ROMANO-BRITISH INDUSTRY AT STONEHILL, HANHAM BRISTOL. A preliminary Report.

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Sunmary

6 months of careful archaeological excavation at weekends by volunteer members of BIAS, Bristol and Avon Archaeological Society (BAAS), and Kingswood History Society has achieved the prime objective of finding, uncovering and recording at least one early bloomery iron smelting furnace, which has proved to be of undoubted Romano-British date. If the weather and impending roadworks permit it is hoped other similar furnaces in the line of the new ring road will be traced, to confirm the current indications that this was a major Romano-British ironworking site in a previously unrecorded and totally unexpected area.

Location

The line of the new Avon Ring Road, currently under construction to the east of Bristol, runs from Keynsham By-pass northwards, over the River Avon, towards the M4 Motorway. Beyond the river crossing it rises to pass along the western rim of the wide shallow valley of the Warmley Brook. In doing so it follows the eastern bounds of what was the Medieval Kingswood Forest Chase and also the corresponding edge of the Kingswood Coal measures outcrop.

In Roman times (see fig. 1) the road from Abone (Sea Mills) to Aquae Sulis (Bath) crossed the Warmley Brook valley rim at the very same point as does the modern A431, Bristol to Bath road, just to the east of Hanham. As a likely spot for ancient remains, confirmed by trial machine trenching, a Professional Archaeological dig, financed by the Highway Authority, took place in 1990/91 on the line of the proposed Ring Road immediately to the north of the A431 roadway crossing. This revealed substantial foundation remains of a Roman agricultural type building, as well as coal mining ‘Bell Pits’ of later date.(see V. Russett, forthcoming report).

As BIAS members will be aware from last year's edition of this Journal, following on from the final completion of the financed dig, urgent representations were made to Avon County Planning Officers and the County Archaeologist for consent to follow up the revealed site indications of early iron smelting in the near vicinity i.e. considerable quantities of bloomery tap slag and actual exposure of seams of iron ore on site.

Geology

It is a feature of the Pennant Sandstones exposures of the mid Coal measures in South Gloucestershire and Avon Counties, on a line stretching south from Iron Acton, through Frampton Cotterell and the Frome Valley, to the River Avon at Crews Hole, that these are impregnated with many narrow veins of the very pure iron oxide (Fe_2O_3) Haematite, and its crystaline form, Goethite (about 80% Fe_2O_3 and 10% H_20). Close to the A431 roadway and exposed by the machine trial trenching were particularly thick veins of Goethite and Limonite (impure Goethite) with an appearance of possibly having been quarried in a shallow pit. To the south of the A431 road these Pennant seams disappear beneath much younger measures of red Triassic Marl, which are in turn capped by Lias Limestones and Clays to form a local prominent ridge feature 'Stonehill' - no doubt named from the easily quarried Limestone slabs much used locally in early buildings until superseded by the more durable, but much harder to work, Pennant Sandstone

The Excavations .

Following on from the direct business contacts John Cornwell has with the landowners, Avon County Council Highways Department, formal consent was duly obtained for a party of suitably skilled local volunteers to carry out an unfunded rescue dig in advance of works on the Ring Road; the object being to endeavour to trace, record and, if possible, to date the bloomery iron smelting furnaces.

Works commenced, on a hot Saturday afternoon in August 1991, by running a line of four trial pits across a likely looking spot on the slope crest some 50 metres clear, and to the north-

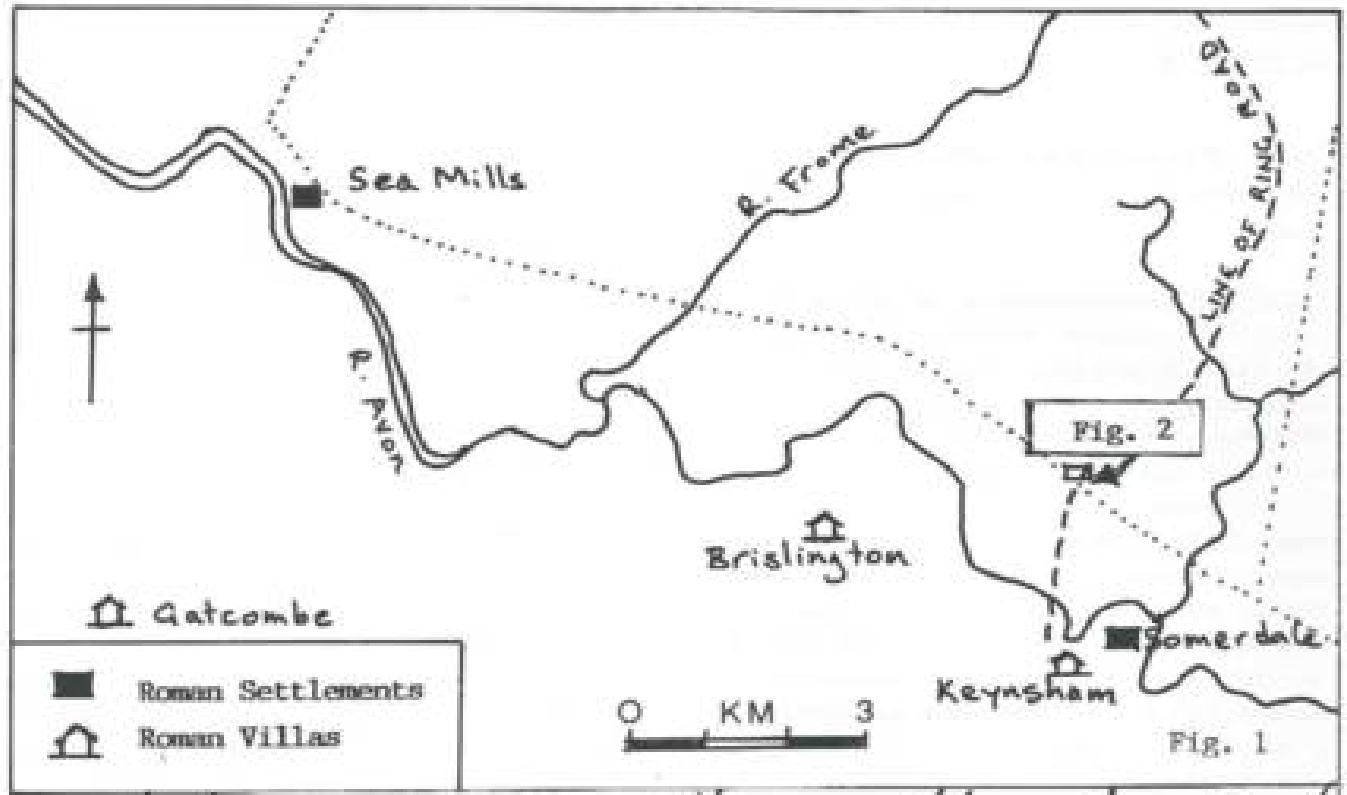

Sea Mills
R. Frome
R. Avon
Line of Ring Road
Fig. 2
Brislington
Gatcombe
Somerdale
Keynsham
Roman Settlements
Roman Villas
0 KM 3

