

# Late Neolithic and Bronze Age Settlements at Hemmed Church and Hemmed Plantation, East Jutland

by NIELS AXEL BOAS

## INTRODUCTION

During 1987–1992 Djursland Museum investigated two settlements near Hemmed Church and Hemmed Plantation,<sup>1</sup> respectively, a good 150 m apart (fig. 1). The results of the first two years of excavation at Hemmed Church have been published in *JDA* vol. 8, 1989.<sup>2</sup> Traces of a total of 9 houses have been demonstrated at Hemmed Church and of 3 at Hemmed Plantation. Of these, 1 is a centre-post house (two-aisled) from the transition between the Single Grave Culture and the Late Neolithic, 6 are centre-post houses from the Late Neolithic A and C, and the transition Late Neolithic C to Early Bronze Age, while 3 are three-aisled houses from the Early Bronze Age. Two small outhouses are assumed to belong. Remains of at least two houses were recorded during trial excavation of adjoining areas.

In both settlements there were extensive aeolian deposits which already in the middle of the Bronze Age had led to an almost complete sealing of the ancient culture levels above the houses. Wind blow has likewise caused some stratification of the accumulated occupation levels in connection with the individual settlements at both sites. This gives a rough stratigraphic separation of early and late occupation layers within the hitherto investigated c. 1,700 sq.m. with traces of 9 houses at Hemmed Church, and c. 1,250 sq.m. with 3 houses at Hemmed Plantation. Less than half of the investigated area lies outside the actual houses. Emergency excavations are usually directed at obtaining reliable information on concrete structures.

The quantity of finds in the more or less protected culture layers is relatively large. Excavation at Hemmed Church yielded c. 45 kg pottery, 106 kg flint waste, 88 flint cores, 492 flint implements, 113 stone (i.e. other than flint) implements, 8 bronzes and 5 amber objects, besides c. ½ kg splintered burnt bone, animal teeth, charcoal and at least 10,000 charred cereal grains. Hemmed Plantation yielded c. 30 kg pottery, 107 kg flint waste, 66 flint cores,

443 flint implements, 80 stone implements, 6 pieces of amber, 1 bone awl, 1 clay bead, charcoal, and cereal grains. This large quantity of flint waste and implements has not yet been processed and analysed. The purpose of this article is solely to give an overview of the structures found at the two sites – their construction, dated finds and the radiocarbon datings carried out so far. The radiocarbon datings are discussed by K. L. Rasmussen elsewhere in this volume (Rasmussen 1993). All C<sup>14</sup> dates mentioned in the following are in calendar years.

## HEMMED CHURCH

The excavation at Hemmed Church (fig. 2) was carried out during the years 1987–90. The recorded occupations may be broadly divided into three phases. The late phase consists of two three-aisled houses from the middle part of the Bronze Age, each with a possible outhouse, house I + house VIII and house V + house VII, with associated collections of cooking-stones and pits in and around the houses. The intermediate phase comprises centre-post houses from the Late Neolithic/Early Bronze Age: house III, parts of house IV and house II, and a few pits. The earliest occupation phase comprises a very late Single Grave centre-post house, house VI, and a house corner, house IX, with a possibly associated collection of pits with Bell Beaker decorated sherds along the south side of the house. All houses are E-W oriented with a tendency to lie WNW-ESE in the middle phase.

### *The late occupation* *House I*

This house has been described previously (Boas 1991: 88–94). It constitutes the latest occupation ascertained so far, before extensive drift sand covered part of the area.

House I measured 30×10 m. The walls were made up

of slender posts 0.2 m in diameter, set 0.2 m into the ancient topsoil c. 0.4 m apart. Along the south wall of the house were pieces of daub with wattle/stake impressions. The gable ends had slightly rounded corners.

An entrance was seen in the middle of the north wall and another one between this and the west end of the house. The entrances appear as openings a good 1.5 m wide with jamb posts inset about ½ m. In connection with two of the eight sets of roof-bearing posts set 0.9 m in the ground were cross-walls consisting of 4–5 sturdy

posts. These divided the house into a large central room, a small east room, and a slightly larger western living-room. The two last-mentioned rooms each had a central fireplace, set with stones in the east room. Around the fireplaces were ovens or cooking-pits about ½ m deep with remains of cooking-stones or crumble from stones heated in the nearby fireplace. At the east end, an almost intact, 1–2 cm thick clay floor, set on levelled ground, was exposed. Remains of a clay floor were also seen at the west end. The clay floor stops c. 0.8 m from the wall, and a

