



Fig. 1. View east along line of sunk road



Fig. 2. Clay core of north wall looking W.

VI.—THE EXCAVATION OF ONE HOUSE SITE IN THE DESERTED VILLAGE OF WEST HARTBURN, CO. DURHAM

*L. Still and A. Pallister*¹

West Hartburn

Nothing is known of the history of the village of West Hartburn before its purchase by Bishop Pudsey as part of the Wapontake of Sadberge about 1187. Its later history is that of Middleton St. George—see Surtees, Hutchinson, V.C.H., etc.

The site of the village lies principally in the fields of Foster House Farm, to the east of the present farm house although some traces lie to the north of the present Long Newton-Middleton St. George road in a field belonging to West Hartburn Farm. Remains on the ground suggest a long narrow village green with houses on both north and south sides, each row of cottages possibly having its own roadway. One sunken roadway is still very obvious running the length of the southern side of the village, but that on the northern side is probably obscured by the modern road and hedges. (See sketch plan of village.)

Two house sites are well marked and in 1961 Mr. Pallister made some trial excavations to determine the nature of the building and the direction of the walls, indicated roughly by mounds on the surface. From the information gathered

¹ The authors would like to acknowledge their indebtedness to the late Mrs. M. Pattison and to Mr. G. W. Pattison of Foster House Farm for their permission to excavate and their assistance at all times; to Miss E. Cannon for her kindness and skill in drawing the metal objects and pottery; to Dr. J. Kent for his observations on a silver coin; to Dr. M. A. Butterworth for her examination of coal specimens; to Mr. L. S. Phillips, M.Sc., F.G.S., for his identification of rock samples; and of course to all those who worked with them on the site itself.

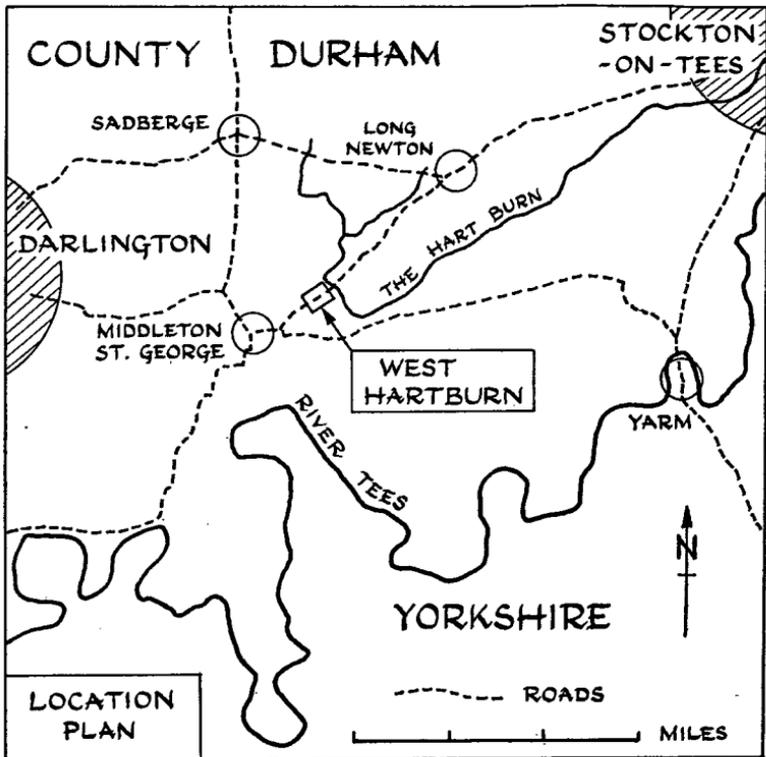


FIG. 1

in this year it was decided to excavate the larger of the two house sites completely and the work was carried out in May, June and July of 1962. The map reference is O.S. 1" Map Sheet 85-358142.

The Excavation

An area measuring 76 feet by 40 feet was pegged out to provide a grid of 4 foot squares. This grid covered the house site completely except for the east end, where a road leading to an Air Ministry radio mast and cutting the north-east corner of the site could not be disturbed. For excavation

WEST HARTBURN

VILLAGE PLAN

MAIN FEATURES ONLY SHOWN.
 GROUND SLOPES GENTLY TO STREAM.
 P.....DRIED-UP POND.
 W.....DITTO - SITE OF WELL?
 RF.....BOLD RIDGE & FURROW.
 FRF....FAINT RIDGE & FURROW.
 A.....HOUSE 'A' - EXC. 1962.

