Romano-British workshops for iron smelting and smithing at Westhawk Farm, Kent

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ABSTRACT: Large quantities of ironworking waste were recovered from a Romano-British settlement at Westhawk Farm (NGR TR998397), near Ashford, in the Weald. The waste was concentrated around the archaeological remains of two workshops, one pre-dating the other. Both smelting and smithing took place in the workshops, and several furnaces, a possible hearth and a working floor rich in hammerscale survived. The raw materials used in the production of iron at the site have been identified and the formation processes for different types of slag have been investigated through analysis of the waste. The scale of the iron industry at Westhawk has been estimated and is discussed in the context of Wealden iron production in the Roman period.

Introduction

Ironworking in Roman Britain

In the Roman period in Britain iron smelting took place using the bloomery process, so called because the iron metal produced was in the form of a spongy mass or bloom. The waste from the process was an iron-rich slag, which was generally tapped whilst molten through an aperture at the base of the furnace. The furnaces were charcoal fuelled and bellows blown. Furnaces were constructed from clay, sometimes with stone, and the archaeological remains are often poorly preserved. Nonetheless, different forms of furnace in use during the Romano-British period have been identified archaeologically. Many were fairly small shaft furnaces, with an inside diameter of about 0.3m and walls approximately 0.25m thick (Cleere 1972; Cleere and Crossley 1985; Tylecote 1990). Their original height is unknown but may have been about 1m. The archaeological remains of a larger type of furnace (sometimes referred to as a domed furnace, although whether the superstructure of these furnaces was actually domed has been the subject of debate) have also been found, with an internal diameter of about 0.6–1.3m at the base. These were often slightly embanked at the rear and reinforced with stone (Crew 1998; Pleiner 2000); a number of examples are known from the Weald (Cleere 1972; Cleere and Crossley 1985).

The bloom of iron from the furnace was consolidated by smithing to remove most of the slag and voids from within it, resulting in a form of refined iron that could be traded, such as a billet or bar. The refining of a bloom is often described as primary smithing, whereas secondary smithing refers to the forging of objects from this refined iron and the recycling or repair of objects. Smithing hearths were bellows-blown, constructed from clay or stone, often (but not always) charcoal-fuelled and could be at floor-level or built at waist height. Debris from smithing accumulated in the hearth, in the bed of fuel, forming a lump of slag known as a smithing hearth bottom (Bayley et al 2001). Numerous small flakes and spheres of iron oxide and slag, known as hammerscale, detached from the surface of the metal during smithing and are found on working floors where iron was smithed.

Roman ironworking in the Weald

The Weald of Kent, Surrey and Sussex is well known for its concentration of Roman ironworking sites and these have been the subject of much research, comprehensively