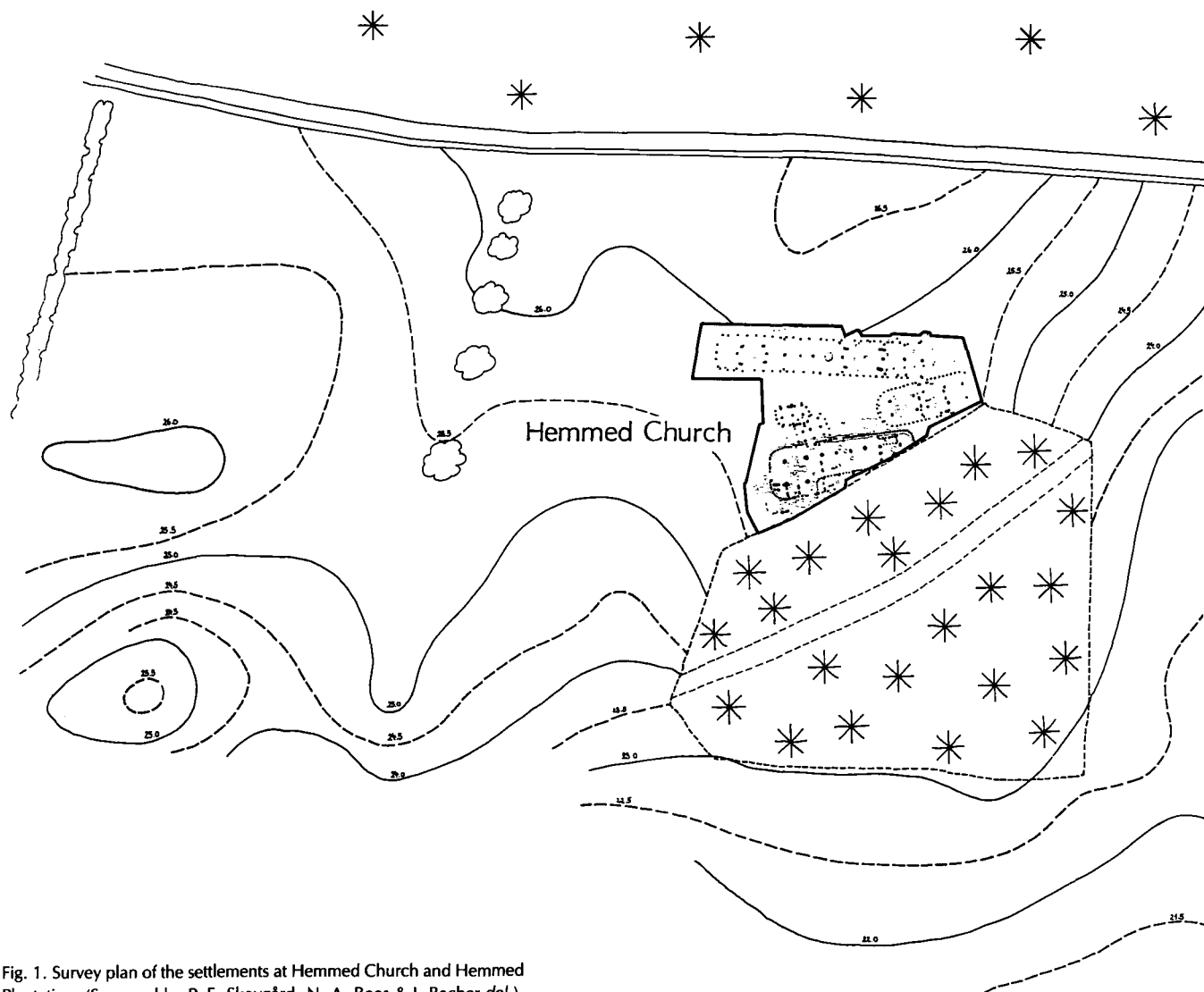


Fig. 1. Survey plan of the settlements at Hemmed Church and Hemmed Plantation. (Surveyed by P. E. Skovgård, N. A. Boas & J. Bacher *del.*).

slight change in the soil flanking the wall posts suggests the construction of a kind of sod panel or earth bench, especially along the inner side of the wall. In the middle room were four cooking-pits, and charred grains of corn in the roof posts suggest a store-room function. At various places in the house were posts from various internal structures, set into the ground.

A sample of charcoal from cooking-pit A19, which was sealed by the clay floor at the east end of house I, gave a  $C^{14}$ -dating of 990–940 BC (K-5170). Another charcoal

sample from the clay floor itself at the same spot was dated to 1000 BC (K-5169).

10–20 m north of house I was an up to 0.2 m thick irregularly delimited layer of cooking-stones. It was, like the east end of house I, directly covered by yellow drift sand, and can thus be linked stratigraphically to house I. Finds of pottery, flint and bronzes, etc., are likewise in accordance with the few and scattered finds that definitely belong to house I. In addition to the tutulus found in the cooking-stone level (Boas 1991: fig. 11c), a corresponding

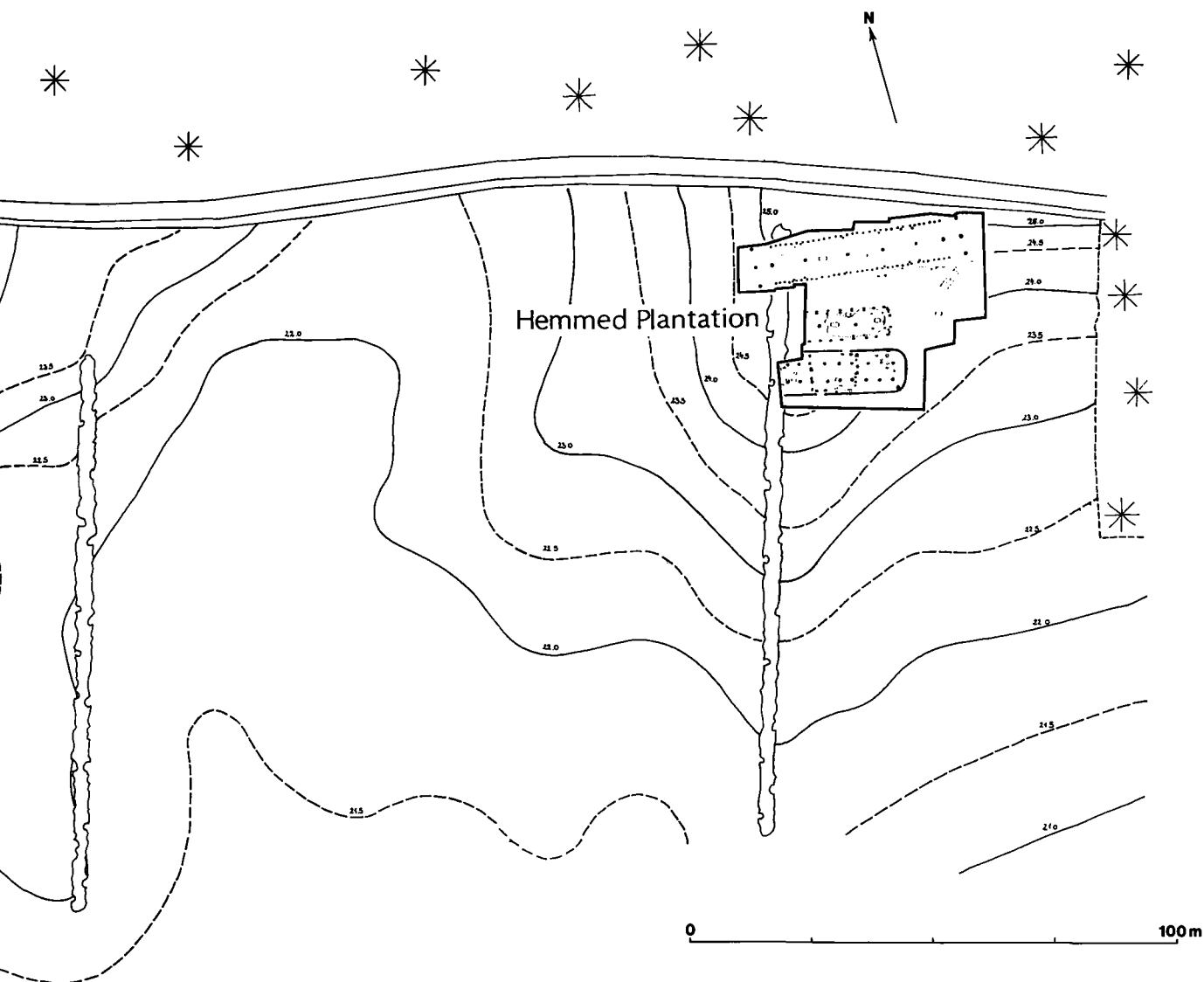




Fig. 2. Plan of the excavation at Hemmed Church. House VI from the Late Single Grave Culture is emphasized. 1:250. (N. A. Boas & J. Bacher *del.*).