Fig. 1

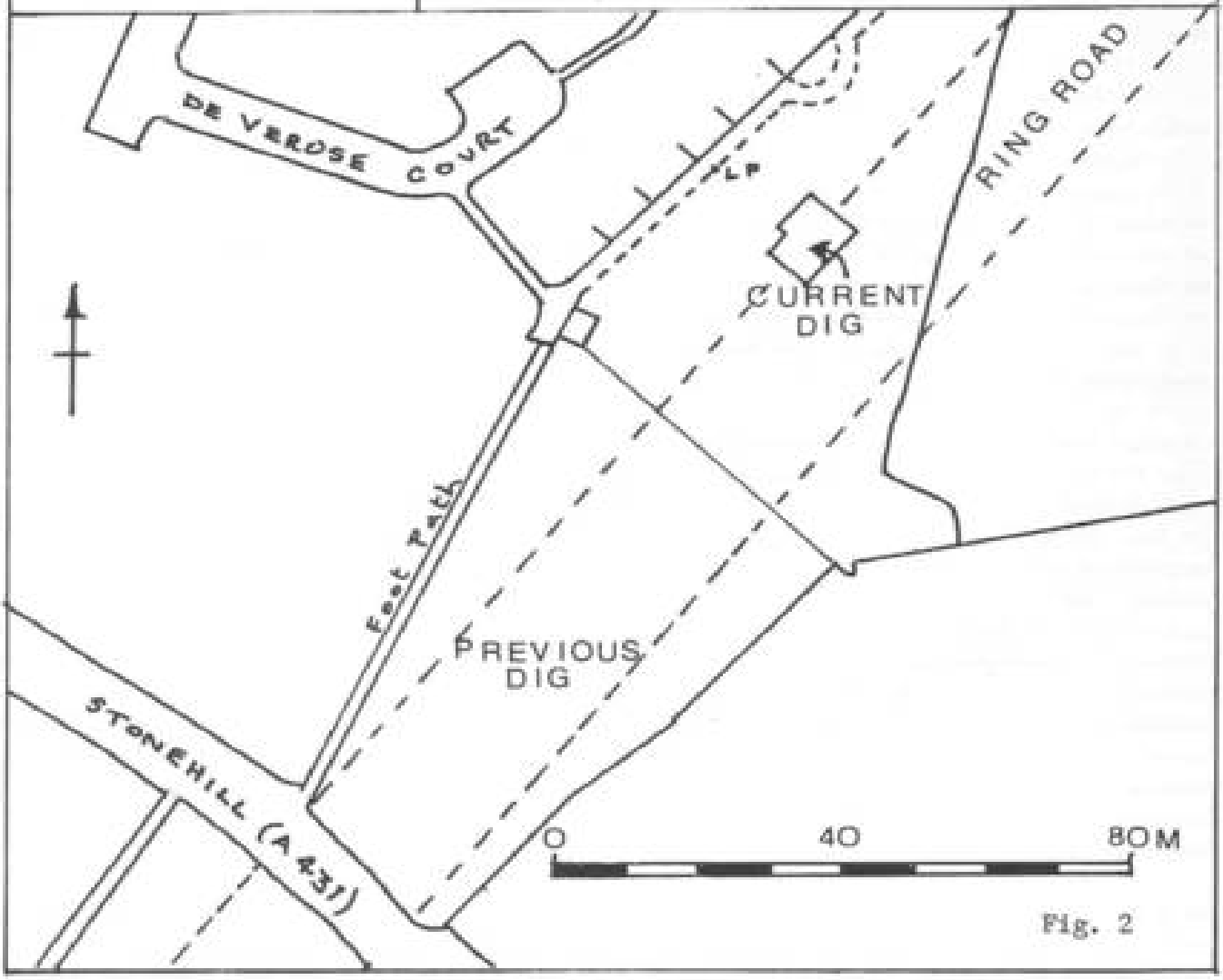
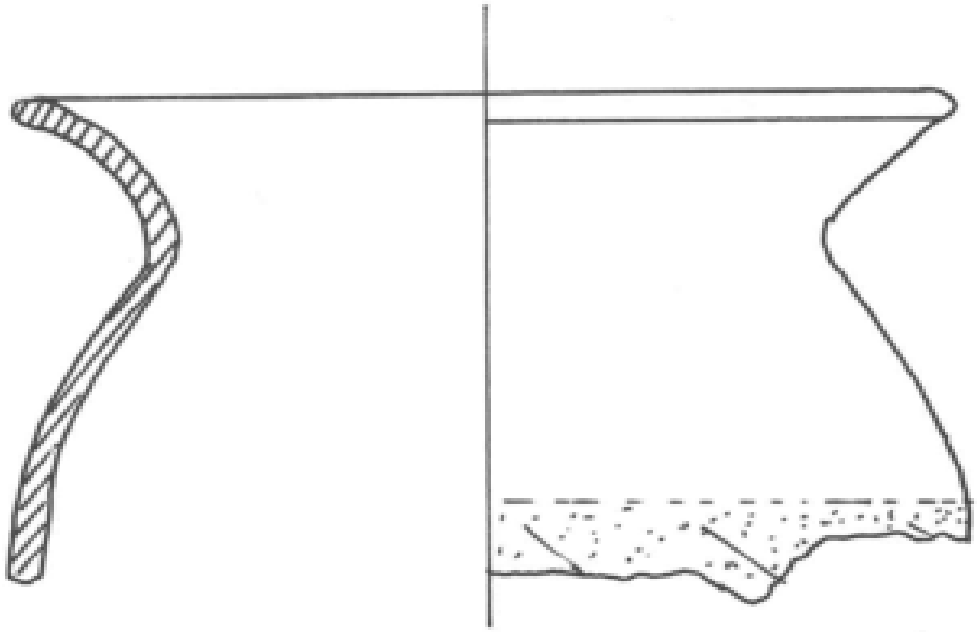
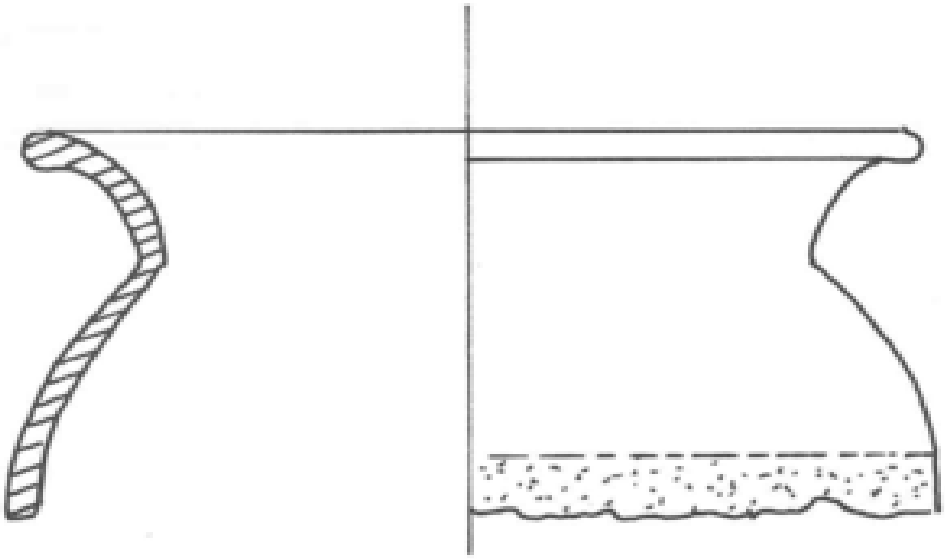

