

# Bronze Age Houses at Hemmed Church, East Jutland

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At the end of the 60's and during the 70's the dwellings of the late Stone Age and Early Bronze Age population became known for the first time as a result of settlement excavations in Jutland (J. Jensen 1988, 155–74). The Djursland peninsula made its contribution in 1971–72 with the excavation of the mid-ridged houses at Egehøj, which lay a good half kilometer NW of the village of Hemmed (N. A. Boas 1980, 1983). In 1968 part of a post-built house from the early Late Neolithic was excavated at Svapkæret, about two kilometers east of Hemmed (N. A. Boas 1986). In 1974 a little house was excavated at Hemmed bog about 2 km west of Hemmed and was with some caution given a date in the Early Bronze Age (N. A. Boas 1980) (fig. 1).

The present article is a preliminary report on the excavation of a new settlement near Hemmed Church. Conditions of preservation were particularly good owing to the presence of a sealing layer of aeolian sand, which had been deposited in prehistoric times. It produced one of the largest and best preserved houses known from Denmark's Bronze Age.

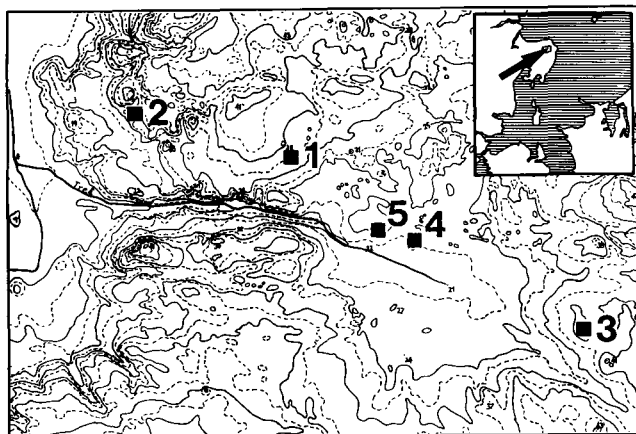


Fig. 1. Settlements excavated near Hemmed. 1. Egehøj (Early and Late Bronze Age). 2. Hemmed Kær (Early Bronze Age). 3. Svapkæret (Late Neolithic A). 4. Hemmed Plantation (Late Neolithic A and C and Late Bronze Age). 5. Hemmed Church (Late Neolithic C and Early Bronze Age). 1:24.000.

One of the effects of sandy soil is to encourage afforestation, and this is what brought about the present excavation in 1987. The site is c. 200 m E of Hemmed Church.<sup>1</sup> Modern forestry often causes serious disturbance. One way it does this is by removing tree stumps by machine. Excavators of sites with tree pits know how much damage this can do. When a tree is uprooted by the wind or a machine the archaeological evidence is often destroyed over an area of several m<sup>2</sup>.

## THE EXCAVATION

An area measuring about 800 m<sup>2</sup> was opened in the corner of a field in process of afforestation. Concentrations of burnt stones had earlier been observed there, and a little Bronze Age pottery and flat-flaked flint had been collected. The excavation was supported by rescue funding from the Office of the State Antiquary.

In 1987–88 remains of four houses were found, representing settlement from the Late Neolithic/Early and Middle Bronze Age. The eastern end of house I had been sealed shortly after abandonment by a layer of blown sand that was originally nearly a half meter thick. Dune formations more than a meter high can be seen in the forest only 100 m N and NE of the site. In 1988 a test excavation in Hemmed Plantation about 150 m to the east also revealed a layer of blown sand up to a half meter thick, in this case sealing a Late Neolithic occupation layer with 2–3 houses.<sup>2</sup>

In the following we will concentrate on describing the large long-houses from the middle of the Bronze Age, house I, only dealing briefly with the three other houses as the excavation is not yet completed.

## THE LATE SETTLEMENT

*House I, a large dwelling house from the middle of the Bronze Age*



Fig. 2. Above: Plan of houses I-II and associated structures. Horizontal hatching indicates accumulations of cooking stones with blackened earth; vertical hatching shows clay floors; dotting indicates sand layers that continue in under the clay floor; hearths are indicated by heavy stippled lines. 1:200. - Below: Section through house I. 1:200.



Fig. 3. House I. Line of wall posts (right). Sand deposits are seen in the holes for the roof posts and the cooking pits inside the house.

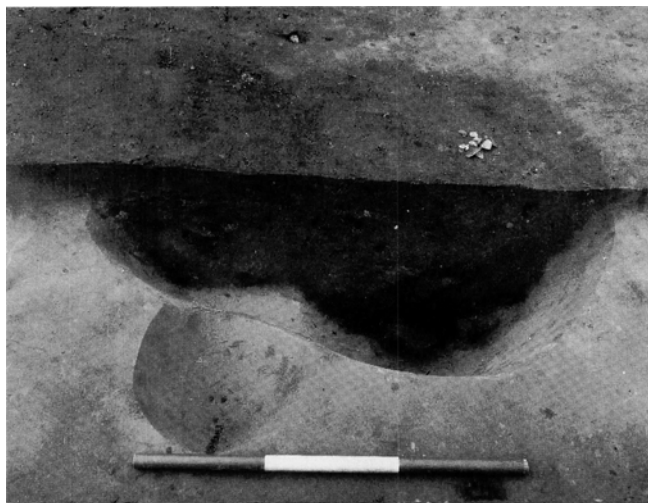


Fig. 4. E-W section through two cooking pits north of the fireplace in the western room of house I. Seen from N.

The mechanical removal of the plough layer followed by careful cleaning revealed the outline of a rectangular three-aisled longhouse measuring 30 x 10 m with rounded corners (fig. 2). The wall and roof posts were visible in the occupation layer up to 0.2 to 0.3 m above the natural subsoil. Apparently the blown sand had been deposited shortly after the house was abandoned. The result was that it could be seen in the top of almost every post-hole.

It seems that the posts at the east end of the house were still present during the sand-blow and caused a protective blanket of sand about 0.3 m thick to settle over the house.<sup>3</sup> The house wall showed up as a row of dark humic patches against the pale yellow blown sand (fig. 3).

House I lay E-W turned towards NW-SE. The walls were straight rows of posts at intervals of 0.4 m. None of them penetrated through the occupation layer into the natural subsoil as they were only c. 0.2 m deep. They would not have been observed if the occupation layer had been cleared away by machine, and cultivation would have destroyed them if it were not for the protective layer of blown sand. In the exact middle of the north wall was seen an entrance, with the holes for the jambs, which were drawn half a meter inwards into the house. The eastern post went down a full half meter below the occupation layer and may have held a door. Half way between this central door and the west end was another-similar entrance. The line of posts of the ends and north wall was flanked on both sides by a belt of dark grey humic sand altogether about a meter wide. As a layer this was so thin that it could not be recorded in section, but it may nevertheless be presumed to be the lower part of an earthen panel, perhaps of sods, supporting the shallow wall of posts.

A line of mould at most 5 cm wide joined together the outer sides of six wall posts in the south wall nearest the house's SW corner. Alongside and up to 1.5 m outside the south wall in the same area was found most of the burnt daub recovered during the excavation. It amounted to 1.2 kg of sand-tempered, red-fired burnt clay. Some of the pieces had been exposed to a temperature so high that they were blistered and slaggy with a blueish glassy surface. A few pieces have definite impressions of withies c. 2 cm thick. A few retain a flat, rough, wiped "wall" surface. Unfortunately the SE corner of the house could not be investigated as it had been dug away in 1911, and parts of the south wall are incomplete.<sup>4</sup>

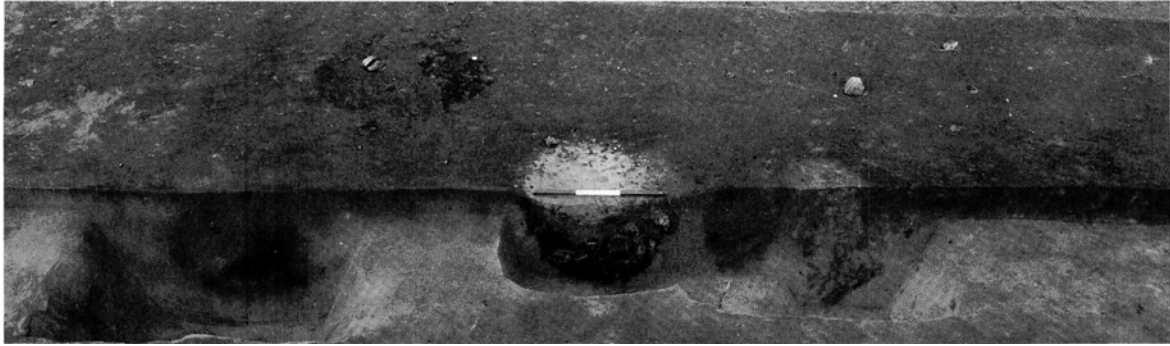


Fig. 5. Cooking-stone pits in middle room of house I. The middle cooking pit and two roof posts are seen in section.