Fig. 3. Hemmed Church. House V exposed. At the top, cooking-pits are seen around a fireplace. On the right is the north wall's row of square posts or post-holes without "core". The large patch in the row is a shallow depression in the middle of the entrance. (Photo: N. A. Boas).

tutulus with tall knob, a bronze awl and an "unfinished" bronze pin, apparently with hammer-marks (fig. 4), were found in the west part of the same layer. Nearby was a small stone of dense material with a smoothly polished flat surface and an annular groove.

#### *Out-house VIII*

About 6 m from the northwest corner of house I and with the same orientation was a small rectangular post-built house measuring c. 7×5 m. The supporting structure seems to be a square of 3×3 posts. Two oblique posts have been supporting the two central posts at the north and south. Just outside the three posts in north and south was a further post serving as a wall post, and four similar posts in a slight curve in the east and west gables.

Near and in the house were slight traces of clay daub and a few sherds of the same kind as in house I, and layers of cooking-stones both to the north-east and south-west.

The find material in and around the house does not indicate its function. There are no certain traces of a fireplace or cooking-pits in the house.

#### *House V*

Only about 1 m from the north-east corner of house I, a three-aisled house measuring 21×8 m was investigated. It had square wall-post holes set c. 0.5 m apart and 0.1–0.2 m into the subsoil (fig. 3). The west gable was smoothly rounded, while the post-holes of the east gable, with a single exception and perhaps already in antiquity, have been ploughed away, for the gable posts, due to a fall in the terrain, must have been set in levelled ground. The five sets of roof-bearing posts were all placed 2.5–5 m apart. There were remains of partition walls, which, unlike in house I, divided the house, which covered 150 sq.m., into a smallish central room measuring 40 sq.m., an east room of c. 47 sq.m., and a western living-room of

c. 63 sq.m. Both partition walls were marked by two sets of paired posts or jamb planks, set into the ground in the middle of the house. A corresponding doorway construction was seen at the 1 m wide recessed entrances in the

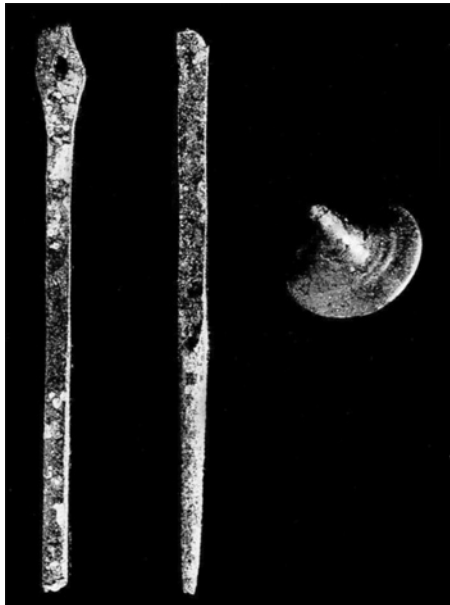


Fig. 4. Hemmed Church. Bronze pin with broken-off ends and square shaft with hammer-marks, bronze awl, and a small tutulus with raised knob. From the late settlement in the Middle Bronze Age. 1:2. (Photo: S. Harbo Andersen).

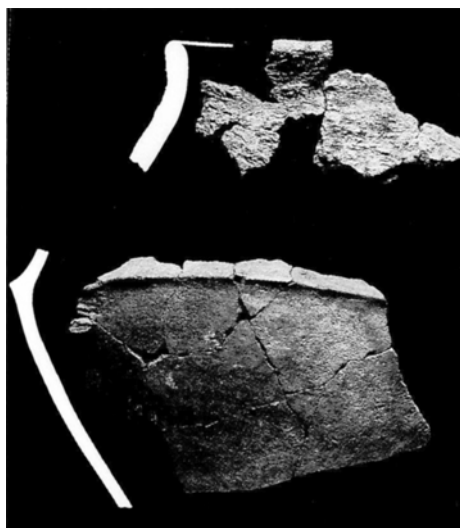


Fig. 5. Hemmed Church. Finds from cooking-pit A 203. Sherds of “slurried” pot and concave-convex pot with carination and traces of a small broken-off lug. (Photo: S. Harbo Andersen).

long wall. The north wall doorway was placed near the middle, while that in the south wall was displaced to the east, so that each doorway leads into the central room, close to a partition wall. At the western end was a diffuse reddish patch from a fireplace mid-way between the four westernmost roof posts. Around this patch there was, as in house I, a cluster of 12–15 small cooking-pits. Only one cooking-pit was seen in the central room, while no structures were found in the east room.

#### *Outhouse VII*

A small house, which based on its orientation and on stratigraphical observations can be linked to house V, was found partially under the north wall of house I, a good 10 m due west of the west gable of house V. The supporting structure was, as in house VIII, 3×3 posts c. 0.3 m in diameter and 0.8 m deep, placed practically in a square. At intervals of c. 1 m and 1 m away from the supporting structure were more slender posts. The outside dimensions of the house are thus 6.5×6 m E-W. In a few of the holes for “roof posts” was a basal packing of burnt stones and in the stone packing of the central post-hole a thigh-bone, probably of a horse. Over the house were four shallow cooking-pits, perhaps in connection with the later occupation in houses I and VIII. There were no signs of a fireplace or of cooking-pits in the house itself.