DE VERDSE COURT
LP
RING ROAD
CURRENT DIG
foot Path
PREVIOUS DIG
STONEHILL (A431)
0 40 80M

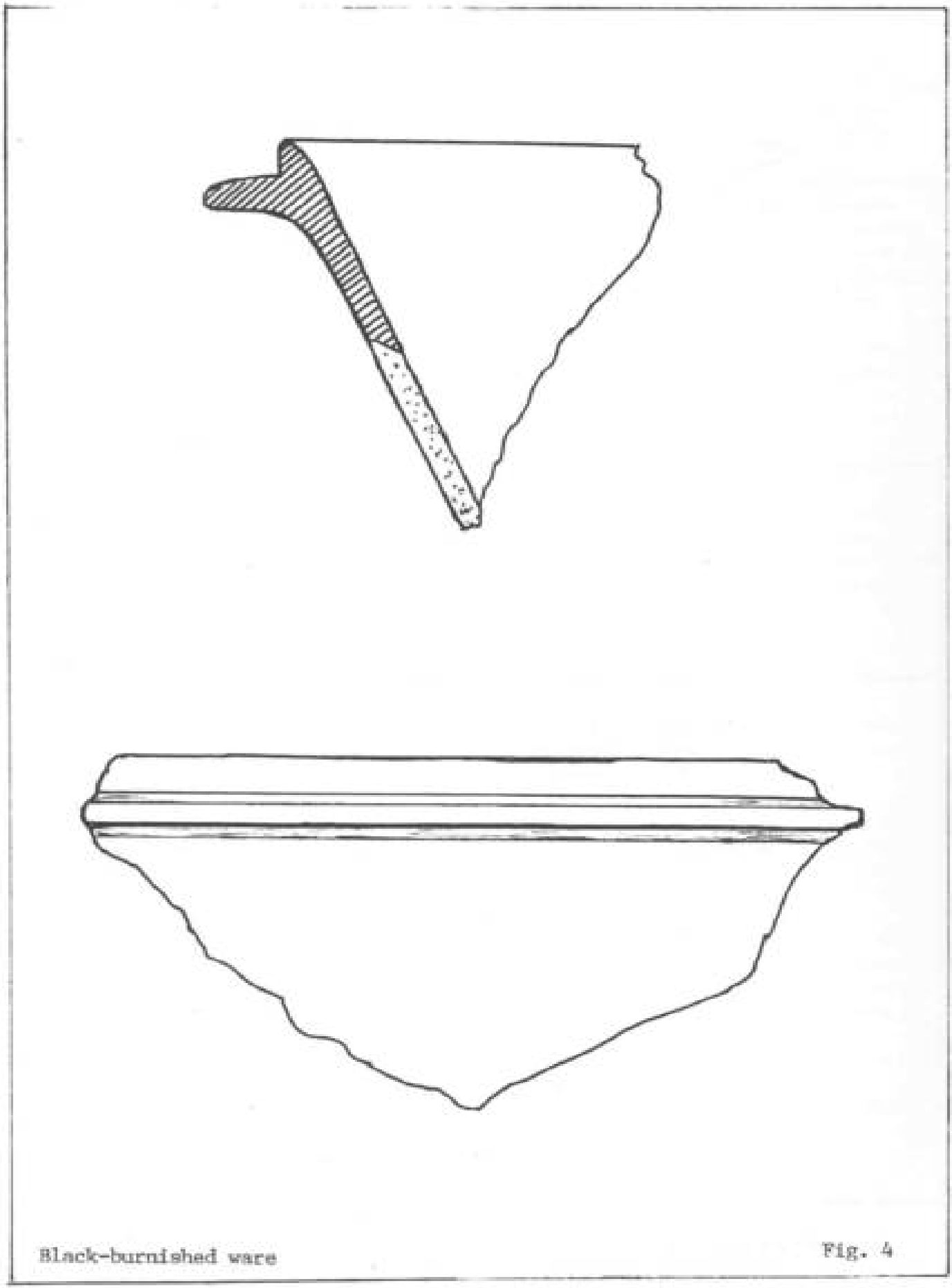
Fig. 2





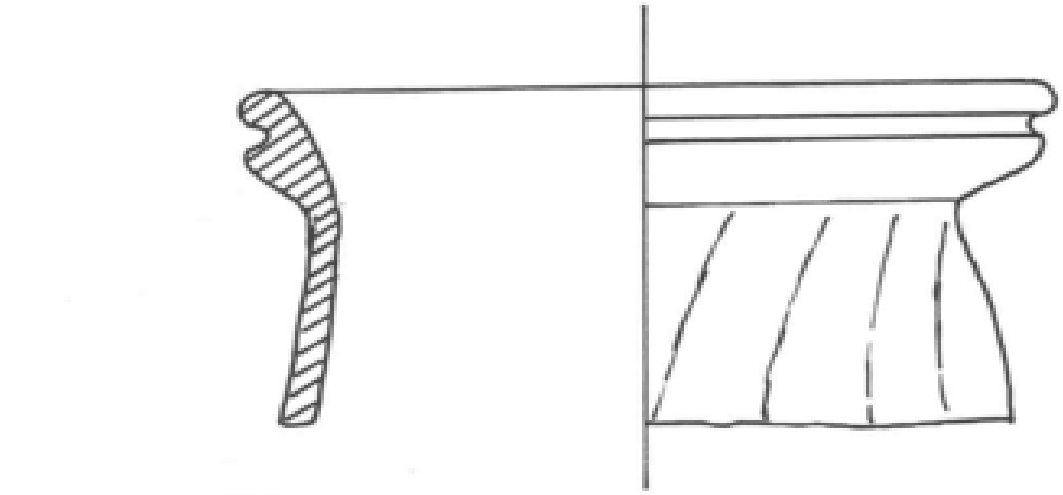
Black-burnished ware

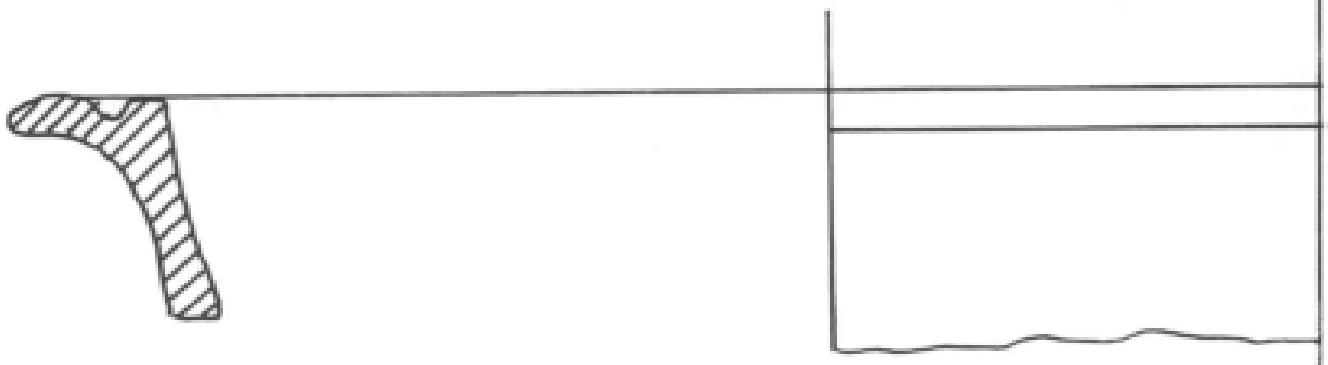
Fig. 3



Black-burnished ware

Fig. 4





Black-burnished ware

Fig. 5

east, of the completed and abandoned Professional excavations. By the end of that afternoon of digging into waist high grass and rock hard soil our exertions were rewarded by Geoff Wallis and his son in the most northerly trial pit turning up a rough floor level of Pennant Sandstone. We had all been carefully retaining the myriad fragments of iron slag scattered in the plough soil of each trial pit, and in subsequently weighing of the samples these proved to average a slag content of some 18 to 20 tons per acre (45 to 50 tonnes per Hectare).

As the weeks progressed the 4m x 4m square of excavation based on this initial finding gradually expanded to uncover and expanse of compact but formless stone jumble, mostly of Pennant Sandstone but with a random scatter of cream coloured soft Lias Limestone.

With further expansion of the excavated area a clearer pattern was revealed with first one and than another, close parallel, ditch cut into the red pennant subsoil, emerging to demark the south-eastern. extent of the stone jumble platform.

Much abraded sherds of Romano-British coarseware pottery had appeared in the covering plough soil but very mixed with Victorian and even later fragments of pot, together with the ever present iron slag fragments. Once into the stone jumble layer the slag fragments still continued, however the potsherds became exclusivly of Roman date, and the ditches in particular produced an abundance of larger pieces of Romano-British Grey and Black Burnished Ware — Category 1 (see figs 3,4 and 5).

On the far north-western side the stone jumble platform ended on a fairly abrupt line with no sign of laid walling, but with a number of post holes appearing in the Pennant subsoil surface rising beyond. Both to the north-east and to the south west the stone jumble platform extended beyond the area of excavation, giving an impression at first that we could have found the line of a road foundation.

