

# A pair of late medieval spectacles from the Trig Lane site

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THE MUSEUM OF LONDON'S 1974-75 excavations at Trig Lane, Blackfriars, are probably well known to readers of *the London Archaeologist*. Here successive generations of medieval carpenters had repaired and renewed the wooden revetments which shored-up the river banks and protected them from high tide and flood waters. As each revetment weathered and decayed, a new one was built a little further out in the river, the gaps between old and new being immediately filled with rubbish (refuse-disposal was a major problem for the city's over-crowded populace). This pattern ended in or shortly after the year 1440, when the frontage was transformed by the construction of a stone wall. Behind the wall was a deposit of some 300 cubic metres of contemporary refuse and it was from this that the shattered remains of a pair of spectacle frames were recovered. Their find-spot allows them to be securely dated to the middle of the 15th century which, as we shall see, greatly increases their value as an archaeological discovery.

Modern building techniques destroy all evidence of previous occupation and, in a desperate struggle to rescue as much of London's past as possible, the Museum has found it impossible to devote immediate attention to the task of restoring and evaluating the hundreds of thousands of objects that have been recovered since its excavation programme began in 1973. Like many other interesting finds, the spectacles have had to wait their turn, and it is only very recently that their true importance as Europe's earliest dated spectacles has been revealed.

## Method of Construction

The frames are constructed of two identical halves, each being cut from a bone plate *c.* 2.5 mm (0.1 in.) thick which Dr. P. Armitage has shown must have come from the metacarpal bone of a bull (no other medieval bone was big enough). Each half consists of a short handle attached to a circular rim intended for a lens of *c.* 30 mm (1.2 in.) diameter (the lenses have not survived). The circular parts were evidently cut out using a specially-adapted pair of dividers — the outer score lines are visible across the handles and are deeply incised towards their edges. The two halves are united by an iron rivet at the ends of their handles.

On the outside of each rim opposite the handle

is a pointed protrusion divided into three teeth. Each protrusion has been split to allow the lense to be inserted into a V-shaped groove inside the rim. The lenses were finally gripped in place by tying a copper wire around each protrusion; by a remarkable accident of survival one of these wires is still in position.

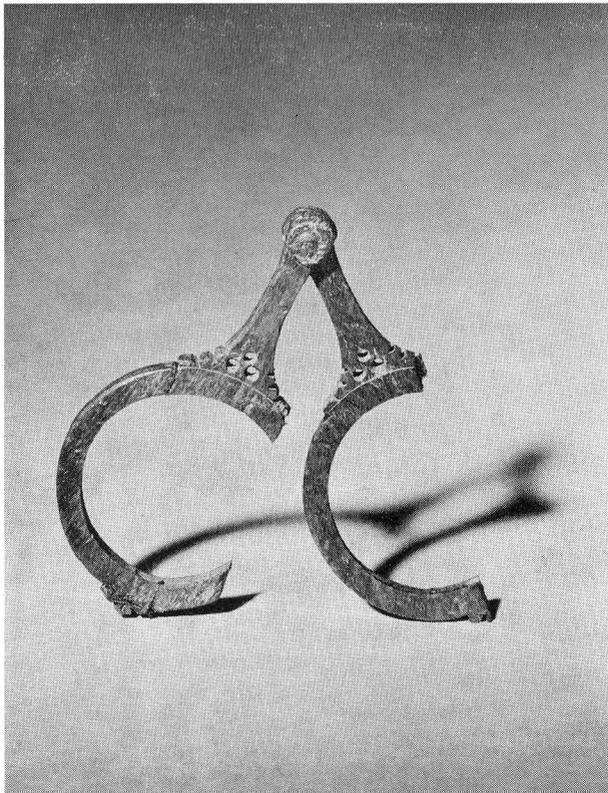
Splitting the rims in this way must have been a hazardous procedure; sawing would undoubtedly have been less risky. It appears, however, that the unevenly-broken edges created a firmer join when bound together than could be obtained between two smoothly-sawn edges, particularly since in closing the artificially-wide saw gap the two sides would have been placed under strain and have tended to spring apart.