#### *Other structures outside the houses*

About 5 m NNW of the northern entrance of house V, a cooking-pit 1.7 m in diameter and 0.6 deep, A 203, was investigated and found to contain cooking-stones, charcoal and pottery (fig. 5). This pit has been C<sup>14</sup>-dated to 1310 BC (K-5786). It was cut into the north side of a hole for a roof-bearing post in house III, from which a charcoal sample has been taken and C<sup>14</sup>-dated to 1670 BC (K-5782). Another large pit, A 57, may be assigned on the basis of pottery to the later occupation phase. It was c. 2 m in diameter and c. 1 m deep and contained stratified drift or water-sorted sand. Stratigraphically, it was associated with house V, at the west gable of which it was placed. A north-south row of seven posts was observed c. 4 m west of pit A 203 (*cf.* Boas 1991: fig. 2). The stratigraphic association and the fill in the post-holes, a couple of which were square, link them to house V and pit A 203, and they may have had a function in connection with the latter.

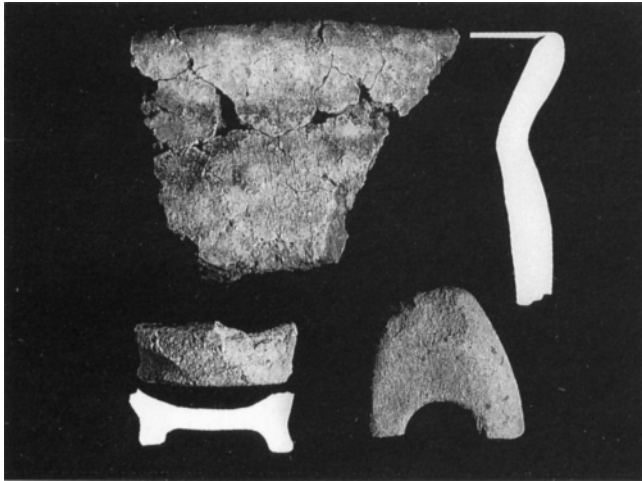


Fig. 6. Hemmed Church. Pottery and shaft-hole axe from the intermediate occupation, house III. (Photo: N. A. Boas).

### *The intermediate occupation* *House III*

The longest house at the settlement, house III, was 43 m long, with a width of 7 m throughout. It was furnished with a row of roof posts or centre-posts, six inside and one in the centre of each gable-end. The ground area of c. 300 sq.m. corresponds to that of the long-house I. The middle part of house III has been previously described (Boas 1991:95–96, fig. 13). House III appeared as a solid post-built construction with straight walls and with posts set c. 1 m apart. While the west gable was almost straight, consisting of five posts set about 1.7 m apart, a more peculiar east gable was seen. 2.5 m from the terminal wall posts were three prominent gable posts, *i.e.* two corner posts and a centre post. The corner posts were double or each paired with a retracted post – perhaps for renewal. The gable posts were, like the roof posts, set almost 1 m in the ground and the holes were about 0.5 m in diameter.

Opposite most of the roof posts were retracted wall posts which must have been connected to a cross-beam across the house to stabilize the roof-bearing construction. Inside the south wall, near the east and west ends of the house, were some extra retracted wall posts, which, combined with a slightly larger opening between the wall posts, suggest doorways. Oblong holes with traces of 2–3 closely set posts were seen between roof and wall post in the house sections near the two fireplaces measuring c. 1.8×1.5 m. The fireplaces were placed mid-way between the roof posts, which were set as much as 8 m apart. The



Fig. 7. Hemmed Church. Wall-posts sectioned in house II's northwest corner. Intermediate occupation viewed from the north-west. (Photo: L. Wincentz Rasmussen).

closely set post structures must have served a special purpose in connection with activities near the hearth. A circular, flat-based and shallow pit, A 95, in the centre of the house, seems from its content of fragmented burnt stones and burnt bones to have served as a cooking-pit or oven. The pit has been C<sup>14</sup>-dated to 1730–1700 BC (K-5781). From the fill in a shallow, oblong pit near the most easterly “jamb post” in the south wall, a couple of thousand cereal grains have been recovered.

Scattered in house III, and especially in its east part, were fragments of small, red-burnt clay strips for caulking the plank walls. These strips showed distinct impressions of hewn planks (Boas 1991 fig. 12). More than half of the potsherd from the excavation area may be assigned to house III, like most of the flint implements and debitage. Flint daggers of type V, a stone axe with a shaft-hole and fragments of small pedestalled beakers may with great confidence be assigned to the house and must be considered diagnostic (fig. 6).

### *House II*

A corner of a house, house II (Boas 1991:94, fig. 2) with a wall construction very like that of house I, but with deeper-set wall posts, was seen under house I's central southern part (fig. 7). A single roof post placed in the middle was found 3 m from the west gable and about 3.5 m from the north wall. It was more than 1 m deep and

thus of at least the same size as the roof posts in house III. C. 2 m east of the roof post were traces of an oval fireplace very much like those seen in house III. Unfortunately, no flint implements or pottery could be definitely associated with this house.

#### *House IV*

Near the south-west side of the excavation, a fireplace was recorded which was disturbed by later cooking-pits. Unfortunately, time and economy did not allow a final investigation of the almost 100 structures in the southwest corner of the excavation. Clarification of which posts and pits belong to the fireplace would require sectioning and excavation of every hole, in an area where observation is made difficult due to bioturbation such as animal activity and tree roots from the adjoining forest. East and north-east of the fireplace, post-holes have been recorded that are stratigraphically older than house I and II. A type IV dagger handle and some pottery of Late Neolithic C/Early Bronze Age character have been found in the culture layer around the fireplace and under house I's floor level. The house has been previously described (Boas 1991:94, fig. 13).



Fig. 8. Hemmed Church. North-south section through roof post in house VI. Earliest occupation. (Photo: N. A. Boas).