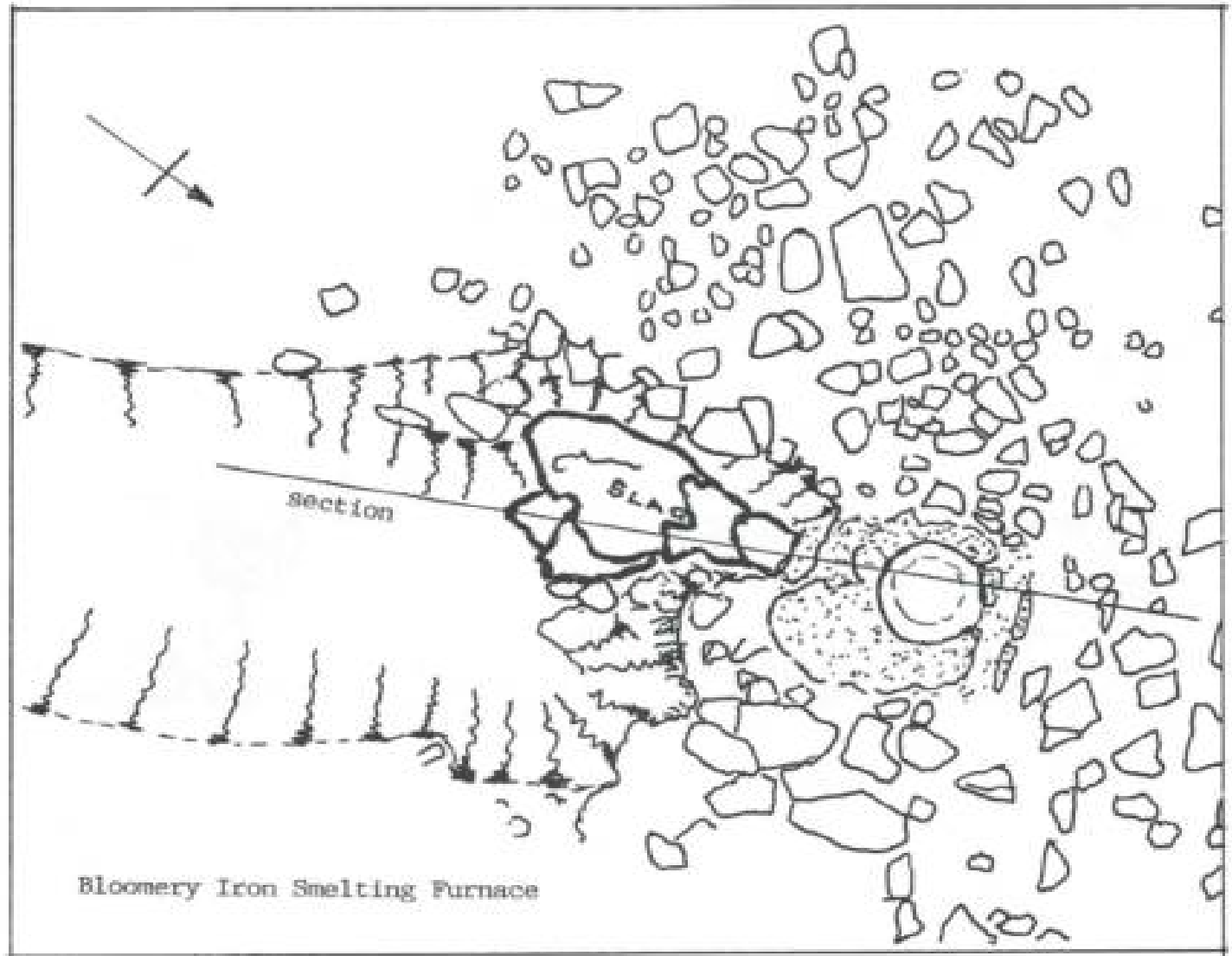
The Furnace

In exposing the parallel ditches further to the north-east the inner one first divided into two parts, with the more northerly part then dividing yet again into a northern spur. Built into and blocking that spur, using the ditch itself for support, we found our objective - the baked clay lower half of a small round furnace. Most remarkable of all, and proving its function, there was an unbroken and smooth surfaced ‘lava flow‘ of solidified iron tap slag pouring down from the furnace's southern side into the bottom of the ditch, no doubt from its last firing.(see fig. 6)

As we hope to preserve the furnace remains in some way - possibly by removal intact - the temptation to section its structure was resisted, but sufficient could be measured to show we had a circular shaft type bloomery furnace with an exterior diameter of approximately 80cm and an interior diameter tapering down from 30cm to 20cm, built in dark grey clay with its interior burnt bright orange-red. Congealed lumps of slag adhering to the interior side and also in the base were left untouched as removal would jeopardize the integrity of the structure. Without damaging the remains it was not possible to see where the furnace was blown - no twyers were visible - but the likelyhood is