## Previous Knowledge of Medieval Spectacles

Spectacles of this kind, termed 'riveted spectacles', are the earliest known European variety. They were first identified from contemporary works of art and it has been shown that they were fitted with convex lenses and used primarily as reading glasses. The only other surviving examples come from the convent of Wienhausen, Germany, where two of the eleven spectacles discovered in 1953 closely match our new find, although unlike the Trig Lane spectacles their age is not determined by their find-spot and can only be suggested by analogy. All of the Wienhausen spectacles are of wood, which caused some surprise when they were discovered since most scholars had taken the yellowish frames on contemporary illustrations to be of horn or bone; our new find tends to confirm this speculation. The use of animal bone may represent an improvement over wood since it is harder, stronger and more durable, though scarcely heavier; when complete the frames (excluding their lenses) are estimated to have weighed only 5.0 g (0.2 oz.).

## Unique Features

Although the general pattern of the Trig Lane spectacles is well established, they present two features which are not paralleled at Wienhausen and have not been noted by any of the writers who have studied the contemporary representations of riveted spectacles. These consist of a row of three teeth situated on both sides of both handles where they widen to join the rims, and a cluster of three



**Fig. 1: Bone spectacle frames from Trig Lane, City of London.**

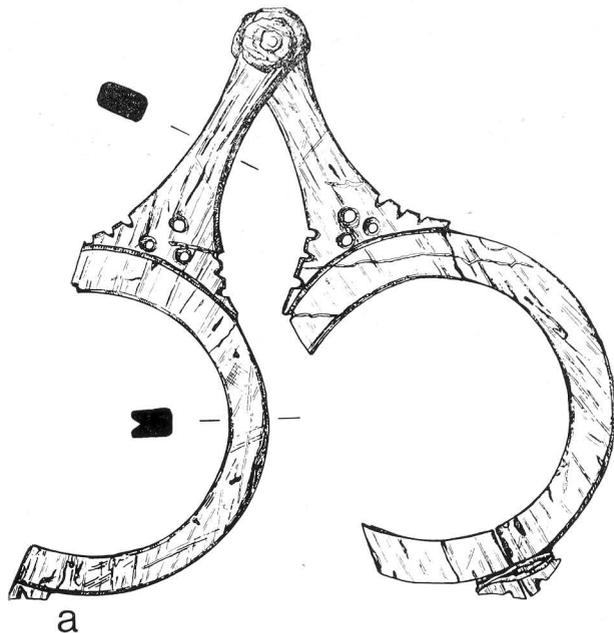
(Photo: John Bailey)

drilled holes in the centre of this same area. Although they might be taken for decoration, an investigation of how riveted spectacles were worn suggests that they were functional.

The pictorial evidence shows that riveted spectacles were often clamped onto the nose in order to leave both of their owner's hands free. Experimentation with replicas has shown that even with the rivet fully tightened, it was necessary to keep the head horizontal in order to prevent the spectacles from tilting forward and falling off (hence the importance of their light-weight construction). It is therefore suggested that the teeth were intended to improve their hold on the nose.

Contemporary portraits seem to indicate that it was possible to wear riveted spectacles in three places on the nose (assuming that the differences shown are not due to poor observation by the artists concerned):

- i) on the nostrils as in pince-nez spectacles (the handles of the Trig Lane spectacles are too long for this pair to have been worn in such a manner).



25 mm

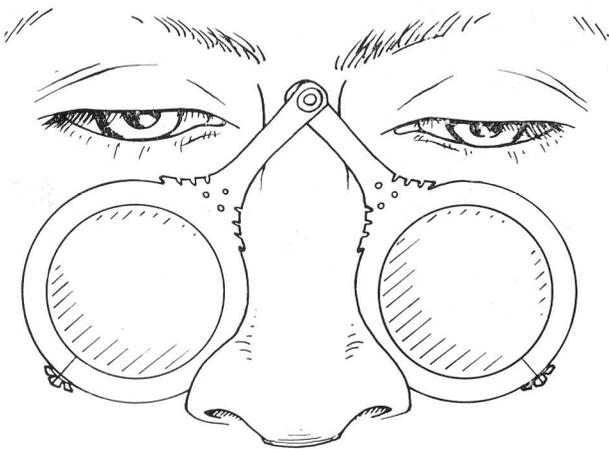
**Fig. 2: Trig Lane spectacles — reverse view.**

(Drawing: Kate Armitage)

- ii) on the upper part of the nose, the rims clamped onto the nose in the normal position of nose-pads in modern spectacles.
- iii) half-way between these two positions, with the rivet at the bridge of the nose and the rims pinching the nostrils rather higher than in position i.