LONG NEWTON

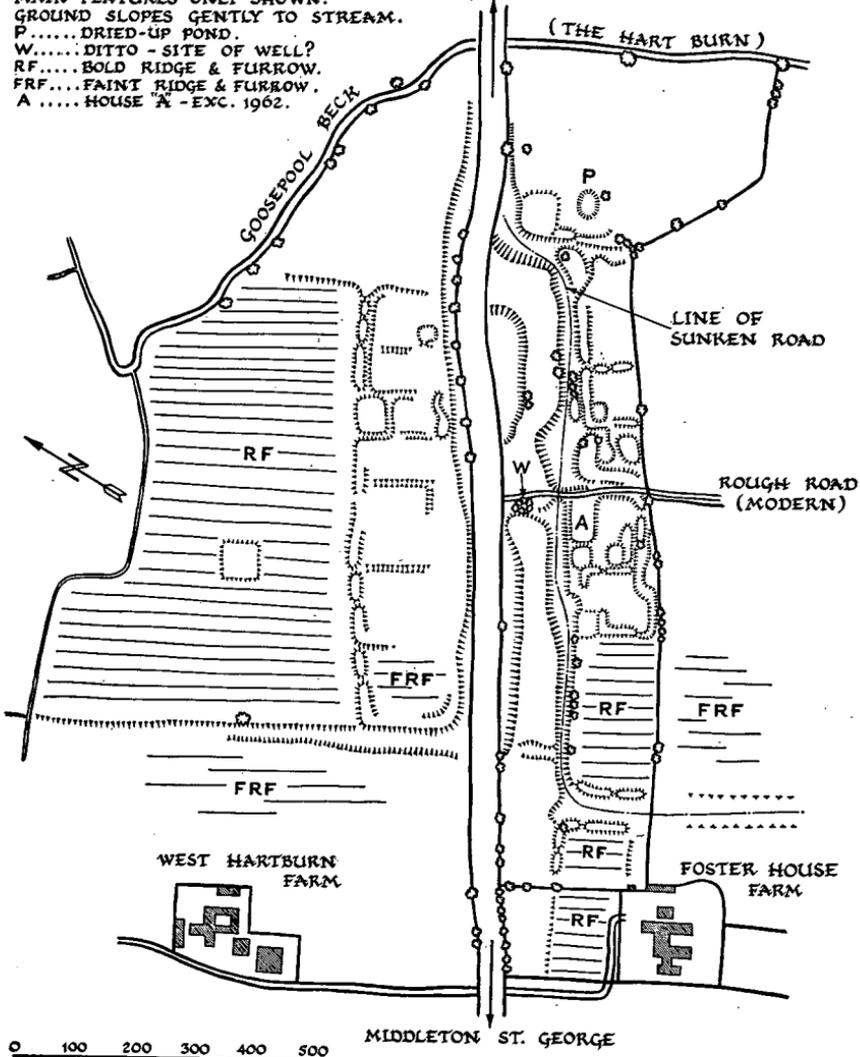


FIG. 2

purposes the site was divided into three sections, leaving two baulks for ease in barrowing and for recording levels as they became obvious. These baulks were removed last and the whole site exposed. Sections were drawn as the work proceeded. The field in which the site lies is permanent pasture, presumably undisturbed since the village was abandoned; a corner of the field still retains ridge and furrow markings which extend to other fields through the modern hedges.

The accompanying plans show the site as it was finally exposed.

Briefly, the overall dimensions of the house are 72 feet long by 24 feet wide. The internal width varies from 12 feet at the west end to 18 feet at the east. A platform had been made before construction began. There was neither turf nor soil below the walls and floors, simply natural clay. The walls were constructed of clay with an inner and outer face of undressed and waterworn boulders brought probably from the River Tees, little more than one mile distant at its nearest point. Some small stones would be found on the site; the area is thickly covered with boulder clay but it does not in general yield such large pieces as were used in the house. The house was divided by a cross wall, 36 feet from the east end. This cross wall had on its western face an apse-like structure, the base of a chimney or a corn-kiln, rather similar in shape and location to that found on Site 20 at the Northumberland D.M.V. of West Whelpington. This cross wall and apse are thought to be later than the two long north and south walls. The floor in the eastern half of the house was made of clay and two distinct levels were seen, the western half had at its lowest level a stone floor, later covered by one of beaten clay. Pottery and iron fragments were recovered from the whole area; in general more were from the western half than from the eastern half. This fact, added to the position of the hearths in the eastern half and the blackened nature of the soil containing vegetable refuse, bones and coal in the western half, suggests that the eastern

half was for human habitation and the other was for animals and stores.

Although the house appeared to have retained its original outline and dimensions there was evidence of at least two reconstructions. These will be described as found, commencing with the upper, or Phase II, level.

Phase II—see Plan no. 1

Plan no. 1 represents the building as seen after all turf, topsoil and loose stones had been removed. The stones in dark shading are those set firmly in hard clay and show the foundations of the walls. These wall footings were examined carefully and sectioned in places and it would appear that the method of construction was that of a clay core between 2 feet and 3 feet thick, faced on both sides by undressed river boulders. The clay of the wall interiors had been worked, it was free from the gravel and small stones found in the local clay, and had a texture and colour quite distinct from the natural layer. The clay interior of each wall was examined for signs of post holes, wattle hurdles, etc., but nothing was found. This suggests that no posts were set in the wall clay as evidence of the use of posts was clearly seen elsewhere on the site. A wall with a core of clay and outer and inner faces of stone, wide at the base and receding towards the top, is a reasonable form of construction, particularly if, as may have been the case, the weight of the roof was taken by other supports. The interior dimensions of the whole building at this stage were 62 feet long and between 12 feet and 18 feet wide. A cross wall divided the structure into two rooms, a small western half 28 feet by 12 feet and a wider eastern half 29 feet by 18 feet approximately. Internal evidence suggests that the western half was a storeroom and possible animal house whilst the eastern half was for human occupation. The evidence for this assumption is (a) a hearth, situated against the cross wall, faced into the eastern end, (b) the eastern half was relatively free from finds and rub-

bish of all kinds whereas the western half contained a great number of animal bones, broken pottery and soft black soil indicative of vegetable decay.

The cross wall itself existed as a projection from the north wall, 5 feet long and 2 feet wide, made of two parallel lines of well laid stones with a filling of clay and smaller stones. It was then enlarged by an apse-like structure, 4 feet wide, projecting westwards and situated behind the hearth, indicated by calcined stones and much burnt clay and ash. This apse-like structure is taken to be either the base of a chimney or a small corn drying kiln.

To the south of this assumed kiln the cross wall was continued as a clay bank, its line on the westward face being clearly indicated by the abrupt cessation of a layer of coal dust which was present in the western section of the house floor at this level. In addition, two small post holes 2 inches in diameter and circular in cross section were seen in such a position as to suggest supports for a wattle hurdle against a clay wall. This cross wall curved westward at its junction with the south wall of the house and formed a corner without any apparent break. East of this junction neither stones nor clay bank were apparent and this gap may represent a doorway.

