BY R. HANSFORD WORTH, M.INST.C.E., F.G.S.

(Read at Tavistock, 22nd July, 1914.)

For twenty years or more occasional notes have been accumulating with reference to the relics of tin-working on Dartmoor. Their sum may possibly be sufficient to warrant their presentation at what may be regarded as moorland meeting of the Association.

BLOWING-HOUSE, RIGHT BANK, YEALM.

The writer has elsewhere¹ described the blowing-house on the banks of the Yealm. The two mouldstones associated with the upper blowing-house on the right bank are unusual in that the cavities would yield an ingot of the astragalus form. The better preserved mould lies within the house, and a plan and section of its cavity are now given (Fig. 1).

MARCHANT'S BRIDGE, MEAVY.

About twenty years ago the writer found a granite mouldstone on the bank of the Meavy, near Marchant's Bridge. The find was announced at a meeting of the Plymouth Institution, but has not been recorded in print. Within the past twelve months it has been stated in a letter to the Press that this stone has disappeared.

It lay to the south of the river, within a wood and very near a footpath leading to Yeo Farm, not many feet from the stile giving access to the wood. The cavity, as frequently is found, was not rectangular; the ends measured 12 inches and 10 inches respectively, the sides measured 19 inches and 17 inches, the depth of the cavity varied

¹ "The Erme, Yealm, and Tavy," Trans. Plym. Inst., 1891-92.

from 3 inches to $2\frac{5}{8}$ inches, and the total thickness of the stone was 15 inches. A view of the stone and a plan of the cavity are given (Figs. 2 and 3).

YEO FARM, MEAVY.

Yeo Farm is an old house which has but recently been abandoned as a residence. Its porch bears the date 1610, and the initials I.W. In a direct line it lies about 1600 feet east from Marchant's Bridge, and is in Sheepstor parish.

At just above ground-level in the wall of this farm, at the back, a granite block has been built in, which has in it two mortar holes.

Two other blocks of granite, each with two mortar holes, he, or used to lie, in the courtyard; an iron ring had been inserted in each, apparently with a view to their use as anchorage for horses. There is nothing to suggest that the wall into which the mortar stone has been built is of a later date than the rest of the building, it may therefore be that the stone has stood in the wall since 1610 (Fig. 4).

BRISWORTHY BURROWS, PLYM.

The remains of a blowing-house lie touching the field enclosures (a wall of the house forms part of a hedge) 1500 feet east of Cadaford Bridge and on the north bank of the Plym. The site will be found marked on the latest edition of the Ordnance Survey.

The walls of the building on the north and east, where they form part of the hedge, are six or seven feet high; on the south and west they are much lower. Mortar stones he within the building, and one lies outside to the south. The internal dimensions of the house are 32 feet by 13 feet (see plan Fig. 5).

Formerly there rested on the top of the ruin of the south wall a flat stone measuring some 2 feet 3 inches each way, but not square, and 7 inches in thickness. Uncovered about wenty years ago by the writer, it proved to be the base stone of the old tin furnace. It had a roughly triangular depression worked in it, 1 foot 2 inches wide and $\frac{3}{4}$ -inch deep at the back, which would have been at the back of the furnace, ending in a channel 3 inches wide and $1\frac{1}{2}$ inches deep at the front (Fig. 6). A view of this stone, taken immediately after it had been uncovered, is also given (Fig. 7). Some years ago this, like the mould at

Marchant's Bridge, mysteriously disappeared; all enquiries and all attempts to trace it have been vain. The loss is the greater in that it had no known fellow on the moor.

BRISWORTHY, PLYM VALLEY.

Northward from the last-described site a narrow, rough and watery lane leads to Brisworthy. On the eastern side at the extreme northern end of this lane where it opens out on the little hamlet are the remains of another blowinghouse, identified by the writer in 1911. A part of the wall remains in the face of the hedge, and a mortar stone is built into the hedge next to the southern gate-post of the field. The face of this stone measures 35 inches by 24 inches, and no less than fifteen mortar holes have been started in it. The largest has a diameter of 4 inches, and the smallest of $2\frac{1}{4}$ inches only. The deepest is only sunk $1\frac{1}{8}$ inches into the stone (Fig. 8). Such a collection of mortar holes, all in an early stage of formation, is, to the writer, unknown elsewhere. A view of this stone is given (Fig. 9) and an elevation (Fig. 9a).

