APPENDIX 1 IRON SLAG

by Lynne Keys

Introduction

1.1.1 Iron slag was recovered during excavation works at South of Snarkhurst Wood.

1.1.2 The material was hand retrieved on site, and three soil samples (from contexts 237, 238-239, and 280) were also collected. None of the slag was washed before assessment.

1.1.3 The material was collected in accordance with the Fieldwork Event Aims for the site, which are set out in section 2 of the main report, above. The slag was collected to determine the type of metalworking which had produced it and whether there might be some association with the kiln or furnace in which it was dumped. This data would contribute to the Fieldwork Event Aims for the site relating to the morphology and function of the late Iron Age and Romano-British settlement, and the presence of economic indicators.

Methodology

1.1.4 At assessment the whole assemblage was examined and was categorised on the basis of morphology and colour. As no cleaning had taken place before assessment the slag was covered with dirt and identification was sometimes difficult. The slag fragments were small, having been broken up before their final deposition, and this sometimes hindered secure identification and led to its being assigned to the undiagnostic category.

1.1.5 Each type of slag from each context was weighed and recorded. The soil samples taken on site were opened and examined for hammerscale and other microslags by eye and by running a magnet through the contents.

Quantifications

1.1.6 The total amount of slag within the assemblage was 8605g. This was made up of the following types detailed on Table 5.1 below.

Table 5.1: Types and quantity of slag

Type of slag	**Weight in g**
Undiagnostic slag	5572
Tap slag	1930
Dense slag	1038
Cinder	49
Vitrified hearth lining	12
Roasted ore	4

1.1.7 Tap slag is a dense, low porosity, fayalitic (iron silicate-2FeO SiO2) slag with a rope-like flowed structure, which is particularly obvious on its surface. This slag was allowed to flow out through a hole at the base of the smelting furnace so the iron bloom could be more easily recovered at the end of the process.

1.1.8 Dense slag is of low porosity and also represents smelting activity

1.1.9 Undiagnostic slag could represent either smelting or smithing activity. In view of the amount of smelting slag present, and the absence of any slags diagnostic of smithing, it can almost certainly be attributed to the smelting process.

1.1.10 Very little material which could represent a smelting furnace superstructure was present amongst the assemblage examined. There was a small amount of vitrified hearth lining, some cinder (formed at the interface between the alkali fuel ashes and siliceous materials, and usually the lighter portion of vitrified hearth lining), and a small amount of burnt clay. The temperatures required to smelt iron ore would have generated more vitrified material than was present.

1.1.11 A fragment of very magnetic burnt reddish sandy stone which may be iron ore, was found amongst slag which came from a different area, away from the majority of the rest of the assemblage.

1.1.12 The absence of any slags diagnostic of smithing (the working of iron using heat and a hammer), for example, smithing hearth bottoms and hammerscale, is quite significant if the entire slag assemblage is to be interpreted correctly. The significant absence indicates the slag was almost certainly produced by the smelting of iron from ore.

Provenance

1.1.13 Most of the assemblage was material dumped into a disused kiln or furnace. The contexts concerned are 237, 238, 239, 247, 280, 281, and 282. Other contexts possibly associated with the kiln are 333, 334, and 335. The fragment of possible ore, however, came from 173, which was not associated with the kiln/furnace. The small size of the slag fragments lends support to the idea that the slag associated with the kiln may have been elsewhere, and had become broken up before being moved to be dumped in that area.

1.1.14 The slag, although unwashed, is stable and unlikely to be affected by any factors of preservation.

Conservation

1.1.15 Iron slag, being fayalitic, requires no special storage conditions and is unlikely to be affected by further analysis. Decisions as to whether the assemblage can be discarded should be made after other relevant CTRL sites with iron slag have been examined and assessed.

Comparative Material

1.1.16 The most useful comparisons for the Roman period will be with Thurnham Villa and the non-CTRL site of Westhawk Farm, Ashford. Technological comparisons could also be made with the CTRL medieval ironworking site of Mersham. Further evidence for ironworking is currently being recovered during ongoing CTRL watching brief works at South of Beechbrook Wood.

Potential for further work

1.1.17 The possible ore should be positively identified at an early stage to confirm or eliminate its potential.

1.1.18 Further analysis of the slag in conjunction with stratigraphic and artefactual data may help to clarify the nature of the iron smelting processes carried out on the site in the early Roman period. Further metallurgical analysis should be possible to compare

this material with that from other sites such as Thurnham and Westhawk Farm, where slag and metalworking debris has also been found.