that it was blown from the northern side where the spur ditch appears to continue and could conveniently hold a pair of foot trodden goatskin bellows. The possibility of the furnace being Saxon or even Medieval in date was discounted by the fact that the ditch infill, covering the slag flow, contained exactly the same Black Burnished Ware pottery as the rest of the ditch system, and there were no signs of any disturbance or intrusions of a later date.

The Finds

As the dig at the time of writing (January 1992) is still continuing, with the number one priority of uncovering and recording as much of the site as possible in advance of the bulldozers, processing of the finds has so far gone little beyond washing the pottery sherds and, numbering them with their context of discovery and location (to a 1 metre square site grid system) The same referencing system is also used in the safe storeage of the finds of other materials, pending appropriate technical cleaning and conservation. The details and inferences given below are therefore in the nature of a very preliminary and limited sampling, subject to revision and considerable expansion as and when time permits proper research


Section
SLAG
Bloomery Iron Smelting Furnace

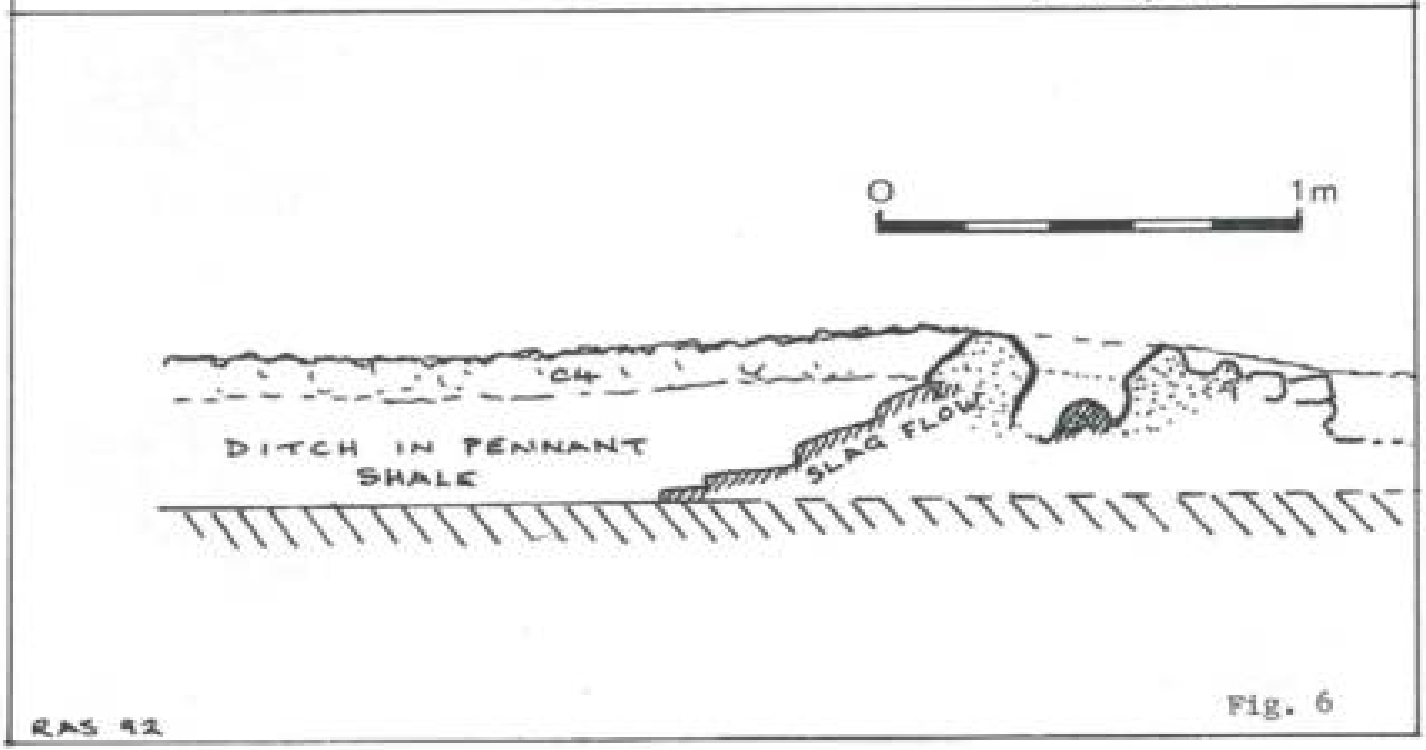
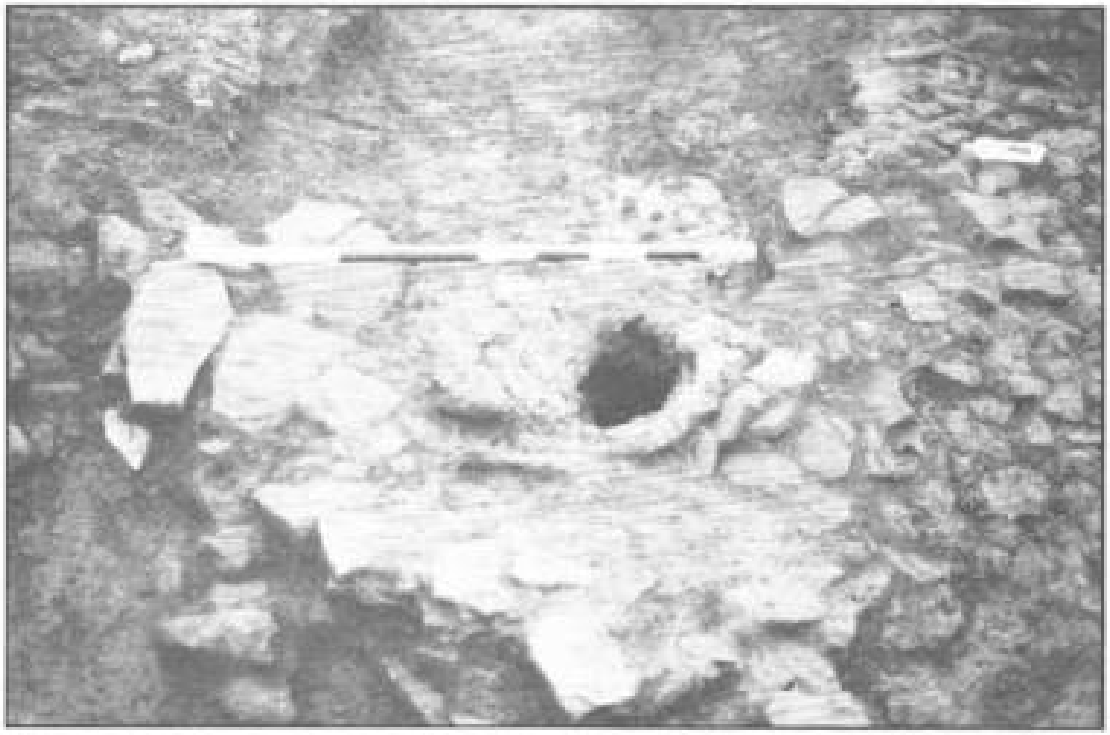