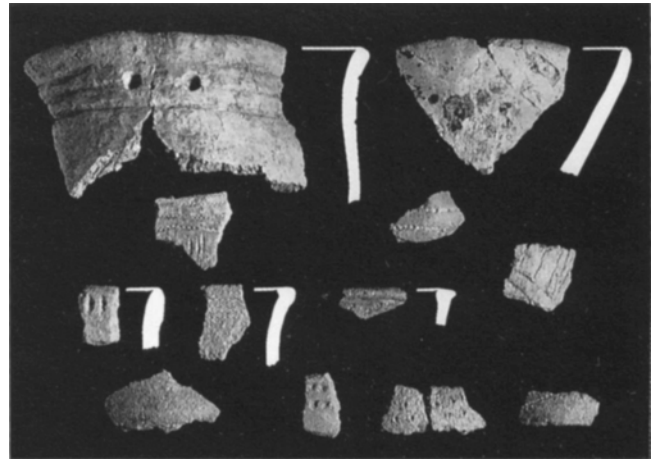


Fig. 9. Hemmed Church. Sherds from the earliest occupation. From above, sherds of flared beakers, conical bowl, and simple beakers with T-shaped rim. Ornamentation in incised groove, pin denticulation, cardium, and wedge. (Photo: S. Harbo Andersen).



Fig. 10. Hemmed Church. Flint implements from the earliest occupation. Barbed arrow-head, barbed and tanged arrow-head, leaf-shaped point with broad tang (cf. Asingh 1988, fig. 20c and e). Thick-butted axe fragment, miniature axe and under this the edge of a hollow-ground adze. Bottom left, three D-type arrow-heads. (Photo: S. Harbo Andersen).

#### *The earliest occupation*

##### *House VI*

Under the east end of house III, a post-built house measuring 16×6 m was investigated. It had slender, slightly oval wall-post holes, set at intervals of 2 m. The corners were slightly rounded, formed by two closely spaced posts, which together with a centre-post make up the



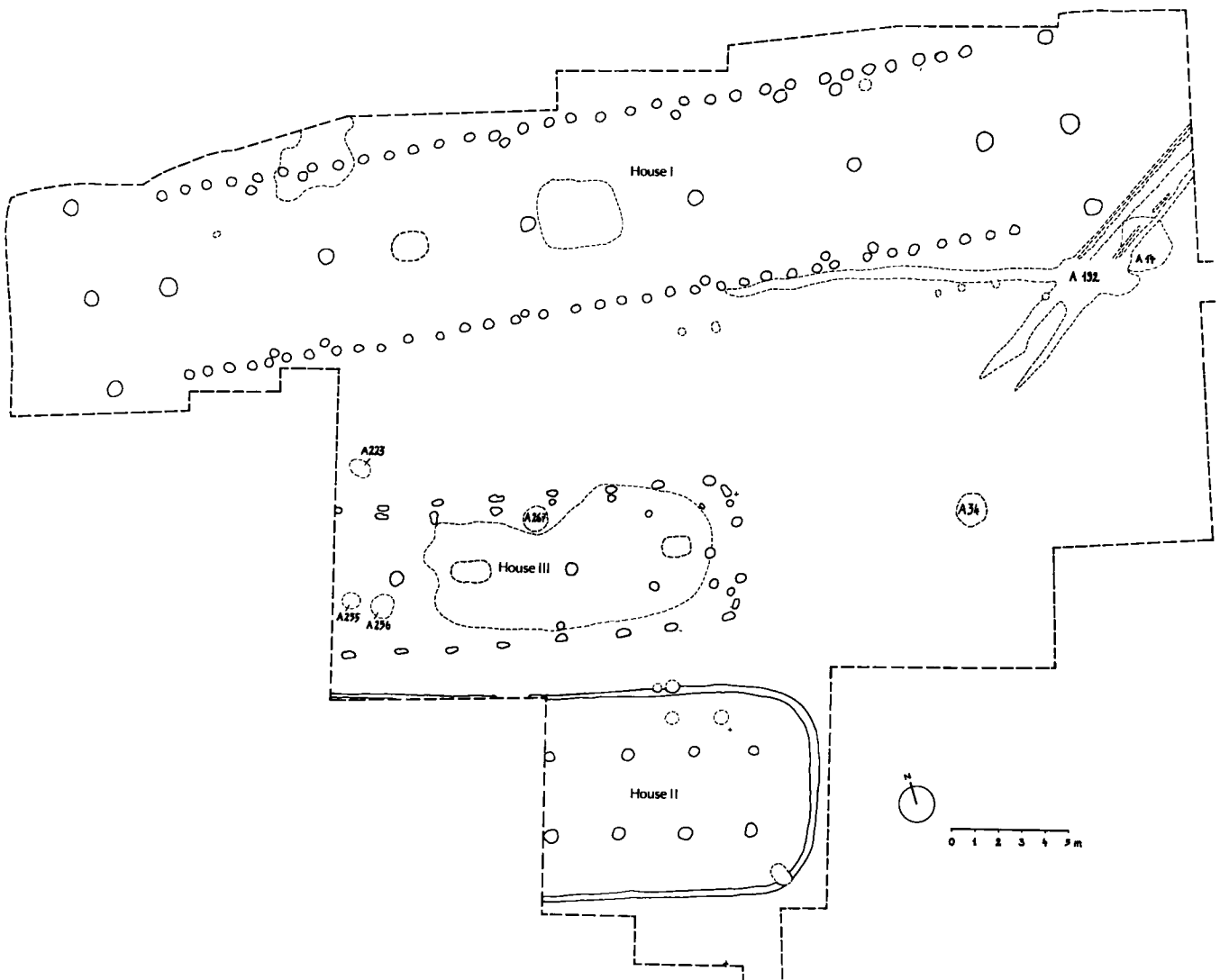
gable construction at each end of the house. The ridge-pole rested on a row of three internal posts 5–6 m apart. The fill in the post-holes clearly differed from the fill in the post-holes of the later structures by being more homogeneous and grey (fig. 8). It was almost impossible to differentiate between the dug hole and the actual post-mark in the individual post-hole.

Within the ground plan of the house, 4–5 pits with almost vertical sides and flat bottom were investigated. In one of these, A 275, the lower part of a pot was found, a B3 or E2 beaker, with horizontal denticulate line orna-

ment (Glob 1945,66–67). No direct connection between house and pit can be demonstrated, however. The pits are connected chronologically via pottery finds to a large collection of corresponding pits, *i.a.* an older pit in the northwest corner of the house, and one is placed in the middle of the north wall-line of the house.

Scattered in the bottom culture layers and over most of the excavation in and around the house, and with a small concentration c. 10–15 m south-west of the house, were sherds of late Single Grave and earliest Late Neolithic (fig. 9), pieces of polished thick-butted axes and adzes,

Fig. 11. Plan of the excavation at Hemmed Plantation. 1:250. (N. A. Boas & J. Backer *del.*).