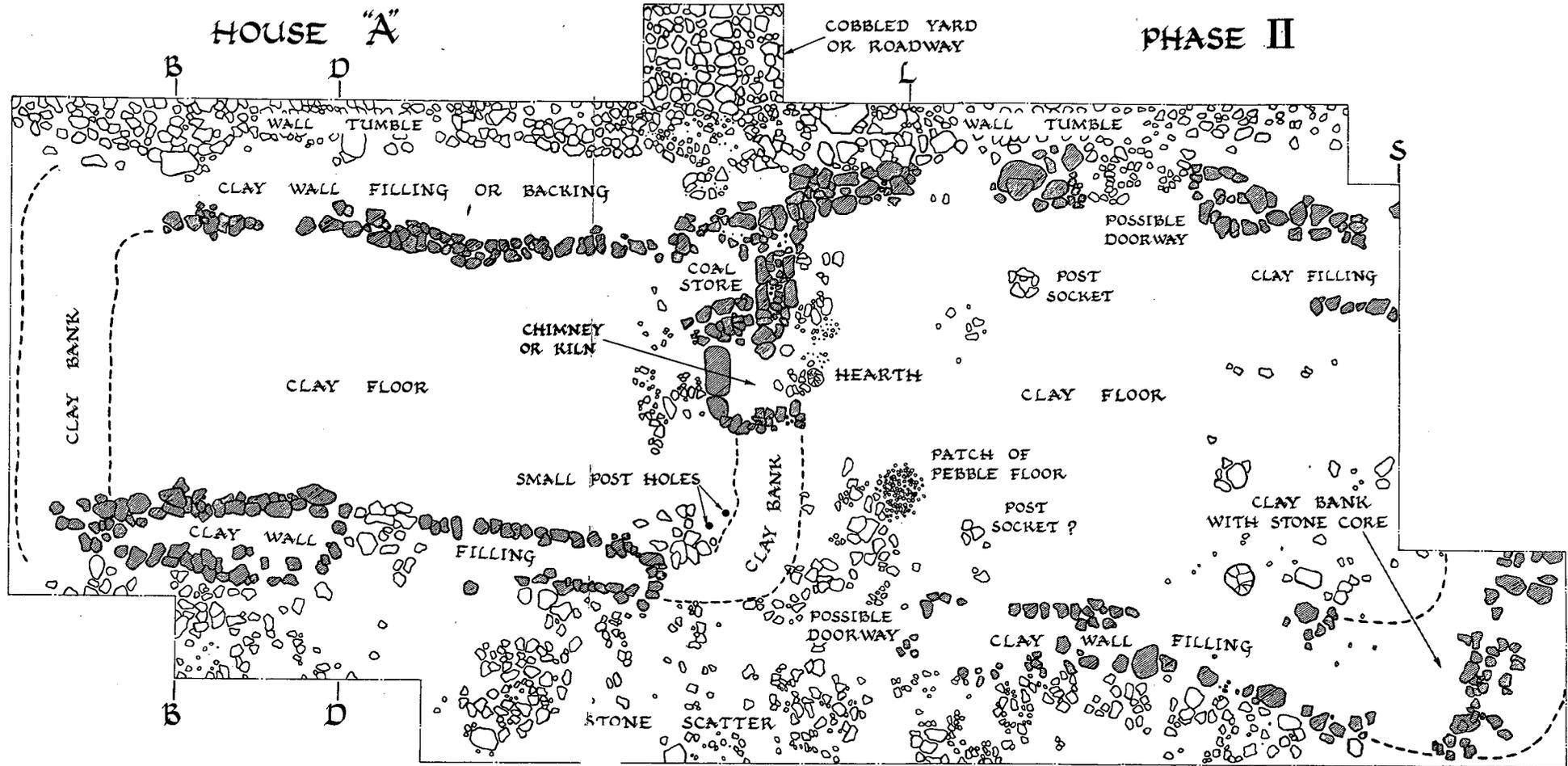
Western section of the house—Phase II

Measuring approximately 28 feet by 12 feet this part of the building had well defined north and south walls and a floor of hard clay. The soil immediately above the floor contained a great number of animal bones, the jaw bones of pigs being most common, much broken pottery and one silver coin, a penny of Bishop Ruthall (1509-23), found on top of the collapsed south wall. This coin and its position is discussed in Appendix 2 to this report.

The western wall appeared as a very noticeable bank of worked clay. No stone facing was in position, but tumbled stones had to be cleared from the interior and could be felt through turf to the westward of the exterior, suggesting the

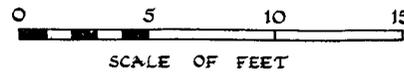
WEST HARTBURN 1962

PLAN I



FEATURES SHOWN AS FOUND ON EXCAVATION.
WALL STONES FOUND IN POSITION, OR NEARLY
SO, SHOWN SHADED.

FIG. 3



use of facing stones in a manner similar to the long walls. In the north-east corner of this room there was a heap of small coal, several inches in depth. This coal appeared as surface scatter over most of the clay floor of this western room. Fragments were taken for examination and the report appears as an appendix.

No obvious entrance suggested itself in this part but a depression, 3 feet wide in the south wall, may represent one.

Eastern section of the house—Phase II

This end of the building is assumed to have been for human habitation—a beaten clay floor, an absence of small finds and a scatter of plaster fragments from the inner face of the east wall supports this view. The internal dimensions were 29 feet by 18 feet, extra width being obtained at the expense of wall thickness. Two groups of stones on the surface of the clay floor suggested post sockets and a roof supported on internal timber uprights. The hearth was very obvious, against the cross wall and marked by cinders and ash upon burnt stones. The south wall was a continuation, both in line and form, of that of the western room; it was fragmentary in places but sufficiently well marked by its clay filling. The eastern wall had possessed some plaster on its inner face which had fallen forwards into the house. No large pieces of plaster were preserved but there was a general scatter of small particles, indicating by their presence the original floor level. This eastern wall could not be examined in its entirety as an Air Ministry road crossed one corner of the site. In the north-east corner a double line of stones (4 feet long) with clay filling suggests that the original line of the north wall was at some period rebuilt to make a larger room. This is admittedly a puzzling feature and no explanation of why that short section of wall remains is offered.

In the south west corner a patch of pebbles and small stones set in the clay floor suggests an entrance. In the

centre of the north wall an absence of large stones may also indicate an entrance or simply the activities of stone seekers. In this context it should be said that in this area, where stone is not plentiful, both of the neighbouring farms have yards paved with small boulders—the obvious resting place of much of the village stonework.