Fig. 6. N-S section of east end of house I. The north wall and interior are on the right of the picture seen from W.

### *Internal arrangements*

The internal bearing construction of the house was 8 pairs of roof posts giving a 5 m wide central and two 2.5 m wide lateral aisles. The holes for these posts were c. 0.4 m in diameter and 0.7 m deep. Usually a half score or so of fist-sized cooking stones had been placed as lining at the foot of the post. The distance separating each pair of holes from the next in the six middle sets was 2.5 m, and

the distance to the end pairs was 4 m. Traces of digging to put in replacements was observed in several places. The house had been divided into three rooms by means of two solid partition walls. The western one was placed at the third pair of roof posts by the addition of five extra double posts. A similar eastern partition, apparently of single posts, was seen at the second-last pair of roof posts. The posts of the partition walls were a little smaller than the ones holding up the roof and lacked the base linings.



Fig. 7. E-W section through E end of house I. From above, section through modern plough layer and blown sand; then in plan the fireplace surrounded by occupation layer and the clay floor, which cut through the section through the cooking pit north of the hearth. Seen from N.

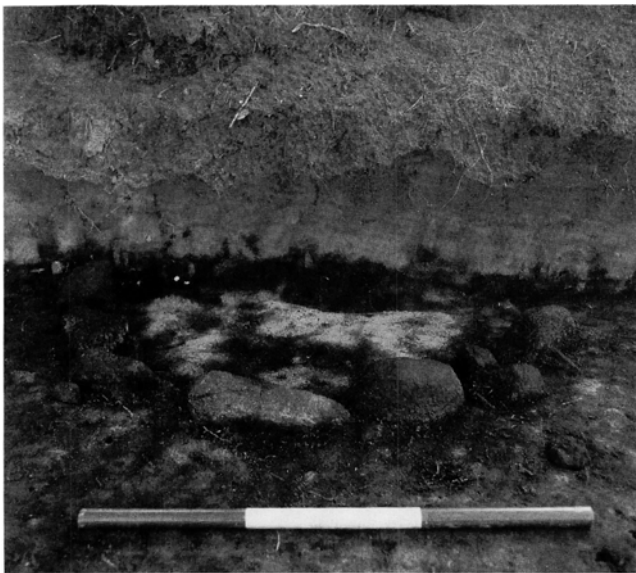


Fig. 8. Stone fireplace in eastern part of house I. Basal layer of coarse whitish-yellow sand. Seen from N.



Fig. 9. E-W section through pit west of hearth in eastern part of house I. The pit seems like the fireplace to have had a deposit of whitish-yellow sand added, covered again by yellow blown sand. Seen from N.



Fig. 10. Ard marks under the middle room of house I. Seen from ESE.

### *The western room*

The western part of the house was not as well protected by blown sand as the eastern part. This room measured nearly 110 m<sup>2</sup>. It had its own entrance from the north, and possessed a clay floor, remains of which were preserved where they had subsided west of the northern roof post in the partition wall. The rest had been ploughed away. Midway between four roof posts was seen a reddish patch of sand 3/4 of a meter across, which must be the very bottom of a hearth.

Around the hearth were five single cooking pits and two groups of respectively two and four intersecting pits. The pits excavated so far are nearly round, about 0.8 m in diameter and nearly 1/2 m deep with rounded base covered by a scattered layer of fire-cracked stones the size of a fist (fig. 4). The fill is uniformly speckled and without stratification apart from being blacker at the base. A thin layer of cooking stones extended across the SE part of the room between the wall and the roof-posts. This and the three circular cooking-stone hearths 0.4 to 0.7 m wide in the same area can have belonged to the floor layer of the house.

In the SW corner, connected with roof post and wall line, and also 2.5 m outside the wall, were seen pairs of elongated doublepost/plank holes. The three sets of planks clearly formed N-S rows. Two corresponding sets were aligned E-W, of which the westerly pair lay between the south-western roof post and the end-wall. The fill in the "plank-holes" was indistinguishable from that in the holes for the roof-posts. These still unexplained pairs of planks belong stratigraphically to the house. So the SW corner of the house may have possessed a couple of separate folds or stalls.

### *The central room*

The 120 m<sup>2</sup> central room was bounded on the east and west by the partitions already described, and the entrance was from the north; only the most eastern part of this section was covered by blown sand. The south wall was incompletely preserved, what had not been removed by recent disturbance being obscured by tree roots, burrows, and earlier occupation (houses II and IV). The few features belonging to the room were, apart from the six free-standing roof posts, three cooking pits in its northern part and a cooking-stone hearth near the

middle. The cooking pits had the same shape and size as those in the western room, but differed in being filled entirely with cooking stones. The one between the two northern roof posts had, like many of the postholes, blown sand in its central part (fig. 5). This may mean the pit was open when the sand was deposited. Of the apparently completely flat floor surfaces, that in the middle room was raised about 5 cm above the clay floors of the eastern and western rooms. The postholes that were investigated in the middle section of the house contained charred cereal grains.

### *The eastern room*

Only about half of the originally 70 m<sup>2</sup> room survived, but this part of the house was sealed under the blown sand that was also recorded in many of the pits and postholes. Below this was found, underneath a dark brown humic sand layer only a single centimeter thick, a 2–3 cm thick floor layer of yellow stamped clayey material, filling the space between the partition wall and the last roof post. This came to an abrupt end 0.8 m from the posts of the north wall (fig. 6). The floor was laid on a 5 cm thick layer of coarse, slightly humic sand, that bounded the clay floor in a 0.5 to 1 m wide belt to the north and west (cf. figs. 2 and 6). This had been placed partly on old cultivated soil with ard marks and partly over a natural hollow a half meter deep and 8 m across, which was more or less filled when house I was built (fig. 7 and 2, section).

Midway between the last four posts was a round hearth. This was surrounded by an approximately meter wide circle of head-sized stones (figs. 2 and 8). Pieces of charcoal lay in and near the hearth (see contribution by C. Malmros, this volume). Two cooking pits were investigated close north and west of the hearth. Their size was the same as that of the pits in the western room, but the northern one was 0.6 m deep and had a nearly flat base on which there rested only a few cooking stones. It was quite clearly sealed by the clay floor, which had subsided a couple of centimeters into it (fig. 7). The pit may have been in use during the lifetime of the house and then been filled up and the floor replaced. The charcoal, which was concentrated in the bottom 5 cm shows, just as with the hearth, that a wide variety of woods were used as fuel (see C. Malmros' article, A19). Charcoal from the hearth and the pit have been C14 dated respectively to 1000 and 985–940 B.C. calibrated (K-5169, K-5170).<sup>5</sup> The slightly smaller pit west of the hearth seems like the



hearth to have had placed in it a layer of yellow subsoil sand, and shortly afterwards to have been finally filled up by the blown sand (fig. 9).

A shallow hollow 1.5 m across was associated with one of the last roof-bearing posts and like it had yellow blown sand as the top layer in its fill. The bottom part was filled with cooking stones in red-brown humic and carboniferous material fully 10 cm thick.

Directly under the floor a 3.5 x 1.5 m rectangular structure showed up, made of at least 12 small stake or post holes. This structure had been placed between the northern roof posts and the northern edge of the floor and seems to have abutted against the partition wall. The structure can be interpreted as the remains of a bench, bed, or other furnishing placed beside the wall near the fireplace.

Unfortunately the inhabitants seem to have tidied up well before the floor was sealed by blown sand. A few groups of sherds, some hammerstones, and a few pieces of flint waste is all that was recovered from the thin soil layer on the floor and around the hearth. Samples have been taken for analysis, and a baulk about 1 m wide has been left over the SE corner of the house, from which it would be possible to take further samples in the future.

#### *Ard marks*

After removing the at least 0.2 m thick and very rich occupation layer on which house I had been erected, there appeared a network of ard marks (fig. 10). The two dominant ploughing directions were WNW-ESE, and NNE-SSW, coinciding with the axial and transverse orientations of the house. The marks were most clearly observed under the middle part of house I and in the northern part of the excavation cutting. No field boundaries could be distinguished in the c. 250 m<sup>2</sup> where ardmarks were present. Marks could be observed at different levels, probably owing to periodic phases of sand blowing when large areas had been taken under cultivation during the Bronze Age occupation.