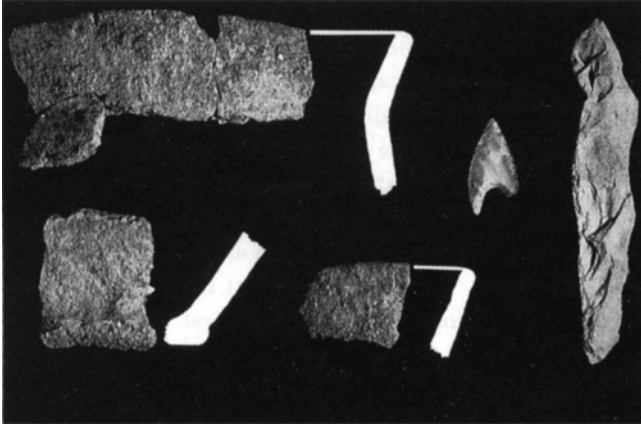


Fig. 13. Hemmed Plantation. Sherds, barbed arrow-head and sharp triangular hammer-stone of flint from the late occupation. (Photo: S. Harbo Andersen).

three D-type arrowheads, a couple of broad pressure-flaked, barbed arrowheads and a single arrowhead with both barbs and tang (fig. 10).

#### HEMMED PLANTATION

The settlement c. 170 m east of the Hemmed Church site lie, like this, on a low elevation approximately on the 24 m contour down to the merely 2–3 m lower and now completely dried up tract of marsh called Svapkæret. Between the two settlements, an over 100 m wide and only 2 m deep flat depression stretches from the marsh to the north (fig. 1). At the edge of a newly established duck pond on the north side of Svapkæret, just opposite the depression

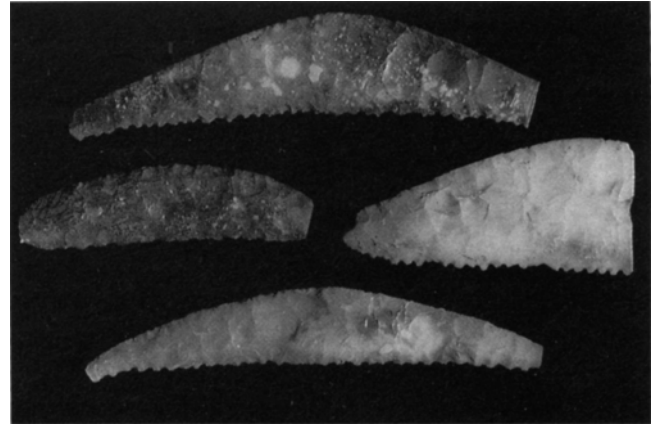


Fig. 14. Four flint sickles from house II, Hemmed Plantation. (Photo: S. Harbo Andersen).

and less than 100 m from the settlements, an almost 1 m thick layer of peat has been observed, with preserved wood, covered by a c. 0.5 m thick, yellow layer of drift sand like that covering some of the Hemmed Church structures. A similar drift sand layer covered the ancient culture layers at Hemmed Plantation. The drift formations hamper the reconstruction of the prehistoric landscape from surface observations. Extensive trial excavations or drilling is needed to permit a more certain reconstruction.

The Hemmed Plantation settlements were investigated in the years 1988–92. Three houses have been excavated, each of which corresponds approximately to the three building phases that could be distinguished at Hemmed Church.

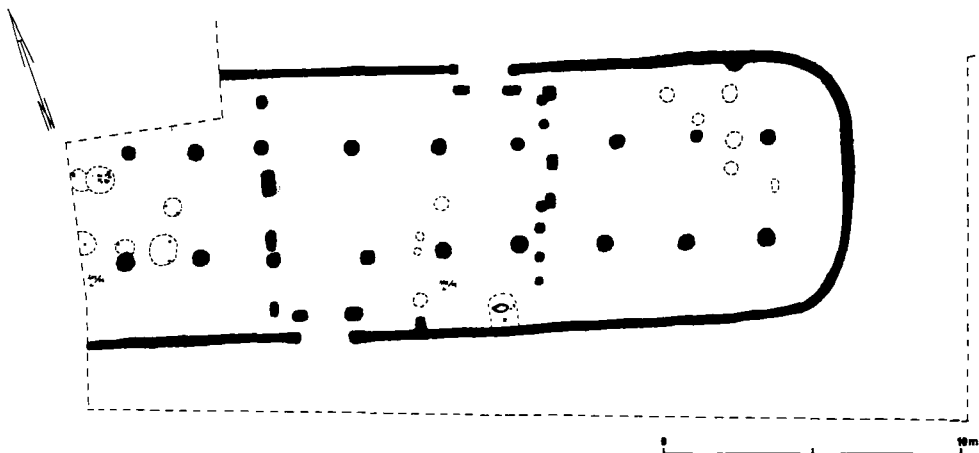


Fig. 12. Plan of house II, Hemmed Plantation. 1:250. (N. A. Boas del.).



Fig. 15. Hemmed Plantation. The 45 m long house I, intermediate occupation. Wall and roof posts are marked with paper plates. In the background, centre, the Hemmed Church settlement. (Photo: N. A. Boas).

### *The late occupation*

#### *House II*

The southernmost structure, house II, is a 9 m wide three-aisled house (fig. 12). From the east gable it stretches at present 27 m to the west, and the west gable may be expected 3 m further west. The house has a 0.3 m wide and up to 0.2 m deep wall trench, which gives a ground plan with evenly rounded corners. At the base of the trench there are posts set 1.8–2.5 m apart, some of which are square-cut like those of the walls of House V, Hemmed Church. The walls are interrupted only by slightly more sturdy posts at the displaced north and south door openings. Both entrances are formed by door

posts or jamb planks, recessed  $\frac{1}{2}$  m into the house, forming a 1.2 m wide doorway. The “outer” door opening in the wall is 1.7 m wide.