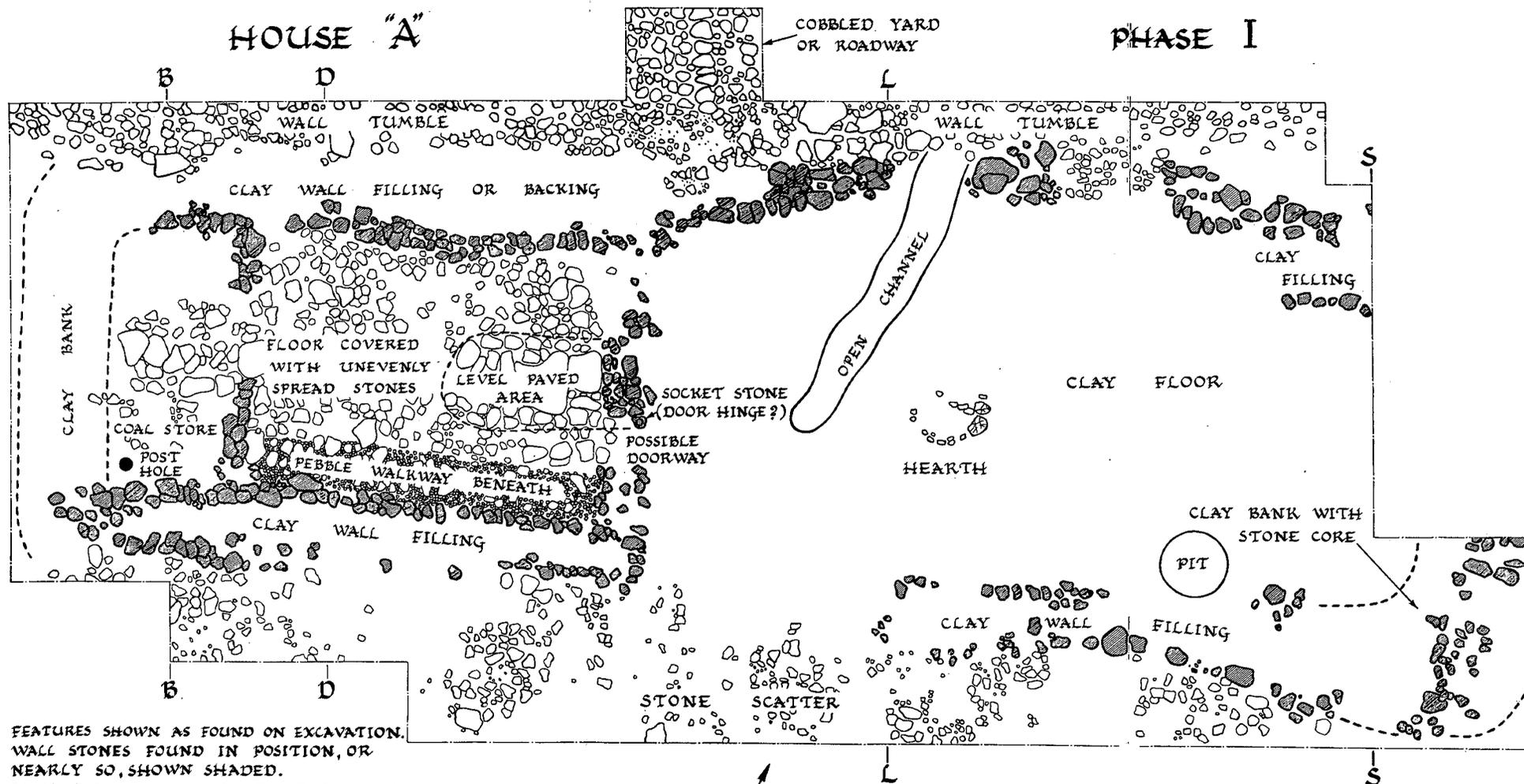
This level of the building which we have called Phase II was sufficiently well defined by a level clay floor throughout bearing a great deal of occupational refuse. Having recorded this level we proceeded to what lay beneath—

Phase I—see Plan no. 2

Western Section

The level clay floor of this half of the building was completely removed to reveal a lower floor in part properly paved and in part clay reinforced with stones. Bones and pottery were recovered from the surface of this floor and from between the stones. The jaw bones of pigs, some with tusks, were the commonest finds. At the eastern end of this half an attempt had been made to construct a level floor, large flat stones being used. This level area occupied only a small proportion of the total floor area; complete paving may have been impossible owing to a shortage of suitable stone. Along the south wall a walk-way of pebbles set in clay was obvious, the remainder of the floor was of clay in which stones were set. Some of these stones were wall tumble, others appeared to have been set in the floor and the general impression was of a reinforced floor level. The walls for Phase I were similar to those of Phase II with the addition of the footing of two short internal projections from both north and south walls near to the west end. These projections form the retaining walls of a small room and the limits of the southern half of this room were marked by another store of coal dust. In the south-western corner there was a post hole, not in the wall but rather in the junction of the south and west walls.

WEST HARTBURN 1962



FEATURES SHOWN AS FOUND ON EXCAVATION. WALL STONES FOUND IN POSITION, OR NEARLY SO, SHOWN SHADED. IT IS NOT CLEAR WHETHER THE OUTSIDE WALLS OF PHASE I DIFFERED SIGNIFICANTLY FROM THOSE OF PHASE II. THESE WALLS ARE THEREFORE SHOWN GENERALLY THE SAME FOR BOTH PHASES.

FIG. 4

This hole was filled with soil and coal dust and had at the bottom two pieces of pottery. The presence of this post hole suggested a roof supported by wooden posts, and an attempt was made to find another in the north-western corner without success, as disturbance of the site there in earlier years had removed that area in which such a post might have been expected.

The cross wall dividing the building was again present but located to the west of the later wall above it. The western room was now 24 feet long instead of 28 feet as previously. This cross wall was indicated by stones set in a clay bank broken only by a gap a little south of centre. It is thought that this gap represented a door, particularly so as at the north side of the gap there was set a stone having a conical socket cut into it in which a post could have turned.

Eastern Section

At this early stage 38 feet long and between the same north and south walls, this room possessed a second, lower clay floor at a depth of approximately 3 inches below the first. The clay broke away easily at this level and particularly so near the centre of the room, where the remains of an earlier hearth showed as an area of burnt red clay partly surrounded by small burnt stones. This hearth had been covered by the laying of a second clay floor.