#### *House II*

The north wall of this house coincided with the line of the southern posts of house I, so that postholes number 3 to 6 from the west in house I were in contact with the north wall of house II, the rounded NW corner of which lay between posts 2 and 3 of house I. Though this house

was very incomplete in its preservation, its wall construction was exactly the same as that of house I, except that all the postholes reached into the natural subsoil. The roof-bearing construction is not yet fully investigated as the postholes have not been sectioned. To judge from the indications in plan it is a mid-ridged building. A feature resembling a roof posthole midway between the western end and a patch of red-burnt sand may be the bottom of house II's western hearth. If this is situated axially in the building as in house I, the original width can be estimated as c. 7 m, which is normal for a Bronze Age house. So far no finds have been made which date the building more precisely. Stratigraphically it precedes house I, the holes for whose roof posts cut the wall posts of house II. Traces of house II's wall seem to have influenced the orientation chosen for house I.

#### *Features outside the houses*

In the area north of the big side-aisle house were excavated four 5–10 m large accumulations of cooking stones in dark, sooty earth, and also five round and an elongated cooking pit, a pair of smaller cooking-stone hearths, a larger pit, and a N-S row of 7 or 8 posts which from their stratigraphy and fill can be related to the above-mentioned settlement. West of the big house was seen an elongated cooking pit that clearly extended in under the west gable of house I and may therefore probably be attributed to house II, which lay a little further east. Near by was seen a group of round pits, about two of which cut into the elongated pit. South of the big house were seen two groups of round cooking pits, a western one with 7–8 and an eastern one with 12–13 pits. The most easterly of them had disturbed the end posts in house II, showing it to be later and therefore probably attributable to house I. Pits west and south of the big house are not yet fully excavated.

The at most 30 cm thick layer with accumulations of cooking stones north of the big house had the greatest concentration of stones in the middle and a heterogeneous spread to all sides. In one accumulation of cooking stones situated about 10–20 m due north of house I's middle entrance, signs of deliberate arrangement could be observed. A concentration or low heap measuring c. 3 x 2 m of cooking stones and stone debris almost without earth had, like the eastern end of the big house, been partly covered on its western side by pale yellow blown sand. In the middle of this heap was found

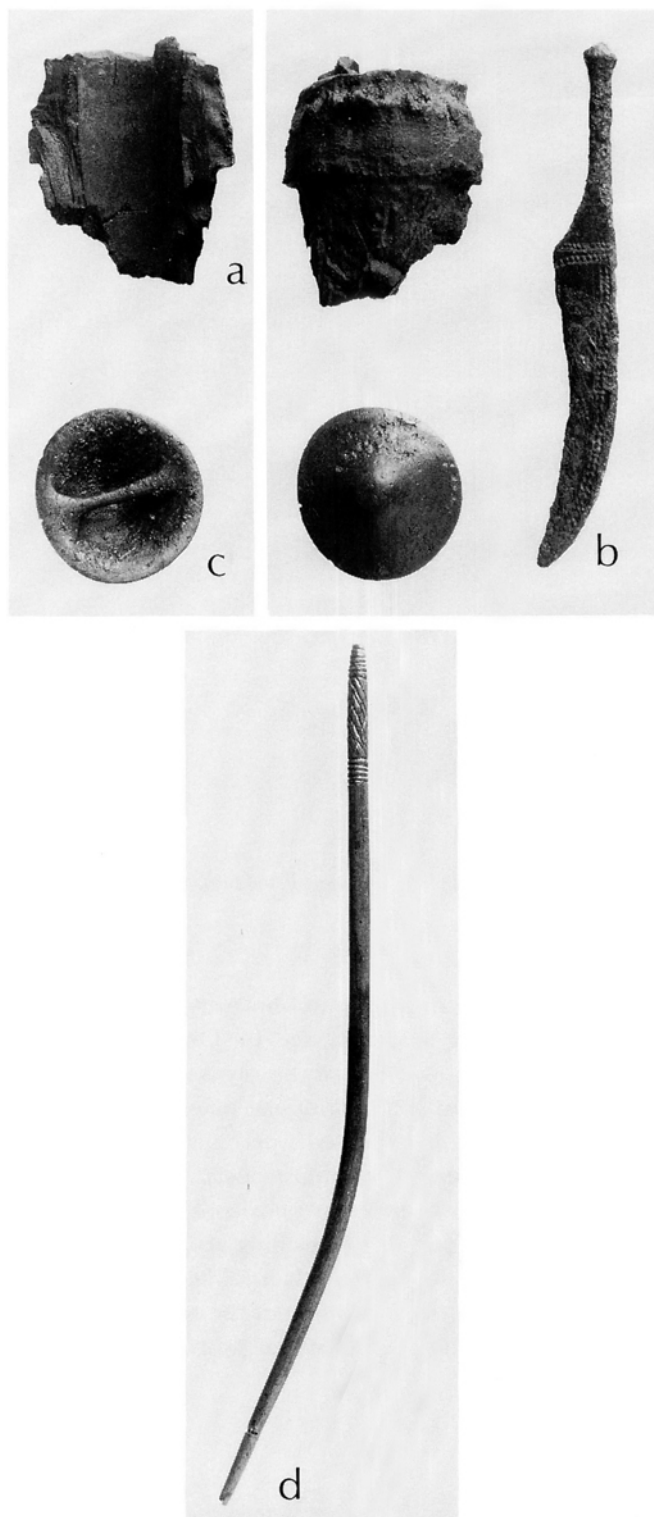


Fig. 11. Bronze objects from the later settlement: a, casting jet; b, toilet knife; c, tutulus. From the earlier settlement: d, bulb-headed pin with head missing. C. 1:1.

a casting jet of bronze (fig. 11a). In a smaller collection of cooking stones a little further north was found a well preserved bronze tutulus (fig. 11c). The up to 30 cm thick soot-blackened layer with the cooking-stone accumulations was sharply distinguished from the underlying c. 20 cm thick cultivation and occupation layer. In the layers with cooking-stones was found a certain amount of pottery (fig. 14), and this was clearly different in form, temper, and firing from the pottery of the underlying occupation layer (fig. 15). Together with the pottery in the upperlayer were found fragments of a miniature vessel resembling a crucible (fig. 14f), together with a little flint waste and a few flint implements (fig. 17b).

A larger pit between house I and the above-mentioned accumulation of cooking-stone with bronze was of rounded rhombic form above, nearly 2 m wide, and 1 m deep with flat base and vertical sides. Unlike the cooking pits it contained a markedly stratified fill, at least ten layers, and also a pair of humic streaks and c. 1/2 kg of pottery. To judge from the organic layers and the shape it may have been used to hold something, or been a privy, a miniature cellar, or perhaps a tanning pit.

#### THE EARLY SETTLEMENT

For reasons of economy the excavation of the rich lower occupation layer and the recording of ard marks was done in two smaller sections of the area opened in 1987. In the northern section of over 200 m<sup>2</sup> there was excavated about 50 m<sup>3</sup> of occupation earth containing pottery, clay "caulking" (burnt clay strips), flint tools and waste, etc. This in itself was enough to indicate the presence of a house (fig. 13).

#### *House III, a Late Neolithic/early Bronze Age longhouse*

A seven meter wide, post-built house with a single row of roof posts extended WNW/ENE with a deviation of 26°. It had been protected by the later layers of cooking stones both to the east and west, and only on the NE side had a modern sunken road and cultivation removed part of the rich occupation layer. The south wall, which consisted of a straight row of posts slightly less than a meter apart, but in a couple of places 1.5 meters, showed that the house had been at least 22 m long. Only a small part of the north wall has been uncovered, so the width of the building was 7 m. Three roof-posts can at the present mo-