The leat which supplied power to this blowing-house was taken out of Legis Lake, and still exists; it now extends to Wigford Down Clay Works, for which it provides water

PLYM ABOVE LANGCOMBE.

On the south bank of the Plym, a little over 600 feet above the confluence of the Langcombe Brook, are the ruins of a blowing-house. The true nature of the ruins had long been suspected, but it was not before the year 1911 that any proof was available, and then this was supplied by the discovery of a mortar stone. The building is near the river-bank, and measures 9 feet 6 inches by 20 inches internal dimensions; it was served by a leat from the Plym. The mortar stone is broken at one end and now 2 feet 9 inches in length; it has two perfect mortars and one broken. One mortar is oval, 13 inches by $10\frac{1}{2}$ inches by $5\frac{1}{2}$ inches deep; another is circular, $10\frac{1}{2}$ inches diameter by $4\frac{1}{2}$ inches deep.

MOULDSTONE AT WILL, NEAR WILLSWORTHY.

On the roadside waste at Will, near Willsworthy, by the road to Tavy Cleave from Horndon, there lies a mouldstone, which in addition to the larger cavity, has also small sample mould. The dimensions of the mould are

15¹/₂ inches by $11\frac{1}{2}$ inches at the top, and in the bottom 12¹/₂ inches by $9\frac{1}{4}$ inches, the depth being $5\frac{1}{2}$ inches. The sample mould measures $3\frac{1}{2}$ inches by $2\frac{3}{4}$ inches and $1\frac{1}{4}$ inches in depth. The overall dimensions for the stone are 3 feet $3\frac{1}{2}$ inches by 2 feet 2 inches (Fig. 10).

REDLAKE ON THE ERME.

In John Webster's *Metallographia*, 1672, occurs the following passage :---

"Now I shall give the reader such informations as I received from one *Thomas Creber* of *Plimpton St. Mary* in Devonshire, who was one (and all his ancestors before him) that had wrought in the Tin-mines ; and these particulars I had of him. . . . '5. Another place they call *Armed Pit* which holds Ore they call *Zill Tin*, which is as small as grit or sand, and needeth nothing but washing, and is the most easily melted of all sorts of Tin Ore, and lieth in chalk and clay ; and this small Ore, because it is rich, they call it fatty Ore.'"¹

There has always been a difficulty in the identification of *Armed Pit* (Erme Head Pit) with the excavations now known as "Erme Pits." Erme Pits appear to be in solid brown granite, while Creber's description evidently refers to tin occurring in china clay. There is, of course, the bare possibility that a patch of clay once occupied a part of the area of Erme Pits, but the indications are strongly to the contrary.

On the other hand, there has been uncovered of late years a large deposit of china clay at the source of the Redlake, which is in the neighbourhood of the head waters of the Erme. Previous to the destruction wrought in removing the overburden from the clay, extensive tinworkings were clearly traceable; these are not indicated on the Ordnance Survey, but Fig. 11 shows them correctly. An approximately north and south trench followed the course of the Redlake and served to unwater the worked area, probably also it yielded some stream tin; east and west runs a lode which was followed by the Tinners with another gully, there being branch gullies spreading from at or near the intersection of these main workings. No great depth was attained in any of these open cuttings;

¹ For the complete passage, see "On the Track of the 'Old Men, Dartmoor," by Mr. R. Burnard, *Plym. Inst.*, 1888-89.

the peat is six to seven feet in depth; this had been passed through and the clay entered to a depth of ten to twelve feet at the extreme. There was good reason for this restricted working, since the clay, near the lodes especially, is very treacherous ground, and the writer had at one point to abandon the attempt to sink a shaft, after three failures. close timbering being used but of too light a nature. Elsewhere close timbered shafts were carried 60 feet in depth, but the necessary pumping involved suggested another difficulty which the tinners were ill-equipped to meet. Relics of the old miners have been found-a rather light iron pick with wooden handle still perfect, and a piece of oak which has been the head-piece of one of the frames used to hold apart the sides of the excavation. The oak, having been completely buried in clay, was in perfect preservation. The piece was half round, about 61 inches across, split from a tree of that diameter; it was between 6 and 7 feet in length, and at each end a notch 31 inches wide by 11 inches deep had been cut, evidently as housings for vertical timbers. The notches appear to have been cut out with hatchet and chisel; no saw has anywhere been used on the timber. The sapwood of the oak is in perfect condition, but at one end the heartwood is rotten. evidently a defect which existed in the tree when felled (Fig. 12). In drying the wood has split.