In the south-east corner a large flat piece of red sandstone partly covered the mouth of a circular pit 3 feet wide and 3 feet 6 inches deep, filled with soft black mud containing large pieces of very coarse hand built pottery of an unfamiliar type. The mouth of this pit was invisible at Phase II level but could have been dug and sealed at any time during the history of the house.

The only other feature observed in this room was a trench or gulley, 14 feet long and previously covered by the clay floor of Phase II date. This gulley had a soft filling containing pottery fragments. It is difficult to account for

this feature—a drain, a sunken entrance, a place where something had been buried?²

Exterior

The exterior of the house on all sides showed much tumbled stone and in addition an area north of the centre of the north wall indicated an attempt at a paved path leading in the direction of a hollow in the ground, supposed to mark the site of a well once known to exist in the village. Many fragments of pottery were found beneath the tumbled stone on the exterior, and also, along the outer edge of the north wall, pockets of mussel shells in some quantity.

Conclusion

The significance of the excavation lies in that it has revealed a complete ground plan of a medieval long house which can be said to have existed between the thirteenth and sixteenth centuries. The pottery fragments, largely body sherds, can be dated only by comparison with other known pieces of this period. The earliest fragments, probably thirteenth century, came from between the stones of the lowest floor level at the west end; the latest sixteenth century patterns from below the collapsed walls on top of the clay floor over the whole site. The iron spur, no. 22, a fifteenth century type, was found in a position suggesting that it had been pushed between two stones at the foot of the reconstructed north wall. Apart from this, there is little to date various building phases which may have occurred. A house built in the fashion described would no doubt require a good deal of attention to its structure from time to time.

There is enough evidence from various sources to suggest that this 'long house' pattern is typical of the period and the place. In South-East Durham a house site of this

² Two levels have been described for each half of the house, and only two could be observed with any certainty. The plans show the two levels of the two house-halves as contemporary with each other, but it is not suggested that this is necessarily the case. A reconstruction of one half of the house could have taken place independently of the other.

nature has been excavated at the deserted village of Swainston near Sedgefield; a second was briefly disclosed during building operations at the west end of the now shrunken village of Long Newton near Stockton in 1963; and outlines of others are suggested by turf banks at Elton, an almost depopulated village near Stockton. In Northumberland the excavations at West Whelpington³ and Memmerkirk⁴ have provided examples of houses of similar pattern although of stone construction.

The West Hartburn house appears to have been dismantled. There is no evidence of burning over the whole site, and only one small fragment of wood was found. This suggests the removal of all roof timbers and posts, a suggestion reinforced by the finding of large numbers of bent iron nails over the whole site. The door key had been thrown into the middle of the house, there to be covered by debris from falling walls. This excavation can throw little light on the reason for the total desertion of this village other than that it did not occur before the later years of the sixteenth century, nor much later; it is significant that no clay pipe fragments were found apart from one small stem piece at grass root level.

METAL OBJECTS

* illustrated.

- *1-5. Spindle whorls, lead. The first has the letters RNO in reverse. (1-3 only illustrated)
- *6. Bronze double ring having two small loops diametrically opposite. Diameter $1\frac{1}{2}$ ".
- 7 & 8. Iron needles, length 4" and $2\frac{1}{4}$ ".
- *9. Bronze buckle.
- *10. Bronze thimble.
- *11-19. Iron buckles. (13, 15, 16 illustrated.)
- *20. Iron stirrup, width $4\frac{1}{2}$ ", height 5".

³ A.A. 4th series. Vol. XL.

⁴ A.A. 4th series. Vol. XLI.

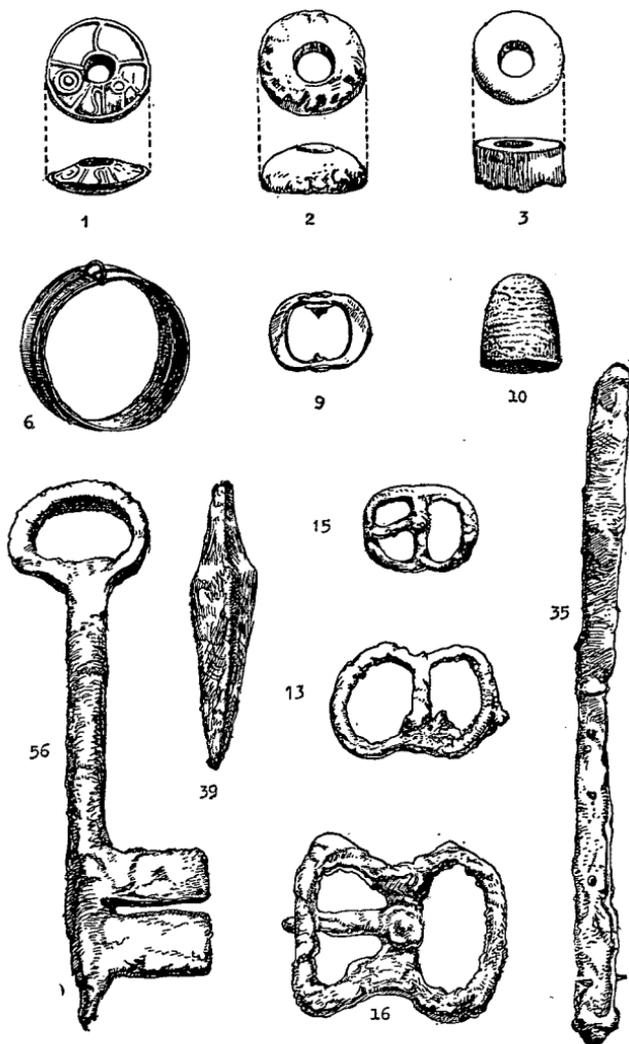


FIG. 5. METAL OBJECTS (½)