0
1m
DITCH IN PENNANT SHALE
SLAG FLOW
RAS 92

Fig. 6

PLATE ONE - Furnace from the North

PLATE TWO - Furnace from the North West



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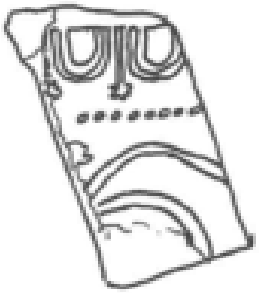
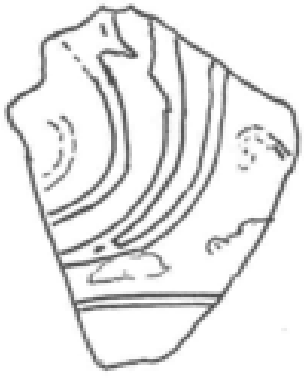
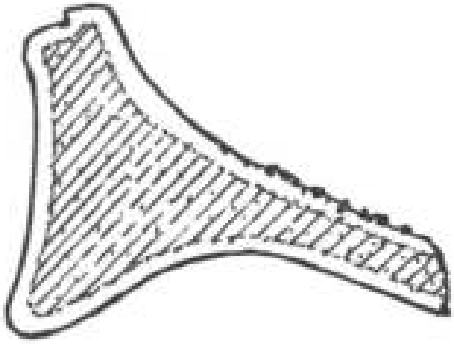
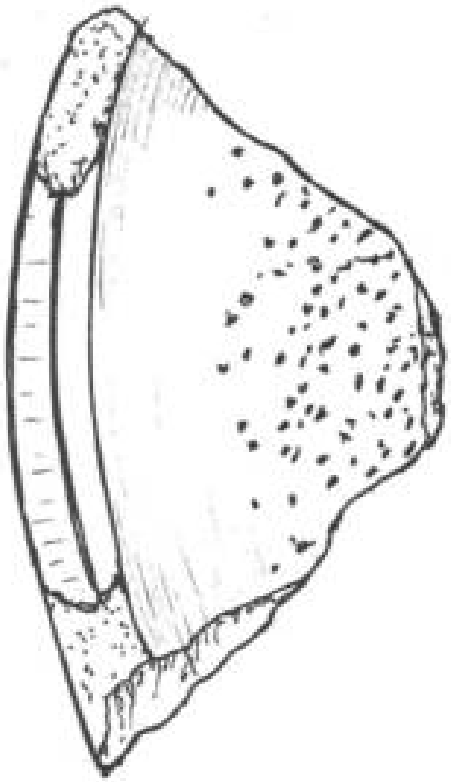




Samian ware

Fig. 7





Mortaria - grey core with orange surface and remains of cream slip

Fig. 8

1) Pottery

A limited scattering of sherds of fine red Samian Ware has been found, mostly plain surfaced, but there are three sherds marked with a floral scroll pattern together with an ovolo border and hanging rosettes, plus another plain piece with a Potters mark (see fig. 7) which would seem to indicate importation from Central Gaul in the first quarter of the 2nd century A.D.

However the vast preponderance of pottery from this site, particularly from the ditches, is of Grey and Black Burnished Ware (Jars with everted rims and with inscribed lattice or single cross hatching upon roughened bands, plus many plain 'Doggie' Bowls) which appear to be very similar to that found at the Gatcombe Villa complex [(1)] and therefore likely to be of a 4th century A.D. production from kilns on the Somerset Levels. This apparent paradox on dating can perhaps be best explained by reference to the 1970-73 excavation report on. Catsgore Romano-British site, near Ilchester in South Somerset, where Roger Leech [(2)] points out - "The percentage of samian present in contexts of after c.320 is also of interest for it is much larger than that found on the nearby farmstead on Bradley Hill. Possibly, samian tableware was passed down through generations of inhabitants at Catsgore, and was thus still in use in the 4th century."