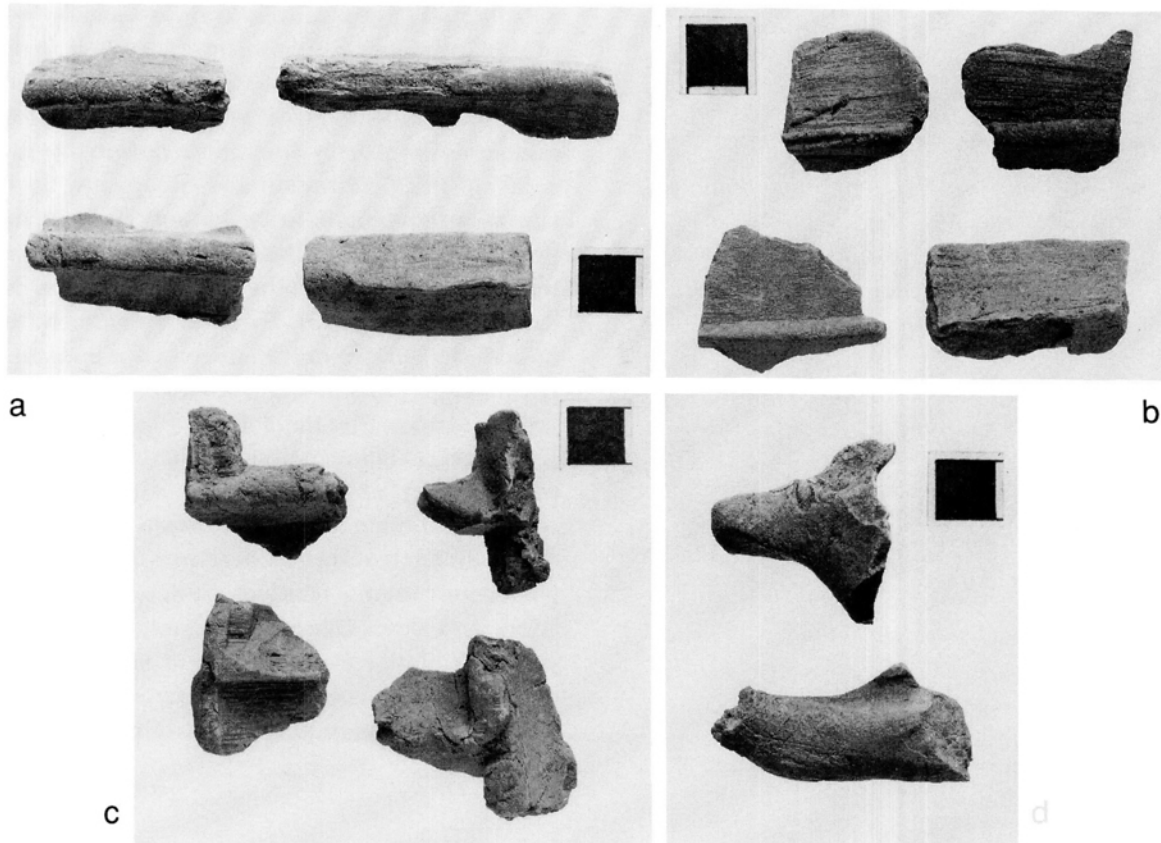


Fig. 12. Clay caulking from house III: a, triangular strips; b, flat triangular strips with impressions of planks; c, vertical and horizontal plank impressions and plank ends; d, clay projections. Different scales. Scale inserted: 1 x 1 cm.

ment be seen in line down the middle. The distances between them were large – 6 and 8 m. In the centre of the eastern part was seen the fireplace, a 1,7 x 1.5 m rounded patch of red-burnt sand. So far only a round hearth or cooking-stone paving has been investigated. It had been inserted c. 0.2 m into the subsoil and provided with a small post on the south side. Carbonised cereal grains were found in two irregular pits in the eastern end of the house.

#### *Clay caulking*

About 2 kg of clay caulking was recovered from the fill, most commonly over house III's eastern end, the hearth, and the postholes. It took the form of clay "sausages" 1–1.5 cm thick that had been pressed in between the planks in the house walls. Unlike the sand-tempered daub of house I this material was untempered. It was a compact, finely levigated clayey mass. On one side the

strips, which are triangular and burnt red, retain finger impressions from being pressed in. On the two other sides are seen impressions of the planks (fig. 12a). The latter meet with an irregularity that may mean that radially split planks were used, perhaps inserted into grooves in the vertical earthfast posts. Some pieces of caulking show for instance two horizontal and a vertical plank (fig. 12c). Traces of dowelling are barely discernible (fig. 12c). From where it lay it is likely that the caulking was used on the inner side of the walls, in contrast with the daub in house I, which lay primarily outside the wall.

#### *House IV*

The other section excavated down to the natural subsoil in 1988 included the area under house I and south and west of it, altogether c. 300 m<sup>2</sup>. From here c. 100 m<sup>3</sup> of occupation layer was removed and found to be nearly as



Fig. 13. Plan of ard marks seen in the natural subsoil and houses III-IV with features provisionally associated with them. 1:200.

rich in finds as the northern section. Various postholes, clearly older than houses I and II, showed up in the natural surface under the occupation layer and the ard marks. Patchy red-burnt sand measuring c. 1.5 x 1.3 m must be the base of a fireplace, corresponding to the observations made in the other houses. A complete excavation will probably reveal the shape of the house to which the fireplace belonged, but this was not completed in 1988. Presumed wall posts are included in the plan, fig. 13.

On the bottom of the large hollow under the east end of house I were found a couple of small accumulations of cooking stones, a large part of a pot (fig. 15a), a dozen scrapers, some flint waste, and on the northern side a few pieces of clay caulking. Charcoal from a collection of cooking stones on the floor of the hollow gave a C14 date of  $1525 \pm 80$  B.C. calibrated (K-5168).<sup>5</sup>

## FINDS

Settlement layers are cumulative deposits. This is true also of the site at Hemmed Church, where at least three settlement phases can be distinguished (houses I, II and IV). Fortunate circumstances have resulted in the preservation of a fairly clear stratigraphy. Sand blown in before, during, and after the periods of settlement have formed protective layers (i.e. over the east end of house I). Extensive collections of cooking stones from a variety of activities requiring the use of fire have, especially during the youngest settlement, sealed areas of the site under dark, sooty, semi-continuous layers in which later disturbances were clearly distinguishable (fig. 2). The stratigraphy made possible a degree of separation into an upper horizon, stratigraphically associated with house I (II), and an earlier horizon (fig. 2, layer 3) which, despite having been cultivated in the period between the settlements, contained a fragmentary but considerable artifact material associated with house II-IV. The two settlement horizons are so far as possible kept separate in examining the finds.

The total material from the site consists of:

<i>Burnt Clay</i>	
caulking	1,976 g
clay daub	1,165 g
Pottery	26 kg or 4,076 pieces

<i>Flint</i>	
flakes	66,311 g
cores/core rejuvenation flakes	55
scrapers, disc or handled	111
daggers, dagger roughouts	6
arrowheads/arrowhead roughouts	32
sickles/sickle roughouts	10
borers, discoid borers, borer points	27
knives on flakes and blades	6
strike-a-lights (including miniature daggers) roughouts	16
fragments of flat-flaked implements	8
inset for flint-edged sword	4
miniature axes, bifacial	1
notched and denticulated pieces	2
retouched flakes	17
	6
total number of flint implements	246

<i>Stone</i>	
mullers	26
hammerstones (1-2 partial striking surfaces)	15
grinding and polishing stones	5
burnishers	7
quern/grinders	3
total number of stone implements	56

<i>Amber</i>	
beads	2
lumps	2

<i>Bronze</i>	
toilet knife	1
jet	1
tutulus	1
pins	2
spiral wire	1

<i>Organic material</i>	
calcined bone	350 g
animal teeth	3
charcoal	not counted
carbonised cereal grains	not counted

### *Pottery from the late occupation*

About 10 kg of pottery can be attributed to houses I(-II) and the extensive cooking-stone accumulations in black earth. Of this 6.5 kg was found in the accumulation with the casting jet and tutulus north of house I, nearly 1 kg lay on the floor of the eastern room, and the last c. 2.5 kg lay scattered over the site.

The pottery is tempered with sand and mica and is fired black, grey-black, red-brown, or brownish yellow. Uniform coloration of the sherds is usual. A few large,

thick-walled vessels have “sandwich” coloration with external grey-black hue sometimes with burnt food crust. Wall thickness varies from 3 mm for the fine ware to an average of 6–7 mm for the middle-sized pots and up to 10 mm for most of the large storage jars with coarse slurried surface. In contradistinction to published settlement pottery from the Late Bronze Age, biconical forms and forms with conical neck and strongly rounded shoulder do not occur in the material (cf. B. Draiby 1984, 178, types A, B, D, and BC). The dominant form is concave-convex with carination (fig. 14a). Sherds of flowerpot and barrel shaped vessels are present (fig. 14b), as are vessels with S-profile (B. Draiby 1984, type AB) or with slightly angular S-profile (fig. 14c). All twelve handled sherds were associated with the late occupation (layer 1). The strap lugs were all joined to the rims of carinated concave-convex bowls (fig. 14d). No lugs or handles have central groove or concave sides. Two vessels with S-profile without carination have in the middle of the body a little nearly round knob (fig. 14e). The only decorated sherd present has alternately sloping fingernail impressions, as seen on the vessel from the Borbjerg hoard (Ørsnes 1958). A half dozen large pots have rough, slurried surface and a narrow burnished zone near the rim (fig. 14c).