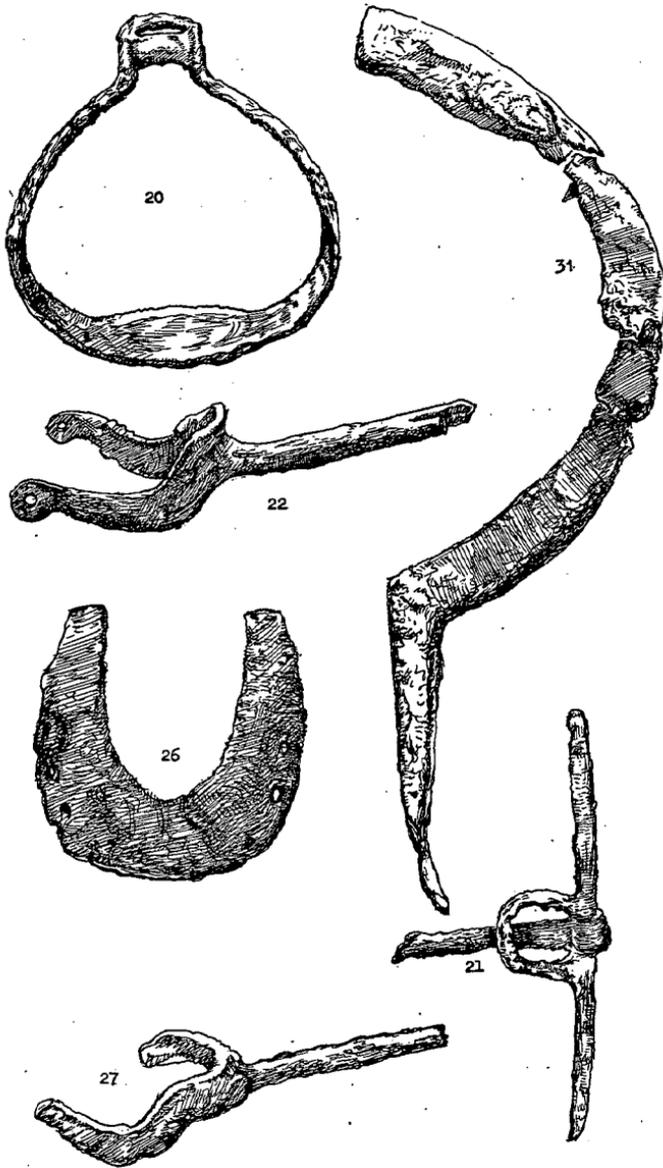


FIG. 6. METAL OBJECTS (1/2) NO. 31 (1/2)

- *21. Iron snaffle bit (fragment).
- *22. Iron spur, length $7\frac{1}{2}$ ". Rowel socket present but rowel missing.
- 23-25. Iron fragments, possibly purse frames, approximately 6" long.
- *26. Iron horse-shoe, no calkins.
- *27. Iron spur fragment, length 6". Rowel socket missing.
- 28. Iron fragment, possibly prick spur.
- 29. Iron knife-blade, single edge, handle missing, length $9\frac{1}{2}$ ".
- 30. Iron blade, 5" long, possibly razor.
- *31. Iron sickle, incomplete.
- *32-38. Iron knife-blades, some with handles still showing rivets for securing cheek-pieces. Lengths of blades 3"-5". (35 illustrated.)
- *39 & 40. Iron objects, square in cross-section and tapering to a point, possibly blacksmith's sets. (39 illustrated.)
- 41. Section of iron chain.
- 42. Iron spike, $9\frac{1}{2}$ " long.
- 43. Iron plate, $1\frac{1}{2}$ " by $1\frac{1}{4}$ ", with centre hole $\frac{1}{4}$ " in diameter.
- 44-50. Iron hooks and brackets.
- 51-55. Iron rings.
- *56. Iron door-key, length $5\frac{1}{2}$ ".
- 57. Door-bolt, iron, length 7".
- 58. Iron fragment, possibly from agricultural implement.
- 59. Iron bracket, incomplete.
- 60. Bronze cauldron leg.
- 61. Iron fragment, purpose unknown.

All metal objects reproduced half size with the exception of numbers 20, 21, 22, 26 and 27, which are one-third size.

POTTERY

* illustrated.

- *1. Rim of vessel in coarse buff fabric, aperture $5\frac{1}{2}$ ". No evidence of glaze.
- *2. Rim of vessel in pinky buff fabric, flanged below rim. Aperture $7\frac{1}{2}$ ". No evidence of glaze.
- *3. Rim of vessel in pinky buff fabric with grey interior, reduced and re-oxidized in cooling. Aperture $4\frac{1}{2}$ ". Lid seated, no glaze.
- *4. Rim of vessel in pink fabric, aperture $6\frac{1}{4}$ ". No evidence of glaze.
- *5. Rim of jug in grey fabric, re-oxidized to pink on inside surface. Aperture $4\frac{1}{2}$ ". Lead glaze stained by ferric oxide on edge of rim only.