9 pairs of roof posts have been recorded, 2.5–3 m apart. They are 0.6 m deep (0.9 m in relation to the ancient surface). The posts are all placed at a distance of 2.5 m from the centre of the gable- and wall-trench. One metre to the left of each entrance are cross-partition walls, both with prominent “doorways” in the middle of the house – exactly like the recessed door openings in the outer walls of the house. Between the anticipated tenth and the ninth set of roof posts to the west is the obligatory cluster of cooking-pits – so far 6 in all. The fireplace seems, as in



Fig. 16. Hemmed Plantation. North-east doorway in house I. Note that the recessed posts of the doorway are drawn away from the door opening in the wall (to each side of the 0.6 m measuring stick). (Photo: G. H. Rasmussen).

house V, Hemmed Church, to have been ploughed away in the Bronze Age.

In the culture layer over the western end of the house were four oblong, lunate, pressure-flaked flint sickles and a shaft-hole axe (fig. 14). By the south wall of the house – opposite the north door – lay a saddle quern, slightly buried in the subsoil. In the upper part of the divided culture layer covering the house, sherds were found scattered. These and the sickles, can be dated to the Early Bronze Age, Period II (fig. 13).

An extensive c. 0.2 m thick layer of cooking-stones stretched from the entrance area in the north wall c. 10–12 m to the north. Nearly two tons of cooking-stones make up this “upper” occupation layer of burnt-out stones, presumably thrown out of the north door from cooking-pits in the western end of house II. C. 10 m north and north-east of the house were two cooking-pits, A 34 and A 223, each a good 1 m in diameter, with sherds of the same type as from house II and the cooking-stone layer.

#### *The intermediate occupation*

##### *House I*

The northern building is the largest with the most accurate ground-plan of all, and with centre-post construction (fig. 15). It measured 45×8 m. The walls consisted of post-holes 0.5 m deep and 0.3 m in diameter. They were placed in a perfectly straight line at intervals of 1 m in the

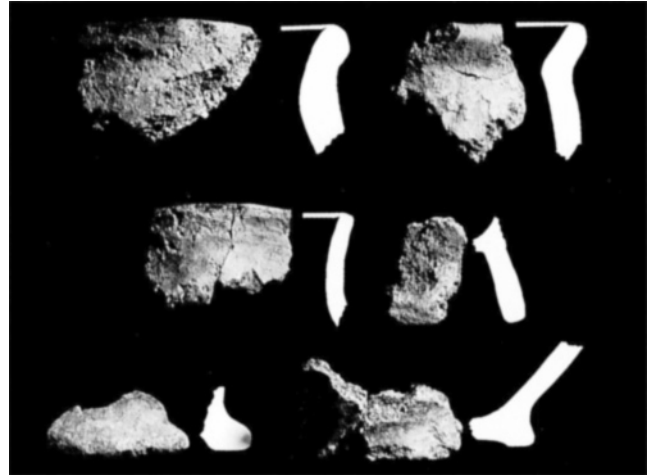


Fig. 17. Hemmed Plantation, sherds of i.a. bucket-shaped vessel and goblets. Intermediate occupation. (Photo S. Harbo Andersen).



Fig. 18. Hemmed Plantation. Flint implements from the intermediate phase, house I. Shaft scraper, hilt of type IV dagger, miniature dagger, edge of shaft-hole axe, barbed arrowheads and dagger point. (Photo S. Harbo Andersen).

south wall, which had 35 posts. The north wall comprised 32 posts. A slightly recessed post was regularly placed opposite each roof post or slightly displaced in relation to this, so that there was room for the cross-beam which could be morticed, tied or nailed to the roof post. A further four recessed posts may have formed door jambs (fig. 16). They were namely placed c. 2 m from one of the last reset posts at each end of the house. That four doorways are involved is supported by the fact that the “frame posts” in the outer wall stand further apart than normal. The six “inner” roof posts of the house were properly set

to a depth of 1.2 m and were 0.6 m in diameter. The maximum roof-post distance of practically 9 m was seen where a fireplace measuring c. 1.7×1.4 m was placed in the middle of the west end of the house. The gables have a striking resemblance to the east gable of house III at Hemmed Church. Three posts of the same type as the roof posts form the special gable construction, which stand “apart” from the house at a distance of 3 m from the last post in the long walls.

Precisely in the middle of the fairly flat floor of the house there was a 3.5×3 m, rounded rectangular and c. 0.3 m deep depression. It contained i.a. the handle of a type IV flint dagger with flint flakes and waste and pottery of the type found in the culture layer over the house (fig. 17–18). A C<sup>14</sup>-dating of charcoal, etc., from the lower part of the depression gives an age of 2120–2040 BC (K-5801).

In a c. 0.5 m deep pit inside the north house wall, just east of the northeast entrance, were jaw fragments and bones of a horse, preserved only because they were closely packed.

In the culture layer over the house an even spread of small pieces of cooking-stone, c. 300 kg altogether, was found. C. 35 kg flint flakes and 10 kg pottery were likewise evenly spread in the occupation layer. Some of the flakes and about 1 kg of the pottery are of Late Neolithic A type and can be assigned to house III to the south.

Apart from a single ambiguous piece, there are no pieces of clay joint filler of the kind found in Hemmed Church house III. A few roof and wall posts had a dense charcoal concentration in the core, where “pure” samples for radiocarbon dating could be taken. There were no signs of the house having burnt down, however.

Samples of the charcoal from four post-holes gave C<sup>14</sup>-datings lying in the interval 1870–1680 BC (K-5797–5800).

#### *The earliest occupation*

##### *House III*

Between the two houses described from Hemmed Plantation, the main part of one more centre-post house was investigated. The recorded traces comprise the c. 0.4 m deep sunken east end and most of the central part, 18 m in all. The walls were made up of scattered, oval and insubstantial post-holes with homogeneous greyish fill, where a core with post remains could be discerned only with difficulty. The post-holes were c. 2 m apart and set 0.2–0.3 m

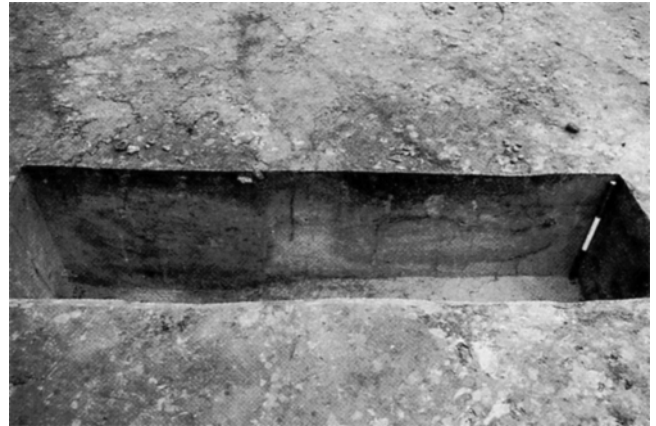


Fig. 19. Hemmed Plantation. Pits in house III. West-east section. Note the vertical sides and flat bottom. (Photo: N. A. Boas).

