

# Report on the metalworking remains at Ballyboden, Co. Dublin (17E0253)

## Description and interpretation

During excavations ahead of infrastructure works at Ballyboden, Co. Dublin, several features were unearthed which contained the waste of metalworking.

The total assemblage weighs over 3.2kg but this includes two large fragments of fired brick with an adhering layer of slag-like material (Fig. 1) weighing about 2.8kg and which are unrelated to metal production. The slag-like material contains small particles of coal and most likely represents the vitrified remains of the fuel and ash from the brick firing operation. As such, the material should be considered as a type of cinder and is not related to metalworking processes. This material was retrieved from a deposit of post-medieval brick (038), most likely production waste.

A kidney-shaped kiln (010) yielded a rounded smithing hearth cake (Fig. 2) weighing 315g from one of its mid-fills (024) and a further piece of slag (36g) from basal fill (017). A younger fill (011) within the same kiln produced an iron hand bell and charred grain from this fill was radiocarbon dated to the 8<sup>th</sup> to 9<sup>th</sup> century AD (95.4% probability). Pit (009), about 5m to the west, contained small slag fragments (3g).

Some 68g of slag with flow structure (Fig. 3) was found in single fill (005) of pit (004) located about 8m northwest of kiln (010). This figure-of-eight-shaped pit measured 0.76m by 0.47m, was 0.53m deep and had near vertical sides and a flat base. A further small slag fragment (24g) was recovered from slot trench (007), just to the north of pit (004).

A charred grain from fill (056) within charcoal-production pit (055) located about 20m north-east of these features returned a radiocarbon date of broadly 8<sup>th</sup> century AD (95.4% probability) suggesting that the charcoal could have been produced for use in the ironworking activities.

## Conclusions

The slag found in the kidney-shaped kiln is the waste of smithing operations and dated to the 8<sup>th</sup> to 9<sup>th</sup> centuries AD. As no associated hammerscale was present in the soil samples of the relevant fills, it can be concluded that the smithing activities took place elsewhere and that the material was dumped in the kiln. There is most likely no relation between the forging activities and the early medieval hand bell retrieved from a more recent fill.

Slag with flow structure is known to occur within smithing assemblages but as most of the material from pit (004) has flow structure, it is more likely to be the waste of smelting activities. The dimensions and sides and base of the pit are characteristic for furnace pits, in general use in Ireland from the Iron Age until the end of the Early Medieval period. The figure-of-eight shape would be unusual but is not unknown. If the feature is indeed a slag-pit furnace, it was thoroughly cleared out after use.

A nearby charcoal-production pit was dated to the 8<sup>th</sup> century AD and might be connected to the smithing, and possibly the smelting, activities.

## Catalogue

(material not related to metalworking in italics)

Cut	Fill	Feature	Description	Weight (g)
004	005	Post hole	Seven fragments of rather dense slag, most showing flow structure. The largest piece is partially composed of vitrified stoney material	68
006	007	Slot trench	Small piece of rather dense slag with adhering rusty patch	24
009	018	Pit	Small slag fragments, no hammerscale included	3
010	017	Kiln	Rounded piece of rather dense slag	36
010	024	Kiln	Rounded, rather dense Smithing Hearth Cake with cavities after charcoal and adhering rusty patches	315
<i>n/a</i>	<i>038</i>	<i>Brick deposit</i>	<i>Two pieces of strongly heat-affected brick leading to partial vitrification</i>	<i>2795</i>

## Figures



Fig. 1. Fired brick with adhering cinder from brick layer (038)



*Fig. 2. Smithing hearth cake from kiln (010)*



*Fig. 3. Slag with flow-structure from possible furnace pit (004)*