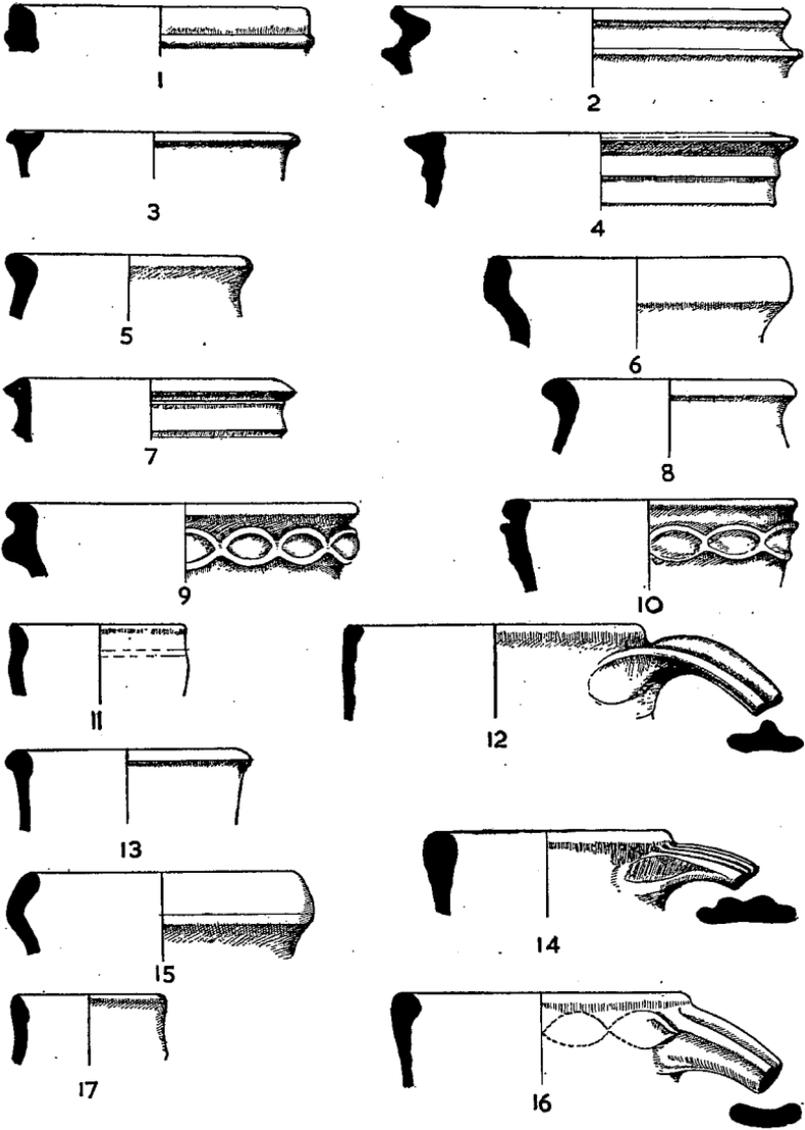


FIG. 7. POTTERY (4)

- *6. Rim of grey jug. Aperture $5\frac{1}{2}$ " , completely reduced fabric. Green lead glaze coloured at upper edge by iron stains from the body of the pot.
- *7. Rim of jug in pink gritty fabric, aperture 5". No evidence of glaze.
- *8. Rim of jug in grey fabric, aperture $4\frac{1}{2}$ ". Evidence of decayed glaze on upper surface of rim only. Outer face of jug fully reduced and apparently free from glaze.
- *9. Rim of jug in grey fabric, aperture $6\frac{1}{2}$ ". Pie crust moulding around neck, green glaze.
- *10. Rim of jug, aperture 5". Grey fabric with heavy pie crust moulding below rim. Green glaze, some iron staining.
- *11. Rim of jug in grey fabric, aperture $3\frac{1}{4}$ ". Green lead glaze.
- *12. Rim and handle of jug in pink fabric, aperture $5\frac{1}{2}$ ". Strap handle joins neck of jug with thumb print on each side. Green glaze with russet brown iron stains.
- *13. Rim of jug in dark grey fabric, aperture $4\frac{1}{4}$ ". Green/brown glaze, slightly pitted.
- *14. Rim and handle of jug in grey fabric, aperture 4". Broad strap handle has three grooves, emerges straight from rim with finger pressings on each side at joint. Pale green glaze.
- *15. Rim of vessel in grey fabric, aperture 5". Pale yellow glaze with brown staining, oxidized-lead glaze.
- *16. Rim and handle of jug in grey fabric, aperture 5". Thick thumb groove down centre of handle which has been pulled to the left on being mounted on pot. Pie crust moulding below rim. Good dark olive green glaze heavily stained with brown.
- *17. Rim of jug in grey fabric, aperture $2\frac{1}{4}$ ". Smooth green glaze.
- *18. Large vessel in grey fabric, uneven double rim turned inside. Handle mounted sideways, probably twin handles although only one shown in reconstruction. Height not known. Probably thrown on wheel, but appearance suggests poor centering. Smooth green glaze.
- *19. Base of jug in buff fabric, base diameter 3". Heavy throwing rings in interior. Poorly made specimen, green glaze.
- 20. Base and lower half of large jar in grey fabric, base diameter $6\frac{1}{2}$ ". Patchy green glaze heavily stained with brown.
- *21. Lower half of well-made storage jar in fine grey fabric with external green to brown glaze. Bung hole 1" in diameter in centre $1\frac{1}{2}$ " above interior base.
- 22. Rim and body sherds of large pot in grey fabric, aperture 18". Coil made and smoothed on slow wheel, average wall thickness $\frac{1}{2}$ ". Depth not known but in excess of 12". Heavy

