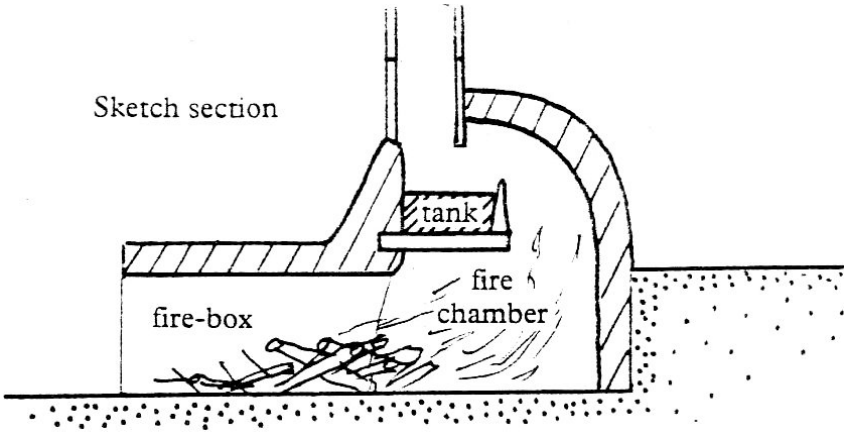
# Reconstructing a Roman Furnace

In August 1995, ]ohn Shepherd (archaeologist), Gilbert Burroughes (farmer and potter) and Ed Iglehart (glass worker) were brought together by Channel 4's *Time Team* to try to recreate a Roman glass furnace. With only a few days preparation, we built a small furnace and successfully melted a small amount of Roman glass - small, undiagnostic body fragments from the 50kg cullet dump at Guildhall Yard, London - and Ed was able to blow something vaguely resembling a glass vessel. We were all content with the result - but we knew that we could do better because we had cut a number of corners for this experiment.

To ensure success we kept a bellows handy – and we used it regularly. This helped us to reach a maximum temperature above the crucible of 1260°C. We also used a modern crucible which conflicts with the fact that, for London at least, we have no Roman crucibles. In addition, we encountered a few 'technical' problems, the most serious of which was that the local clay we used to build the furnace had a low melting point. As the temperature rose above 1000°C, part of the furnace collapsed. It did, however, produce some very fine fuel-ash slag. Cheats and problems aside, one very important observation was that, without a chimney attached to the back of the furnace we would never have gone above 700°C.

Last Summer, Gilbert and I built another furnace on his farm near Chediston in Suffolk which reproduced more faithfully, we believe, the archaeological evidence for Roman furnaces as found on 2nd century sites in London - small, keyhole-shaped structures with suspended tanks. Traces of partially fired clay around the edges of a Roman brick, used as the base of such a tank on a site near Moorgate, indicated that it had been built into just half of the circumference of the round wall above the fire-chamber. To replicate this, we made a similar brick from Chediston clay, 30x30x3cm, in an electric kiln beforehand. The sketch section shows the position of this brick in relation to the other elements of the furnace.




A small wall of clay was attached to the top of this tile on the open side and connected with the main walls of the chamber. This small wall, scarcely 3crn thick, was the weakest part of the structure, being both flimsy and very close to the main zone of combustion in the furnace.

Note that both the tank and the chimney were positioned at the front of the main chamber allowing the heat from the fire chamber to deflect off the rear wall and the roof of the furnace down onto the surface of the glass in the tank (in this experiment, some mid-1990s wine bottles, conveniently close to hand, were used). The results were more than we expected. Without bellows we achieved a maximum temperature of c.1150°C above the tank. The lack of good, bone dry fuel prevented us from increasing the temperature and so, after ten hours, when we suspended the experiment, the glass had began to melt but was not in a state to work. The entire furnace, however, had remained intact including the narrow wall across the front of the base of the tank.

Once again this single, simple experiment helped us to understand a little more about how, using the evidence in the archaeological record, a furnace in Roman London would have looked and worked. The next step will be to build another furnace under even more controlled conditions, to measure and record its efficiency - and, perhaps, blow some glass.

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