The Trig Lane spectacles were apparently intended to be worn in this third position. Experimentation has shown that (assuming that they were intended, as normally portrayed, for a male wearer with a nose of average size) they could have been adjusted to make contact with the nose from just below the rivet to a position nearly one third of the way way around the rim with the teeth gripping the nose on either side of the nasal bone. With the head held horizontally, the lenses would then be ideally situated for reading, and would allow the wearer to peer over the rims when looking straight ahead (see Fig. 3).

Worn in this manner the value of the small holes would also have been apparent. In widening to join the rim, the handles would have obscured the natural scope of vision had these holes not extended the field of view into what would other-



**Fig. 3: Suggested wearing position for the Trig Lane spectacles.**

(Drawing: Claire Thorne)

wise have been irritating blind spots. As small apertures act as simple lenses, they would also have ensured that these areas were roughly in focus for someone with poor eyesight. The writer, being myopic and normally unable to read at normal distance without the aid of lenses, finds reading quite easy under good illumination whilst looking through these holes, and although the overlapping images do not coincide, the effect of this is minimal, especially when viewing as if through the lenses, with the holes operating in the margins of the area of vision.

Despite the surprising degree of sophistication of this device, there is no reason why the manufacturer of the spectacles should not have grasped the effect of viewing through pinholes at this period. They would seem to be a natural subject for investigation: for example, Leonardo, who was active later in the 15th century, is known to have examined the effect of looking at the stars through pinholes. Small apertures were also used to improve poorly-focussed vision in eskimo spectacles (where doubtless they also helped to reduce glare), but the Trig Lane spectacles provide the earliest European

evidence of the use of pin-holes in an optical instrument.

### **Documentary Evidence for Spectacles in 15th Century London**

Spectacles, which were invented in Italy at the end of the 13th century, were apparently quite common by the time of the Trig Lane spectacles. Customs records show that they were being imported into London in large quantities from the late century and evidence for their sale is found in the 15th century satirical poem 'London Lyckpenny' whose destitute subject was pestered to try 'fyne felt hatts, or spectacles for to reede' by Flemish pedlars at the door of Westminster Hall. The mention of *Flemish* pedlars in particular strengthens the impression that the Trig Lane spectacles were made in the Low Countries. The customs records reveal that most of the ships which were importing spectacles and the merchants who paid the customs levies had Dutch names. As an alternative the spectacles could have been made here by a Dutch immigrant; the earliest known spectacle-maker in England, Paul van (de) Bessen of 'Suthwerk' (active 1458-9), was evidently a recent Dutch immigrant and it is known that there was a well-developed spectacle industry in the Low Countries at this period which seems to have spread from there to Germany, France and Spain. We might well infer that it also spread to this country. Indeed the rules of the Worshipful Company of Spectacle-makers of London, founded in 1629, seem to have been modelled on those of the Netherlandish Spectaclemakers' Companies suggesting that even at this late date the Dutch were still regarded as the leading specialists in this field.

A detailed discussion of these spectacles has been prepared and is expected to appear in one of the national archaeological journals in the next two years.

### **Acknowledgement**

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editorial columns of *Antiquity* about the choice of a patron-saint for archaeology<sup>19</sup>. We in London can have no doubts; our patron must be that archaeological bishop St. Erkenwald — if the story is apocryphal it is still as good a basis for the claim as most patron saints can show. Perhaps London's archaeologists should gather each 30th April, the Feast of St.

<sup>19</sup> *Antiquity* 54 (1980) 5-6; 84-85.

Erkenwald, at the site of his shrine, (not marked in the present cathedral, it lay in the area of the present south aisle of the choir) to pay tribute to all those scholars, antiquarians and archaeologists who have studied the surviving physical evidence for London's history, among all the difficulties caused by constant rebuilding and redevelopment, from the time of Bede and Erkenwald to the present day.