A single sherd from a flanged lid has flat upper surface. A barrel-shaped miniature vessel is hard fired and may have served as a crucible. It was found near the casting jet in the big cooking-stone accumulation. One bowl or biconical vessel with rounded carination could be assembled until the profile was nearly complete (fig. 14c).

About 120 out of the total of 270 rim sherds could be attributed to the later occupation. They represent at least 100 vessels. The rims are normally flat, tapered in section, and bent outwards. Only in a couple of cases was a collar at the rim observed (cf. Draiby, 1984, 194) (fig. 14a). An internal facet is found on only one black-fired rim sherd. Out of about 83 base sherds c. 22 can be assigned to the later occupation. Usually there is no marked foot, but this is seen in a few cases.

#### *Pottery from the early occupation*

About 16 kg of pottery was found in the two excavated sections of the old cultivation soil over houses II-IV. The greatest find density was at the houses (fig. 16). The sherds were very small with an average weight of 6 g. In contrast with the later wares this pottery is coarsely tempered with angular debris from cooking stones. The co-

lour is reddish to yellow-brown, often with a dark grey core. The sherds are on the whole too small to show the distribution of pot sizes. The thickness is  $\frac{1}{2}$ –1 cm for the small and 1–2 cm for the medium and large pots (fig. 15). The forms agree completely with the ones found near by at the Egehøj site (Boas 1983, 100, fig. 7–8, and fig. 10–11). There are bucket-shaped vessels (fig. 15a), vessels with S-profile (fig. 15b), and incurved rims (fig. 15c). Bases with straight side without foot and bases with marked foot (fig. 15f) are equally common, but slightly offset foot is rare. One base has a “ring-foot” or hollow base (fig. 15f). The only nearly complete base is from a miniature vessel with thick bottom slightly under 3 cm in diameter. A bucket-shaped vessel with wide groove below the rim and a perforation in the groove was found near the bottom of the hollow under house I (fig. 15a). It lay together with charcoal dated radiometrically to 1525 B.C. This pot is gritted with sand and fired grey-black. A couple of small sherds with strong secondary firing and inturned rim may be from crucibles (fig. 15e). They resemble the crucible fragment found in the late cooking-stone layer over house III. Similar examples are known from Haag near Thorsager in Djursland (Neergaard, 1908, 288, fig. 3). Two sherds are from pottery sieves. Sixteen sherds have cordons placed less than a centimeter below the rim (fig. 15d).

#### *Flint*

Altogether 70 kg of flint waste has been recovered from the site. In this case it can be more difficult to identify the material from the two settlement horizons, as it was moved more easily moved by human activities during the settlement and by bioturbation subsequently. The raw flint seems to have been very fully exploited as only 4 kg of cores and waste lumps were left.

Scrapers are the commonest tool. Of the 111 scrapers 20 are rejuvenation flakes. Only a couple are genuine handled scrapers, the others are pear-shaped, round, or narrow (fig. 17a). Out of 15 nearly complete arrowheads 3–4 belonged to the younger settlement. These and a couple of loose finds are distinguishable from the older arrowheads by having a leaf shaped outline (fig. 17b, above left). The sides curve right to the ends of the barbs, which therefore bend inwards. The maximum width of these arrowheads is more than 150% of the distance between the barbs, while the corresponding figure for the arrowheads from the earlier layer is less than 150%.

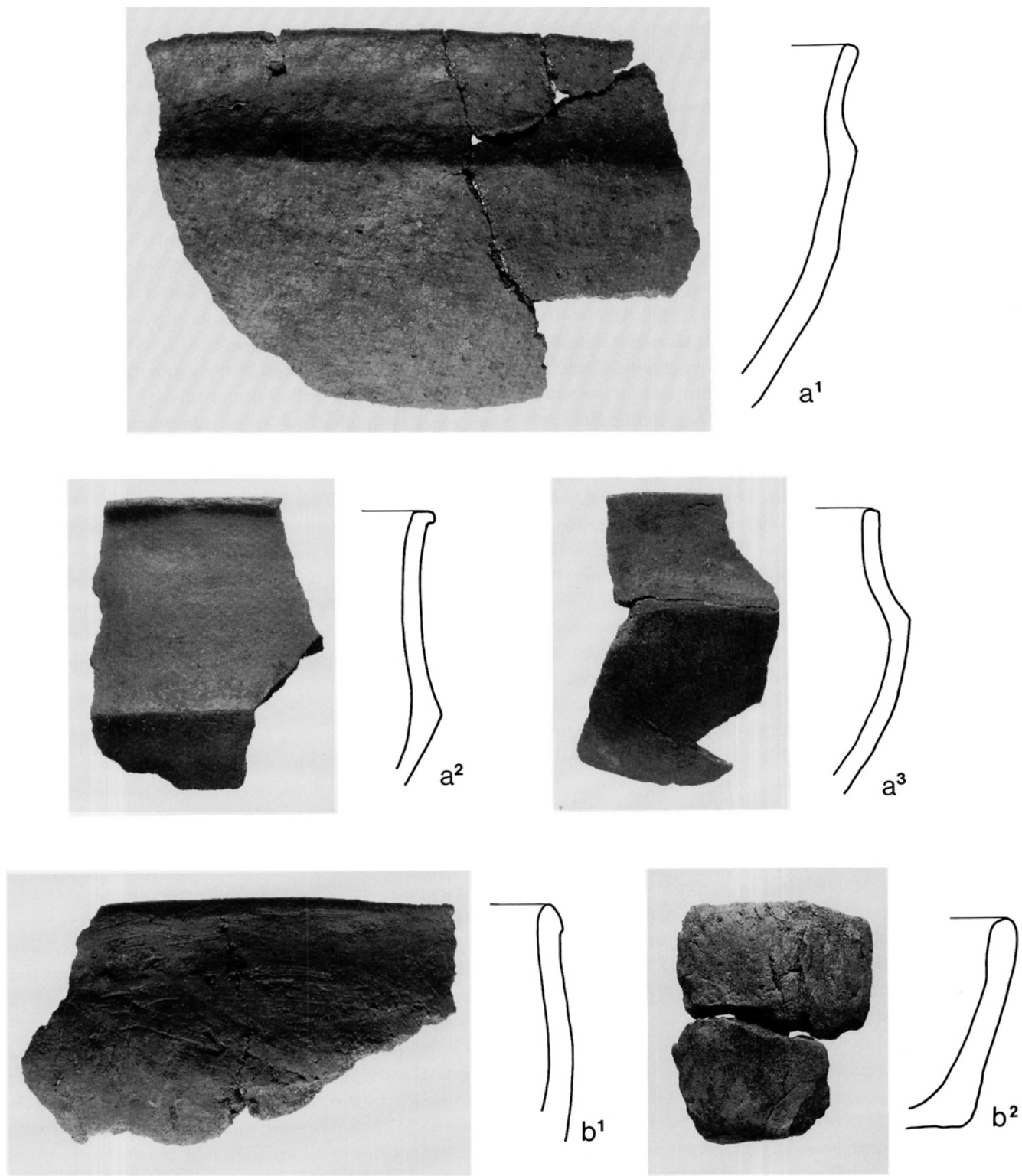
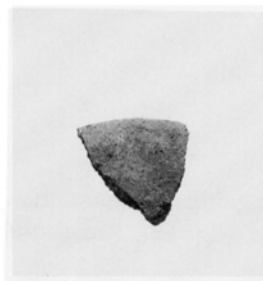
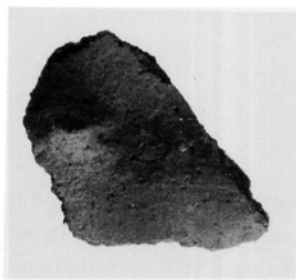
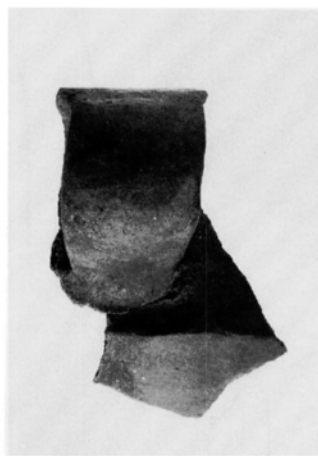
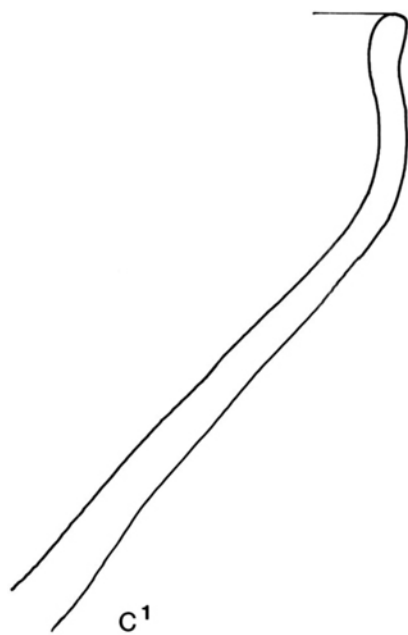


Fig. 14 a-f. Pottery from the Middle Bronze Age.