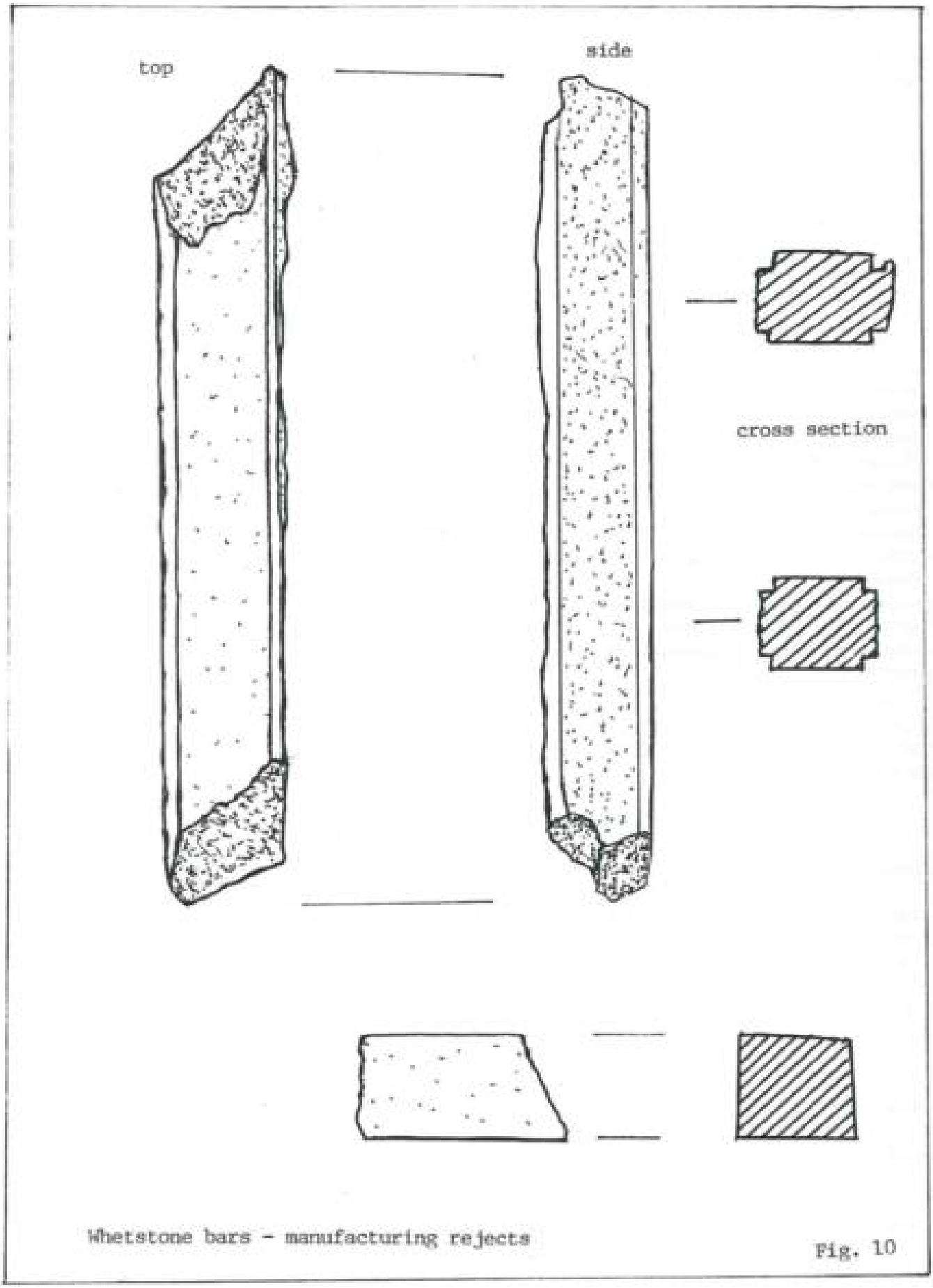
Mortaria - typically Roman pottery food mixing dishes with grit fired into their inner surface to act as an abrasive (see fig.8) - whilst portions of various styles and construction fabric were found on site, unfortunately these were in a generally badly damaged state and all came from the unstratified plough levels so are not of such a value to dating as might otherwise be the case.

2) Objects of Stone

One peculiar find was a flint scraper in beautiful condition (you have to be careful not to cut your fingers on the still sharp edges - see fig. 9). One could easily dismiss this as purely an intrusive item from the Bronze Age or even earlier that just ‘happened’ to be on site when the Celts arrived, but an increasing number of flint items have been noted on local digs of Romano-British context, for example at Sea Mills [(3)] and Alveston [(4)]. One is therefore tempted

