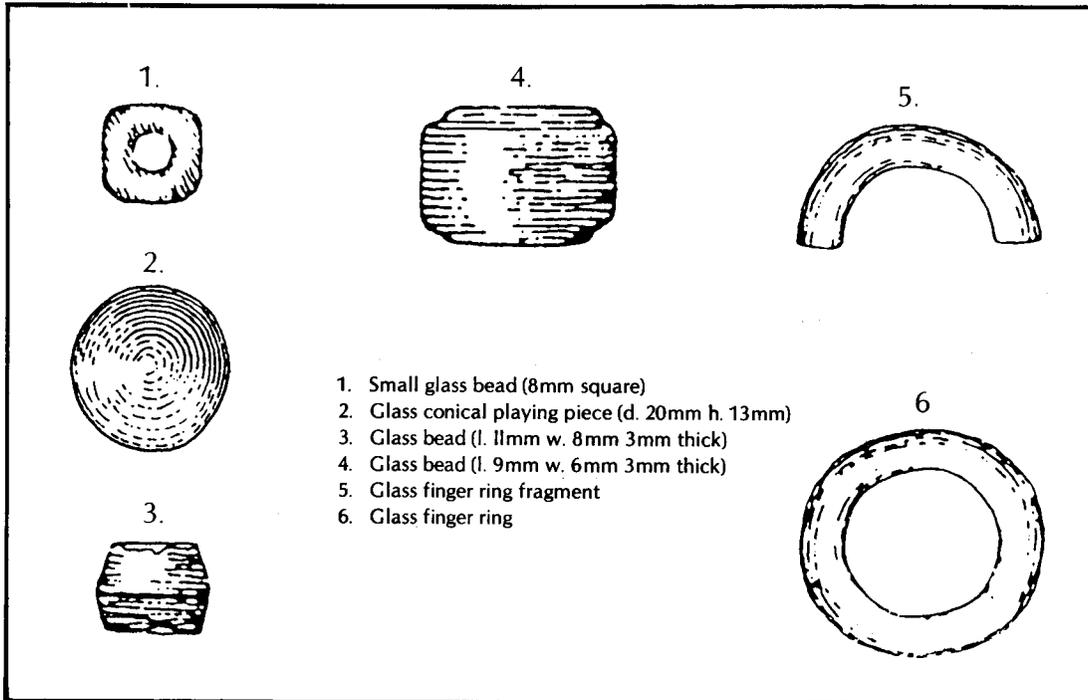
Glass blowing –
as shown by a 15th century medieval manuscript.

The Vikings made glass, and remains of a glass-working furnace were found on Coppergate. This had been in use before the first Viking houses and workshops were built in about AD 900.

In Viking times there were two ways of making glass: either from the raw materials of quartz and soda, or more often by melting down broken glass (cullet) and re-using it. Pieces of broken glass from around the Coppergate furnace suggest that it was sometimes used in this way. Of course if the craftsman wanted to make something out of red glass, for example, then only fragments of this colour could be used, possibly with some clear glass added. Getting enough pieces of one colour could be difficult, and to overcome this problem the Vikings imported small blocks of glass from the Continent, taken from mosaics. Large amounts of different coloured glass could be obtained in this way.

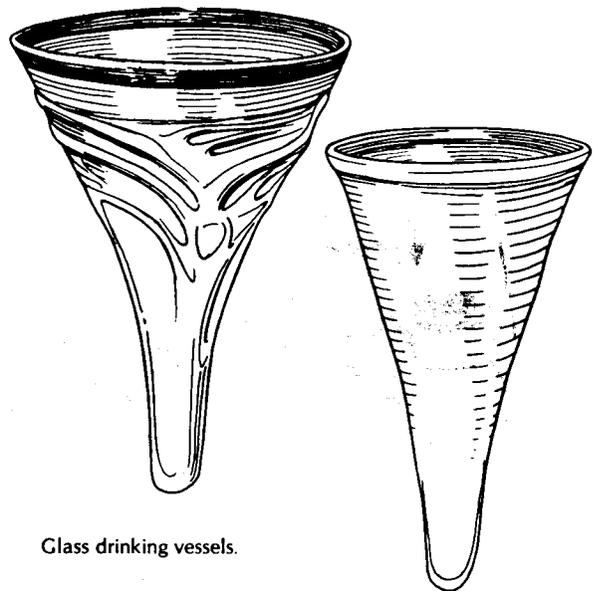
Making glass from the raw materials of quartz and soda was much more difficult. The quartz came from sand, but the soda was brought in from the east Mediterranean in a form called natron. First the sand and natron were mixed together and heated in an oven for several days; during that time the material was constantly raked over to allow waste gases to escape. It was then broken up and put into a crucible with cullet added, and melted in a furnace; if all went well, glass was formed. Often, however, the process seems to have gone wrong and the glass was only partly formed. At Coppergate, large lumps of waste glass were found all over the site.

If the glass formed properly, it was colourless or had a green tinge. To colour it, minerals were added. Copper was used in different ways and in different amounts to make red, blue or green; iron to make black, and tin to make yellow. Tin could also be used to make the glass opaque.

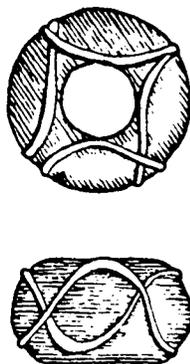


1. Small glass bead (8mm square)
2. Glass conical playing piece (d. 20mm h. 13mm)
3. Glass bead (l. 11mm w. 8mm 3mm thick)
4. Glass bead (l. 9mm w. 6mm 3mm thick)
5. Glass finger ring fragment
6. Glass finger ring

The newly-formed glass was then shaped into objects — mostly vessels, beads and finger-rings. To make vessels, the craftsman collected a blob of molten glass on the end of a hollow rod and blew into it. By blowing carefully, turning the rod and using various tools, he was able to make vessels of complicated shape, as modern glass-blowers do. The commonest were cone-shaped drinking glasses and small bowls, which were sometimes decorated by having trails of molten glass applied to their outer surface.



Glass drinking vessels.



Glass bead with white applied trails.

Glass beads were also common, and were usually made from glass which had lead oxide added to give it extra sparkle or brilliance. This also made the glass easier to work by lowering the temperature at which it became molten.

Glass beads were made by using tongs to pull a droplet of molten glass off a wire. This made a globular bead, but other shapes could be formed by using different tools. The beads were either left plain, or decorated in different colours with extra glass applied to the surface in the form of blobs and trails. These could be pressed right in, to leave the surface smooth.

The finished beads were very colourful and splendid, but none of the York beads were as complicated as the multi-coloured beads made by the Vikings in Scandinavia.

Glass finger-rings were also popular. They were made either by shaping molten glass around a metal rod of the right diameter — as the glass cooled, it could simply be pushed off the rod. Another method was to place a molten blob of glass on the point of an iron cone, which was then spun by hand; this caused the glass to work its way down the cone until the desired size of the ring was reached.

The range of Viking glass objects was very small; a little window glass was used in wealthier homes, but it was very rare, and apart from a few small objects such as playing pieces, nearly all the glass was used for vessels, beads and finger-rings.