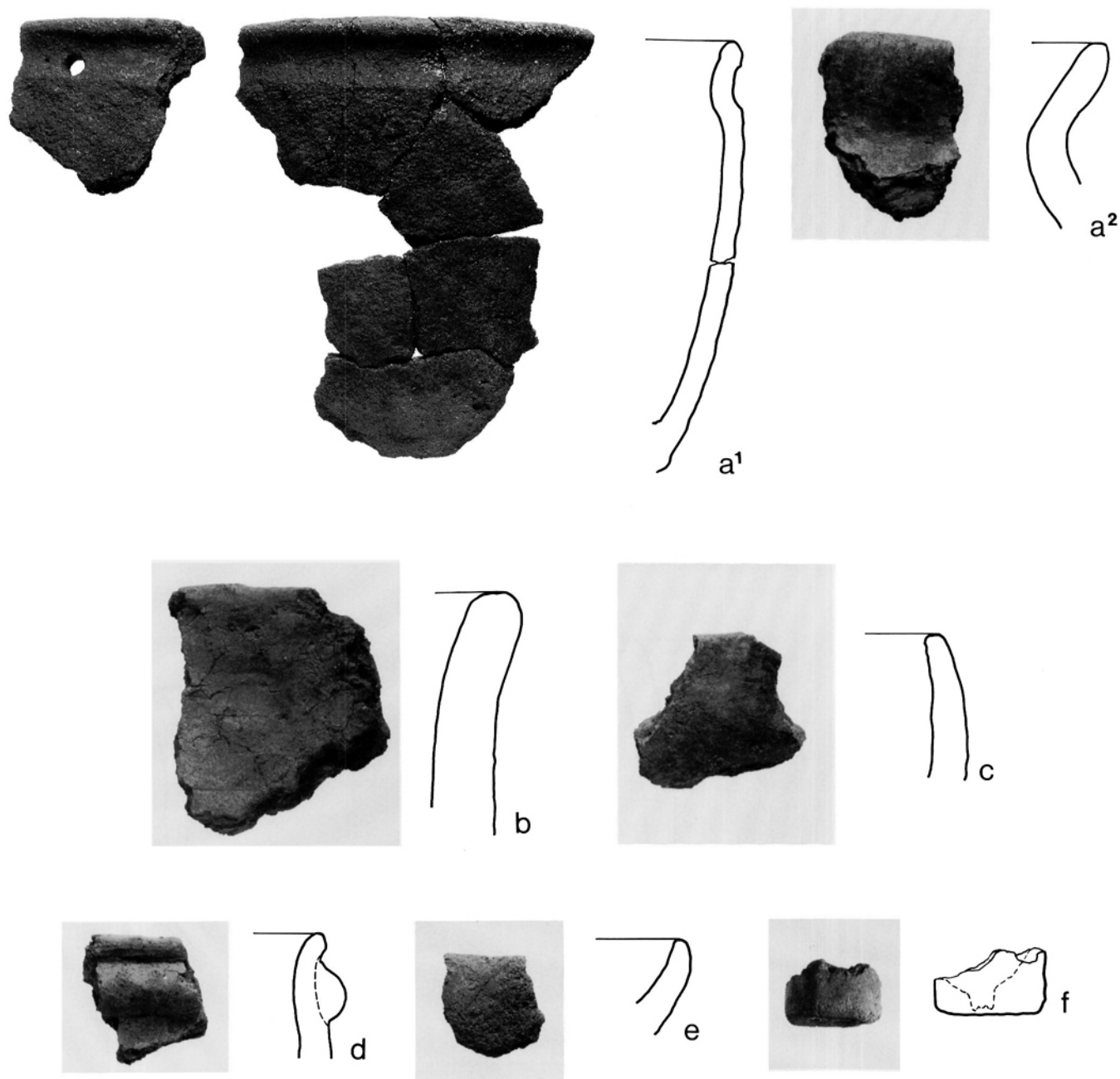


Fig. 15 a-f. Pottery from Early Bronze Age.

As with the arrowheads from Egehøj, the hollow base can be either rounded or angular (fig. 17). Roughouts are less common than at Egehøj.

Three dagger fragments are of determinable type. One (a loose find) is a type VA handle (Lomborg 1973,

58), and the two others come from the old lower cultivation layer. There is a type VA handle from near the south side of house III and a type IV C handle from near house IV (fig. 17c). Apart from a couple of simple sickle-shaped flakes, fragments of pressure-flaked artifacts are too small

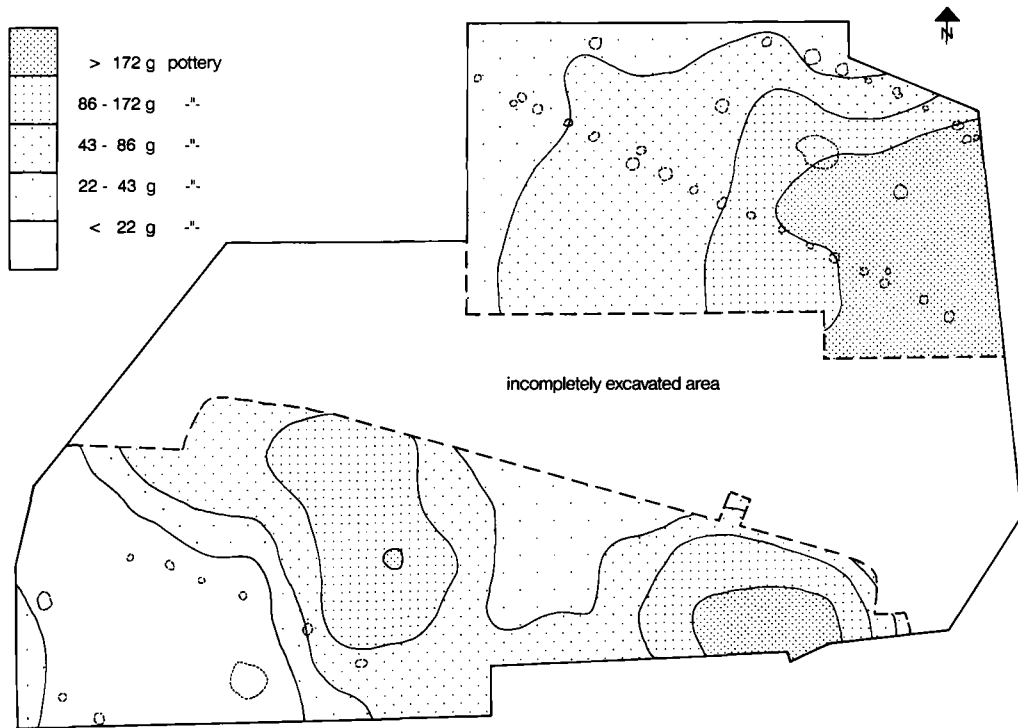


Fig. 16. Distribution of Early Bronze Age pottery.

for a possible type determination (fig. 17d). There are 16 strike-a-lights of which a few are shaped as miniature daggers (fig. 17c). The borers are 13 drills, 9 core or long narrow borers, and 5 disc borers (fig. 17b).

The unusual forms include a polished and an unpolished bifacial miniature axe (fig. 17e) and part of the inset from the edge of a flint-edged sword (fig. 17f). Finally there are a dozen roughouts and fragments of flat-flaked implements and a few flakes with "work-retouch". Two loose finds of coarse blade knives could belong to the younger settlement (fig. 17d). A few flakes are reworked as flake knives (fig. 17d, bottom).

#### *Stone implements*

Mulling stones were scattered throughout the site. Their size is 5–10 cm. One slightly larger elongated stone has pronounced marks of hammering at one end. In particular the hammer-stones of the later layer show damage all the way around, whereas the older layer contains many stone hammers with marks of use at one or both ends only (fig. 18). On both mullers and hammerstones can be found areas that are polished smooth. This is unknown on Iron Age mullers. "Burnishing stones" are

small round pebbles of various shapes. They are only slightly worn. An axe polisher may be earlier, as pieces of polished thin and thick butted axes have turned up at the site, as well as 12 potsherds from the Single Grave Culture and 3 type D arrowheads. A pair of quern fragments and a rubber were found together with the cooking stones.