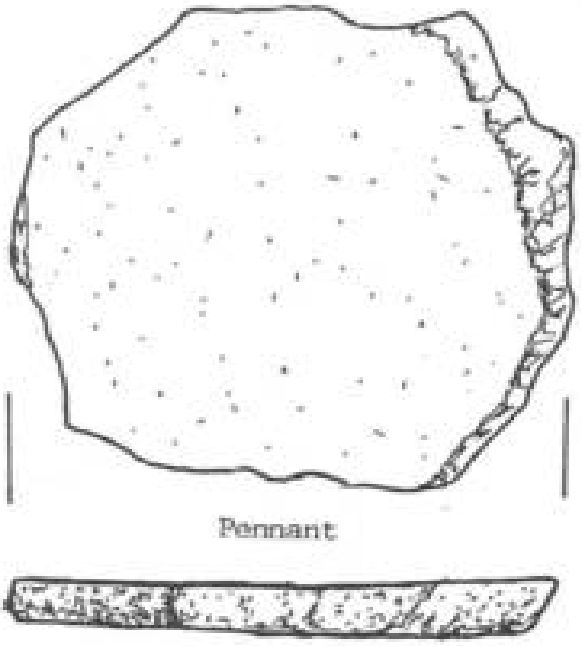
Flint scraper

Fig. 9

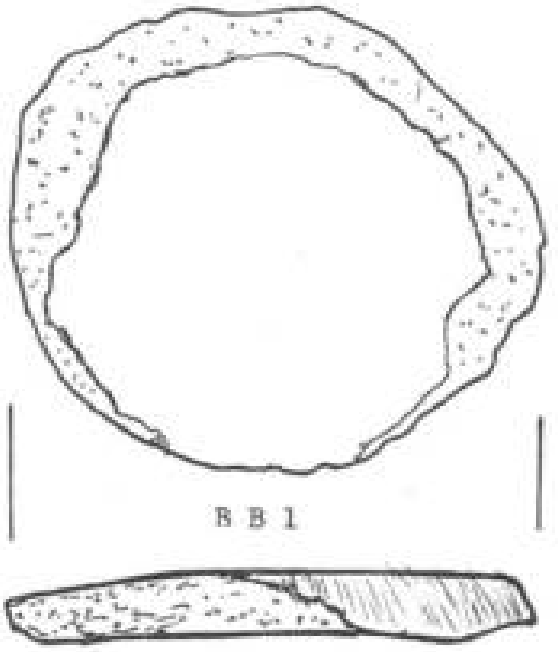


Whetstone bars - manufacturing rejects

Fig. 10



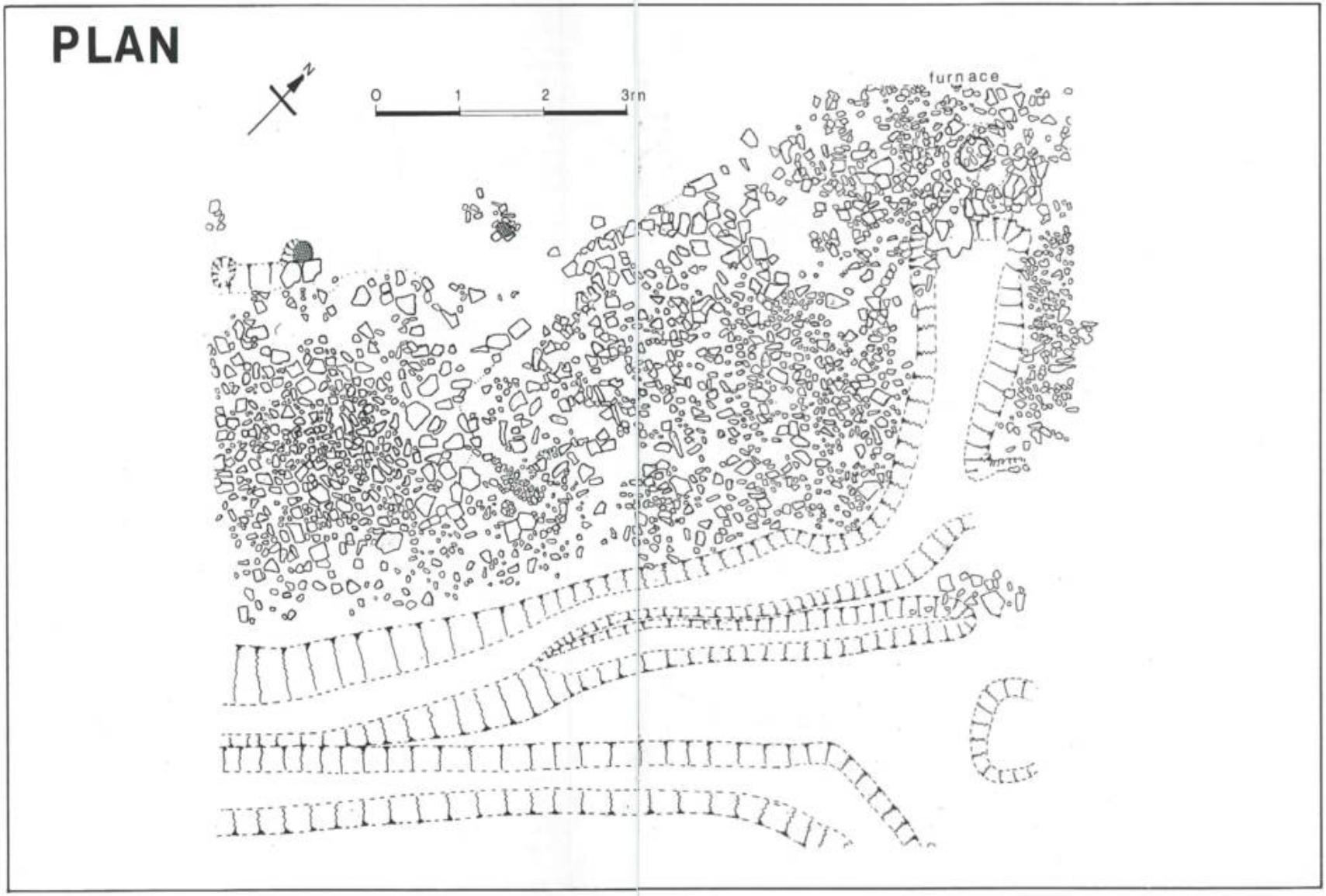
Pennant



B B 1

Pot Lids

Fig. 11


PLAN
N
0
1
2
3m
furnace

to wonder if ancient technology did not in fact linger on far longer than has previously been considered. After all, decent steel to take a long lasting razor edge must have been quite a rare and costly commodity in Roman times with only the direct, but rather ‘hit and miss', bloomery process plus case hardening available to them. So why not continue to use simple flint, being low in cost to produce, has a very sharp and renewable edge, and no rusting problems when scraping (say) wet animal skins?

Probably the most significant finds were rectangular bar whetstones made of fine grain grey Pennant sandstone, just a few showing any signs of wear - most being clearly unused rejects from various stages of manufacture (see fig. 10). A process of manufacture can be deduced from these rejects into the following basic stages -

1. A level slab of fine grain and dense Pennant sandstone, approximately 17cm across, as long as is convenient to work, and about 20mm thick was first rubbed flat on its upper surface, presumably with an abrasive block of the same material.
2. A single sawcut was made across the width of the top surface of the slab, approximately 3mm deep, together with a closely corresponding sawcut across the lower surface to match.
3. The shorter waste portion of stone was knocked. off at the sawcut line with a sharp blow.
4. On the remainder of the slab a new pair of sawcuts, top and bottom, were cut across 18mm - 26mm in from, and parallel to, the first. Again the stone knocked off with a sharp blow in order to form a roughly squared. bar of stone, the process being repeated to break off as many of these bars as the slab could accomodate.
5. The sides and bottom of these produced bars were then rubbed reasonably flat and smooth, before the whetstone ends were snapped off and trimmed up, ready for use.

The odds are that the Pennant slabs so used came from very close to the site - very similar stone has appeared in preliminary works at the road crossing - and that the whetstones were being produced in surplus of local requirements as an easily transportable and readily barterable items of trade.

Pennant stone roofing slabs have also been found on site, mostly in the ditches, but so few as to suggest the majority may have been salvaged for re-use elsewhere at some later stage. It is however risky to make any such assumptions purely on the basis of purely negative evidence.

A considerable number of so called ‘pot lids‘ were found scattered all over the site, practically all made of thin Pennant Sandstone slabs fashioned roughly into discs, but with one made out of the base of a Black Burnished Ware bowl (see fig. ll - lower). Being of all different sizes the thought occurred that they might have some other purpose, such as crude weights or some form of tally. In carefully arranging them one upon the other in a nicely graded pile one digger, only half jokingly, commented that one might have 21 nice game of ‘Towers of Hamurabi' to pass away the tedium of blowing the furnace.

Conclusions

As stated before it is far too early a stage to reach any firm conclusions from this excavation beyond a strong impression of a very rough working ‘shed’, with local Celtic workers under some degree of Roman control producing raw iron in commercial quantities of at least a regional significance, from outcrops of good local ore; and that a sideline trade in making whetstones was also occuring. This is the bare bones of what must surely have been the very start of organised industry within the Kingswood Forest area, and further exploration holds out the promise of shedding considerable light on the technology of the period at a previously unrecorded and unrecognised location.

References

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4. Site 47 – Lodge Farm, Alveston. Everton & Miles. in ‘Archaeology and the M5 Motorway, 4th Report’. Transactions of the Bristol & Gloucestershire Archaeological Society, 1976