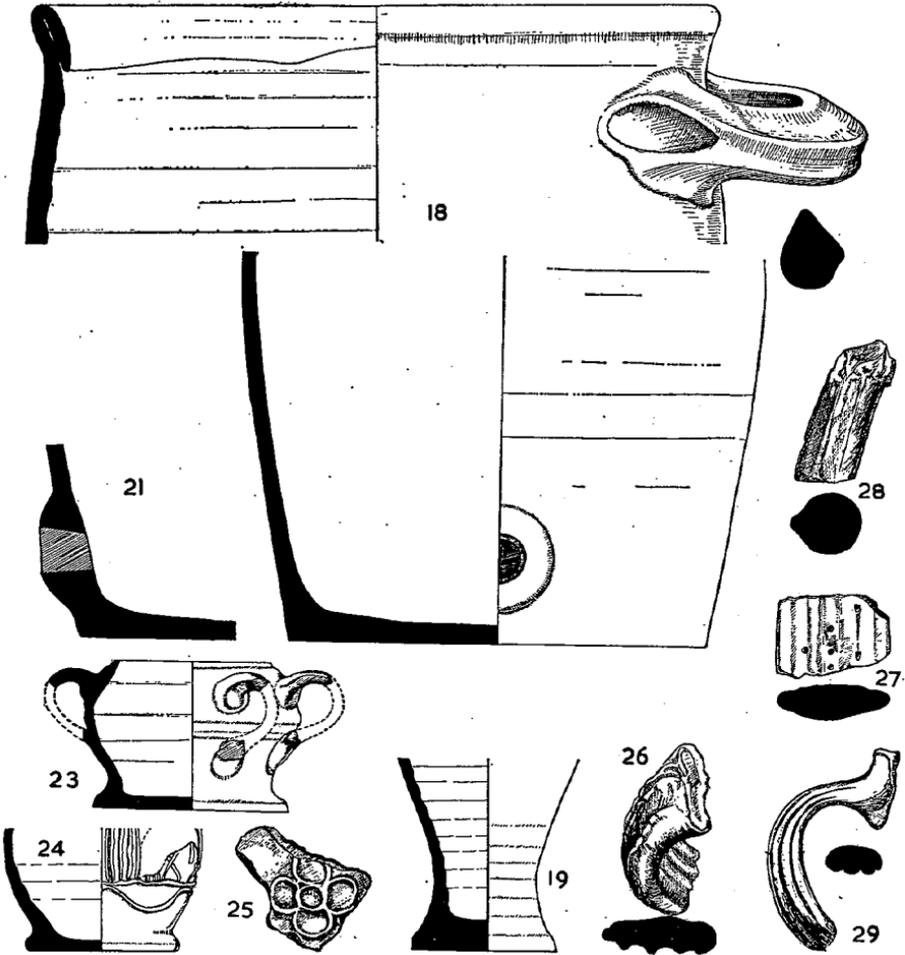


FIG. 8. POTTERY (4)

applied thumb print decoration $1\frac{1}{2}$ " below rim. Patchy decayed green glaze on interior and exterior surfaces.

*23. Eight handled cup in thin hard red fabric. Aperture diameter 3", maximum 4", base 3".

*24. Part of small vessel in hard red fabric with white slip trailed decoration under glaze, general chestnut brown body colour.

- *25. Applied four leaf decoration on pot of grey fabric with pale green glaze.
- *26. Large strap handle, width $2\frac{1}{2}$ " , with three grooves running lengthwise. Yellow glaze.
- *27. Fragment of strap handle with five shallow and irregularly spaced grooves and three rows of regularly spaced holes made with a sharp pointed instrument.
- *28. Section of handle in pink fabric, central ridge with thumb print at one end. Yellow glaze.
- *29. Handle in pink fabric, poorly formed, three incised grooves, vestiges of green glaze.
- 30. Pot lid fragment to fit aperture 5" in diameter. Grey fabric, decayed green glaze, lower flange $\frac{1}{2}$ " deep. Incised concentric ring decoration on upper surface.
- 31. Convex base of pot in grey fabric, diameter 5". Evidence of face blowing inside pot. Stacking ring noticeable. Green glaze.
- 32. Ditto in grey fabric, green glaze badly decayed. Inside shows signs of pummelling out possibly with a stick, while outer edge was being eased away from the wheel.
- 33. Decorated fragment of green glazed grey fabric pot having three incised wavy lines occurring twice in two separate bands.

APPENDIX I

MIOSPORE EXAMINATION OF A SAMPLE OF COAL FROM THE MEDIAEVAL VILLAGE OF WEST HARTBURN, CO. DURHAM

Fragments of coal from excavations at the mediaeval village at West Hartburn, near Middleton St. George in County Durham were submitted for miospore analysis by the Chief Coal Survey Officer, Newcastle.

Miospore assemblages

The coal contained spores indicative of horizons between those of the Harvey and Marshall Green seams, not inclusive. The high numbers of *Densosporites* suggested that the coal was from either the Busty or the Brockwell seams. The fragmentary nature of the sample makes it impossible to be more precise about the identity of the seam.

Conclusion

It is concluded that the coal could have originated from the Busty or Brockwell seams in Durham,⁵ or from coal at equivalent horizons in other coalfields.

pp. *Divisional Chief Scientist*
Mavis A. Butterworth.

APPENDIX II

SILVER COIN

Found in soil over tumbled wall in south-western section of south wall.

Identified by Dr. John Kent of the Department of Coins and Medals, British Museum, as—

Henry VIII, a Durham Penny issued
by Bishop Ruthall (1509-23). Type 1
(TD over shield)

Dr. Kent is of the opinion that as the coin is in good condition it is unlikely to have been lost later than about 1545.

The position of this coin above the fallen wall suggests that this end of the house was in ruins at the end of the sixteenth century.

APPENDIX III

ROCK SPECIMENS FROM WEST HARTBURN D.M.V.

- Specimen A Bunter sandstone. This rock group forms the bed rock in the West Hartburn area and the specimen is therefore probably of local origins.
- B Probably also a Permo-Triassic sandstone from the same area.
- C Highly angular coarse quartzose sandstone. This is probably one of the coarse sandstones of the Millstone Grit group whose outcrop flanks the Pennines, particularly in the upper valley of the Tees.

⁵ The nearest outcrop of the Busty and Brockwell seams occur in the St. Helens Auckland area, i.e. about twelve miles to the north-west of West Hartburn.

- D Fine-grained micaceous sandstone crossed by a thin vein of calcite stained red by fine-grained hematite inclusions. This rock is probably Ordovician or Silurian in age; the nearest outcrops of these rocks are in the Lake District and at Cross Fell.
- E Keuper Marl. This rock group succeeds the Bunter Sandstone to the south-east and occupies a broad tract of country between Middlesbrough and North-allerton.
- F Marly shale, i.e. calcareous shale. The origin of this specimen is doubtful. Its general colour and softness suggests a comparatively young age—possible Middle Jurassic from the North Yorkshire Moors, Magnesian Limestone from Durham.
- G Probably Magnesian Limestone. The outcrop of this rock extends from Richmond to Newcastle and Hartlepool.
- H Silicified shale-quartz vein breccia. The age and origin of this specimen is extremely dubious. Probably from a vein in the Ordovician-Silurian rocks of the Lake District.
- I Dolerite or whin-stone. This could come from either of two sources—either the Whin Sill in the Middleton-in-Teesdale area or the extension of the Cleveland whinstone dyke which extends intermittently from the Cleveland Hills to Middleton. This rock is exposed in Coatham Beck and was formerly quarried nearby.
- J The specimen is highly weathered and appears to be a miclamprophyre or similar basic igneous rock. Dykes of this rock type occur in the older rocks of the Pennines.

In summary, all the specimens, with the exception of those of local origin (A, B, E and I) come from the North-West or North. Without knowledge of the occurrence of these specimens and excluding the agency of man, the most likely transporting agents were the Pleistocene ice sheets.

L. S. Phillips