#### *Bronze*

As already said, a piece of a presumed casting jet 3 cm in size was found in the upper part of the accumulation of cooking stones north of house I and over house III. It had casting rim and marks of chiseling at one end (fig. 11a). A similar rim is seen on a spearhead mould from Vindblæs. The jet could have been removed from the socket of a similar spearhead (Vestergaard Nielsen, 1956, 46, fig. 6). In the northern part of the cooking-stone deposit was found a small, smooth, plain tutulus with attachment bar behind. In front it is conical with rounded point (fig. 11c). A probable bulb-headed pin was found in the lower occupation layer c. 4 m S of house III. Both point and head are missing. The shank's upper end has groups of horizontal lines and a cross-hatched zone. The bottom third is slightly bent. Thus bronze was found in both the

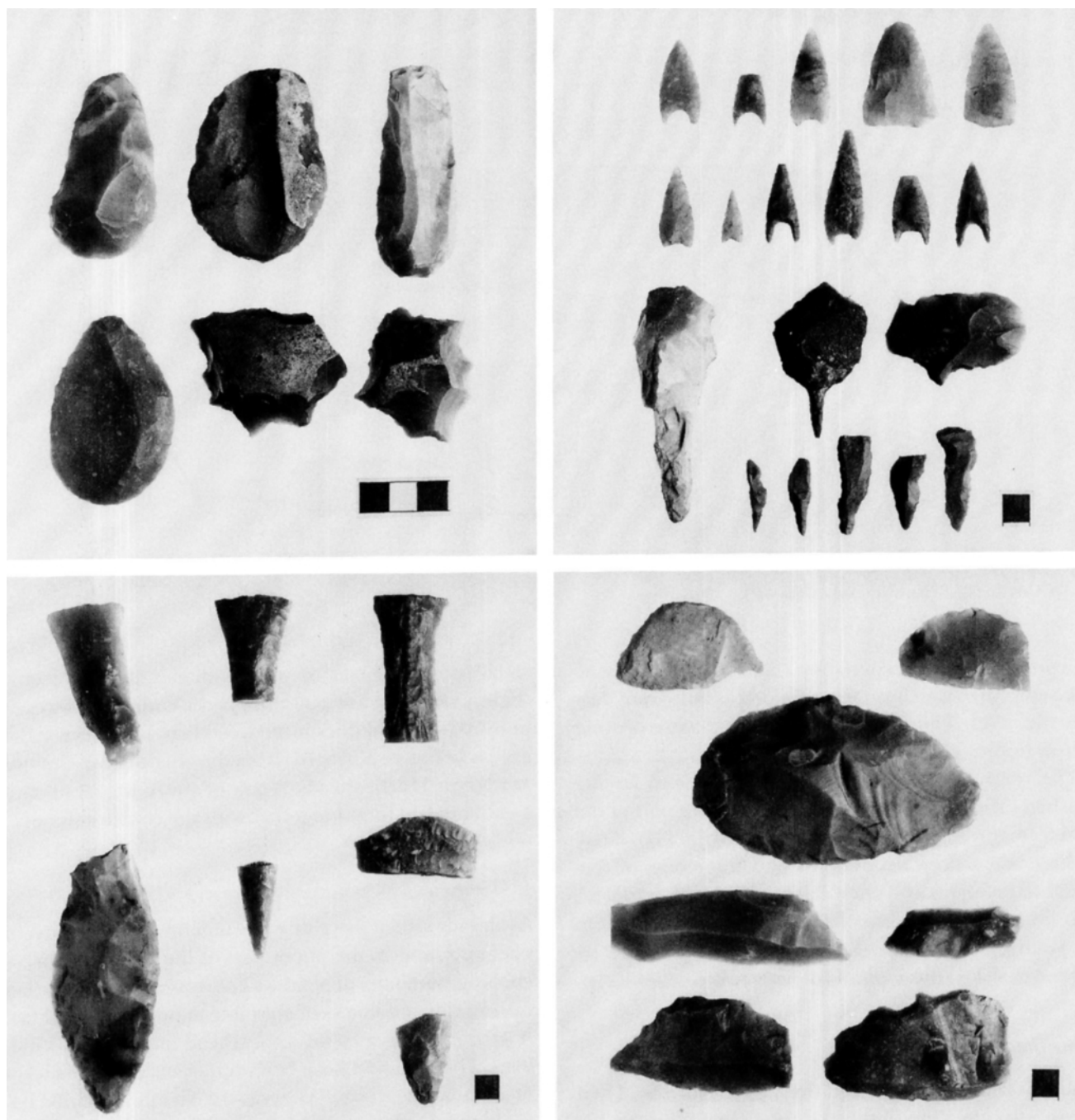
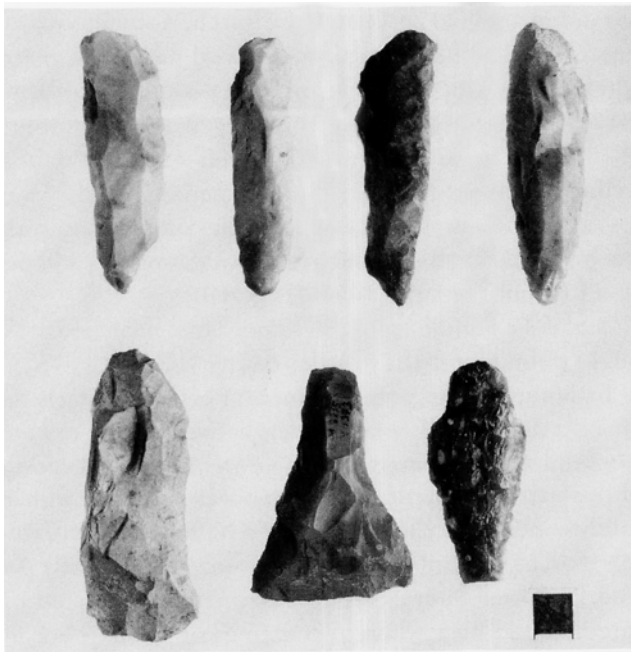


Fig. 17. Flint implements from the Bronze Age settlements at Hemmed Church: a, handled scraper, elongated and denticulated scrapers; b, arrowheads, arrowhead roughouts, core, disc, and drill borers (the three on the upper left are from the late settlement in the Middle Bronze Age); c, dagger fragments and roughout for a dagger-shaped strike-a-light (lower left); d, flat-flaked sickle and roughouts for sickles; blade and flake knives; e, strike-a-light and dagger-shaped strike-a-light (lower right); two bifacial miniature axes (lower left); f, fragment from the point of a flint-edged sword. Different scales, scale inserted = 1x1 cm.



earlier and the later settlements. A couple of years earlier a toilet knife was found on the surface about 10 m W of house I (fig. 11b).<sup>7</sup>

#### *Amber*

Two small damaged beads were found a couple of meters north of the fireplace at the west end of house I. They are c. 7 mm in diameter and flattened spherical in shape. The lumps are unworked.

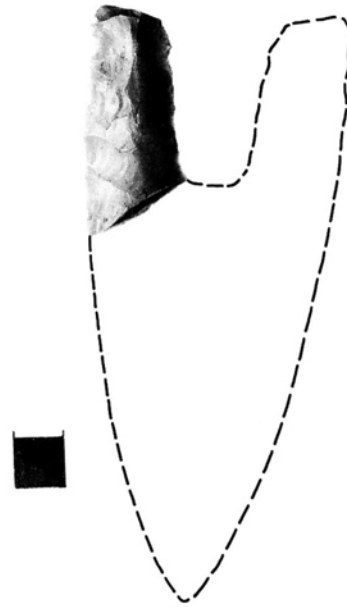
#### *Organic materials*

350 g of small fragments of burnt bone may be mentioned. The pieces were seldom larger than 1 cm and lay scattered throughout the occupation layers of the site.

As carbonised grain was observed in postholes of house I and pits of house III, soil samples were taken. The burnt bone and soil samples have not yet been examined.

#### DATE OF THE OCCUPATIONS

As already shown in the description of the features and artifacts from the site, it was possible to distinguish two settlement phases stratigraphically. The upper one consisted of five or six extensive accumulations of cooking stones, each of 100–500 kg of shattered fieldstones and dark sooty sand. Houses I and perhaps II belong to this



layer. There were also cooking-stone pits which did not contain datable material apart from a little pottery. On the other hand pottery was found throughout the cooking-stone accumulations, particularly in the largest of them, which was north of house I.