The lode which has been mentioned contains but little tin-stone. The tin occurs in bunches near the lode, in the china clay, in fine to medium grains of great purity. The colour is brown to black, the smaller particles being naturally the browner. The soft, thoroughly decomposed rock needs but washing, as Creber said. The workers must have had very varying fortune, since really productive parts of the clay rock are local and restricted. It is, however, a matter for comment that quite extensive workings are to be found on Dartmoor, where diligent search reveals nothing but very poorly furnished lodes.

It is suggested that the works at Redlake were Creber's "Armed Pit."

YELLOWMEAD, SHEEPSTOR.

On Yellowmead Farm in Sheepstor parish there is a field bounded on the south-west by the Sheepstor Brook and extending in a north-easterly direction until it meets the open moor. From the hedge adjacent to the moor

Fig 1.



PLAN



SECTION



R. Hansford Worth

STRAY NOTES ON DARTMOOR TIN-WORKING .- Between pp. 288-9.



FIG. 3.-MOULDSTONE, MARCHANT'S BRIDGE, MEAVY.



FIG. 4.-MORTAR STONE, YEO FARM, MEAVY,

STRAY NOTES ON DARTMOOR TIN-WORKING.



BASE STONE OF FURNACE.



SKETCH PLAN of BLOWING-HOUSE Scale 10 feet to 1 inch

BANK



R. Hansford Worth

Mortar

Fig 5.

STRAY NOTES ON DARTMOOR TIN-WORKING.



FIG. 7.-FURNACE BASE, BRISWORTHY BURROWS, PLYM.



FIG. 9.-MORTAR STONE, BRISWORTHY, PLYM.

STRAY NOTES ON DARTMOOR TIN-WORKING.





FIG. 10.-MOULDSTONE, WILL, NEAR WILLSWORTHY.



FIG. 12.-PORTIONS OF OAK STRUT, REDLAKE, ERME.





south-west for a distance of three hundred and fifty to four hundred feet, this field is entirely occupied by very considerable tin-streamers' burrows, great mounds of boulders and stone thrown up in the search for tin. At the foot of the burrows there are the ruins of two buildings, both resembling in structure and size the average blowing-house. Only one of these ruins is indicated in the Ordnance Map. No mould or mortar stones have been found, but a thorough search would involve clearing the buildings of fallen stone. A large piece of slag, weighing several pounds, was discovered this present year near the ruins, and on being broken disclosed numerous "prills" or beads of metallic tin, providing conclusive evidence of smelting. There is also a third building in the same field, probably connected with the tin workings, but doubtfully a blowing-house.

WILL OF A DARTMOOR TINNER.

1631, April 27. The Nuncupative Will of Frauncys Worth, of Walkhampton, was proved in the Court of the Archdeacon of Totnes, by Elnor Worth, daughter, executrix and residuary legatee.

The testator gave to his son Ellize and his daughter Nicholl, wife of Walter Saunder, ten shillings each-to his daughter Temperance, wife of Henry Hingston, and to his daughter Elizabeth Worth, twenty shillings each.

Witness John Warren.

Inventory by John Warren and Nathanaell Gee or Geer, 4 Feb., 1630-31, £10 1s. 8d., which included "His Tinners Tooles with other Iron Worke" 3s. 4d.

LOCALITIES REFERRED TO.

Right Bank, Yealm, blo	w-								
ing-house		lon.	3°	56	54"	lat.	50°	27'	27늘"
Marchant's Bridge, mou	ld-								
stone		lon.	4°	2'	58''	lat.	50°	29'	2"
Yeo Farm, mortar stone	es	lon.	4°	2'	34''	lat.	50°	29'	2″
Brisworthy Burrows, blo	w	-							
ing-house		lon.	4°	1'	45''	lat.	50°	27'	$49\frac{1}{2}''$
Brisworthy, blowing-									-
house		lon.	4°	1'	46''	lat.	50°	28'	5″
Plym above Langcomb	be,								
blowing-house .		lon.	3°	58	' 81/2"	lat.	50°	29'	$15\frac{1}{2}''$
Will, mouldstone .		lon.	4°	4'	$26\frac{1}{2}''$	lat.	50°	36'	50"
Redlake, old workings		lon.	3°	54	' 33"	lat.	50°	28'	9″
Yellowmead, Sheepstor	ð	lon.	4°	0	' 37"	lat.	50°	29'	25"
TOT NIT		m							