Some of the pottery forms are known from period IV of the Bronze Age, i.e. the concave-convex vessels, the S-profiled vessels with and without carinated body, and the simple bucket-shaped wares. Sherds of large vessels with slurred body with narrow, smoothed zone at top and bottom, strap-shaped handles joined to the rim, small round knops, an internal facet at the rim, an external collar at the rim, and the body sherd with fingernail impressions, are all typical Late Bronze Age elements. However much is lacking that is found at settlements where period V pottery dominates, as at Fragdrup and Voldtofte (Draiby 1984; Jensen 1967). Biconical and conical-necked forms scarcely occur, and the same goes for use of cordons, ornamentation with parallel lines, protruding lugs, and oval knops. The only fragment of a lid present could because of its flat upper side be either Late or Early Bronze Age (Broholm 1943, DB II, 132). It is still almost impossible to draw comparisons with period III settlement pottery as this is still nearly unknown in Denmark. Local grave pottery from Djursland is unknown from periods II and III and extremely rare in period IV. The bronze toilet knife ploughed up near house I dates from period III.

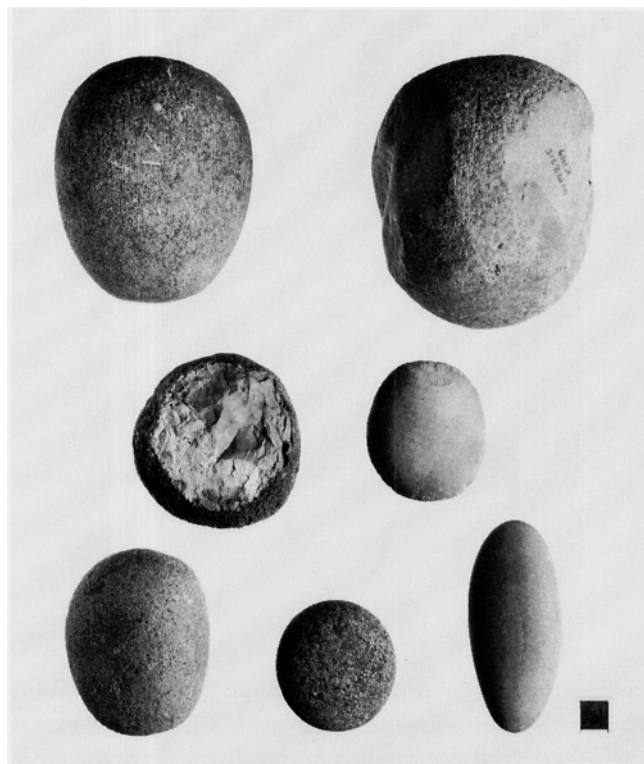


Fig. 18. Stone tools from the settlements: hammer-stones (upper right, middle, right, lower left); muller (upper left); burnishing stones (lower centre and right). Inserted scale = 1x1 cm.

The pottery from the lower settlement phase has by and large the same elements as the neighbouring Egehøj site (Boas 1980; 1983). This is true of the forms, tempering and firing. The most characteristic features are coarse thick and thin walled ware with large grits, bucket-shaped vessels constricted at the rim, vessels with simple profile and inturned rim, vessels with a single high cord-on, marked and articulated foot.

Flint tools are rare in the later phase. A little dagger-shaped strike-a-light of Lomborg's type D (Lomborg 1960, 160) was found in the big accumulation of cooking stones where bronze was found, but it can be older and intrusive. The hollow-based leaf-shaped arrowheads that seem to belong to the younger settlement occur a couple of times at Egehøj (Boas 1983, fig. 5, no. 6 and 8) and three were found in each compartment of a double cremation cist that was inserted into the SE side of the barrow, Egehøj. Bronze double-buttons with star decoration date the graves to period III.<sup>6</sup>

The arrowheads from the early settlement have about the same variation and shape as those from Egehøj (Boas 1983, 95, fig. 5); the mean length/breadth index was 128

at Egehøj and 130 at Hemmed Church. A small, square, flat-flaked flint has a break at one end just at the place where the outline begins to curve. It may be the broken-off "tail" of the point of a flint-edged sword (Rønne, 1988, fig. 1–2), and this would further support a dating to the earliest Bronze Age. A dagger handle of type V was found in the lower strata and can in combination with the presumed bulb-headed pin give a dating to early period I (Lomborg 1973, 145–47, fig. 84B).

A type IV handle from the lowest layer near house IV might point to a slightly earlier dating (LNC).

In summary, the pottery, flint and bronze artifacts indicate a dating of the lower or earlier settlement to Late Neolithic C and Bronze Age I. The archaeological dating of the later settlement cannot on the basis of the bronze tutulus, the pottery, and the strike-a-light be set more closely than to the end of the Older Bronze Age or early period IV. These datings are approximately supported by three C14 datings, where two datings of "reliable" charcoal from house I place that house near the middle of the Bronze Age, c. 1000 B.C., while the dating of the charcoal from layers under the house agree with the Egehøj datings (Boas 1983, 101). The difference between the datings of house I here and the house at Trappendal (Andersen and Boysen 1983) are remarkable, for both are nearly identical in construction.

#### SUMMARY AND CONCLUSION

The excavations carried out so far of the site at Hemmed Church have, thanks partly to the sealing layer of blown sand, given new information about settlement in the early and middle parts of the Bronze Age and make possible the checking and confirmation of the results from the earlier investigations at Egehøj. House II, the midridged house, may turn out to be considerably longer than the largest building, house I, at Egehøj. The similarities in the post construction are evident, but the Hemmed Church house lacks the lowering of part of the floor. In this respect it resembles more the SW Swedish Late Neolithic C houses from Fosie IV, site III; also "indrawn" wall posts are seen in the Hemmed house (Björnhem, N. and Säfvestad, V. 1987, 14). The caulking with clay of plank walls indicates an entirely different wall construction than in the c. 600 year younger house I.

House I gives evidence of great precision of workmanship and has given new and detailed information about

construction and internal arrangements. Like the unique cult building at Sandagergård (Kaul, F. 1987) the walls had a wide raised sockle of earth or peat. There were partition walls and carefully laid clay floors. In the living rooms at both ends there was space between the roof posts for stone fireplaces with auxiliary fire pits as in the Højgård houses (Ethelberg, P. 1987), and traces were seen of different kinds of post features that could be furnishings, alcoves, small rooms, etc. The presence of cereal grains in the central room suggests a storage or provisions room.

Outside the middle entrance could be seen indications of bronze foundry activity. Round or elongated pits, both single and grouped, indicate activities that required the application of heat, such as corn drying, pit kilns, cooking, pottery firing, etc. Perhaps some of the questions that can be put to such a rich material will be answered by future investigations before the growth of the trees permanently prevents a deeper insight into the daily life of the Bronze Age people.

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#### NOTES

- Hemmed Church, Hemmed parish, Djurs Nørre herred, DJM 2215. The excavation was carried out by Djurslands Museum under the direction of the author assisted by Lisbeth Wincentz, Gert Hougård Rasmussen, Anne Bjerrekær, Lene Lund, and Niels O. Boas.
- Hemmed Plantation, Hemmed parish, Djurs Nørre herred, DJM 2049.
- Soil analyses were carried out in 1987 by the *Danske Hedeselskab* on samples of blown sand, on humic sand from under the east end of house I, and on subsoil sand. According to Frode Olesen, Skanderborg, the three samples show considerable similarity to blown sand caught in the air at Rimsø on 06/05 – 1987. "The material is exceedingly well sorted and consists chiefly of fine sand, 0.02–0.2 mm, which makes it probable that all three samples are wind transported material".
- A son of the owner of that time, S. Bolther, Hemmed, has reported that his father said that many "old fireplaces" were dug away here when the Gjerrild-Ryomgård railway was constructed in 1911.
- C14 datings from Hemmed Church:  
K-5168: 1320 ± 80 bc (= 1525 B.C. cal.) hollow under east end of house I.  
K-5169: 890 ± 75 bc (= 1000 B.C. cal.) fireplace in eastern part of house I.  
K-5170: 860 ± 100 bc (= 985–940 B.C. cal.) cooking pit under clay floor in house I.
- Egehøj. KHM J.nr. 160/69. Burial mound excavated by the author in 1969.
- Bronze knife (DJM 2010) and flint tools and pottery from the settlement presented to Djurslands Museum by the amateur archaeologist, Frank Jensen, Hemmed Kirkevej.

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