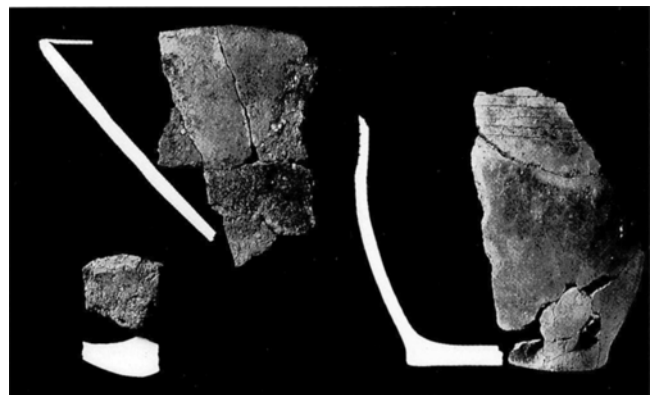


Fig. 20. Hemmed Plantation. Conical bowl, flared beaker (bell beaker) and fragment of clay spoon, earliest occupation. (Photo S. Harbo Andersen).

into the ground. At the north wall of the house was a double post setting consisting of outer wall posts 0.2–0.3 m from inner wall posts. A corresponding arrangement was seen at at least one post in the south wall. The house’s east gable had slightly rounded corners with an oblong, plank-like post as the first gable post near the corner of the house. The central gable post was recessed about 1 m. It could also have served as an internal roof post in connection with the two others demonstrated down the middle of the house. Only the eastern and western roof posts were markedly deeply set, c. 0.6 m, in the subsoil and 0.4 m in diameter, while the middle post, which was in the bottom of the depression, was set shallow. The depression in the east end of the house was c. 14 m long and 4–6 m wide. Its sides were steep along the north side and in the middle of the south side, while the ends were

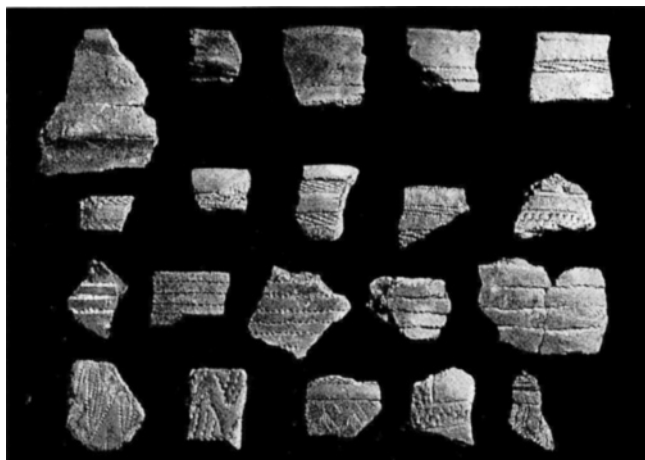


Fig. 21. Hemmed Plantation. Rim and belly bowls with cordon and Bell Beaker ornament. Note the in-crustation on the first sherd in the second row from below. (Photo S. Harbo Andersen).



Fig. 22. Hemmed Plantation. Flint implements from house III, earliest occupation phase. Type I dagger fragments, barbed arrowheads, broad-edged axe and serrated blade saw. (Photo S. Harbo Andersen).

only slightly sloping. A regular shallow cooking-pit was placed in the centre of the depression's north side, and nearby lay a large burnt fragment of a quern. The pit A 267, c. 1.1 m in diameter, was almost in contact with the "inner wall line" of the north wall. It contained the settlement's largest cooking-stone, up to 5 kg, and altogether 25 kg of cooking-stones. It must be interpreted as an extremely well-preserved circular oven with incompletely burnt-out cooking-stones from the nearby fireplace. The nearest fireplace was recorded as a 1.6×1 m large, red-burnt patch in the middle of the west end of the depression, only 2 m from the oven. Traces of a corresponding

fireplace were seen at the eastern end, only c. 0.6 m from the roof-post hole.

Scarcely ½ m south-west of the westernmost roof post were two circular pits lying close together, about 1 m in diameter and up to 0.7 m deep, with vertical sides, or slightly wider near the completely flat bottom (fig. 19). These pits were very similar in shape to those seen under and north-west of house VI at Hemmed Church. Typical of the pits at both sites were the few finds and their low humus content.

Just as at Hemmed Church, there were ard-marks over most of the surfaces at subsoil level. Even at the bottom of house III, distinct longitudinal ard-marks were seen. This suggests rapid conversion to arable use, after the house had been abandoned and demolished.

Everywhere in the culture layer, but most densely in the lower part, were sherds of predominantly thin-walled, often decorated (c. 450 pieces), well-fired sherd material from the Late Neolithic A (figs. 20–21). About 35 sherds have a cordon, usually 1–2 cm under the rim. There are three fragments of clay spoons (fig. 20) and five of sieve vessels. Four sherds seem to be painted with black, horizontal strokes, and two sherds have white paste or in-crustation in the decoration. A collection of irregular pottery was seen in the east end of the depression in the house.

Flint waste, flint cores and implements were like the ceramics evenly distributed inside and outside the house. The scrapers were found (200 altogether) in a somewhat greater concentration in the house fill than outside, just as a thick-butted, broad-edged axe was found with fragments of several axes in the sunken part of the house (fig. 22). Broad pressure-flaked barbed arrowheads may be assigned to the house, with a couple of type I flint dagger fragments. One of these lay in the middle of the northeasterly plank-like corner post in the house (fig. 22). Three fragments of shaft-hole axes from the site are unfortunately too small to be typed.

## DATING AND DISCUSSION

Frequent and sometimes very extensive sand drift in north Djursland caused by arable farming is the primary reason why the ancient settlements at Hemmed are unique in settlement-historical context.

From the Stone Age and Bronze Age it has not previously been possible in Denmark, within so small an area,

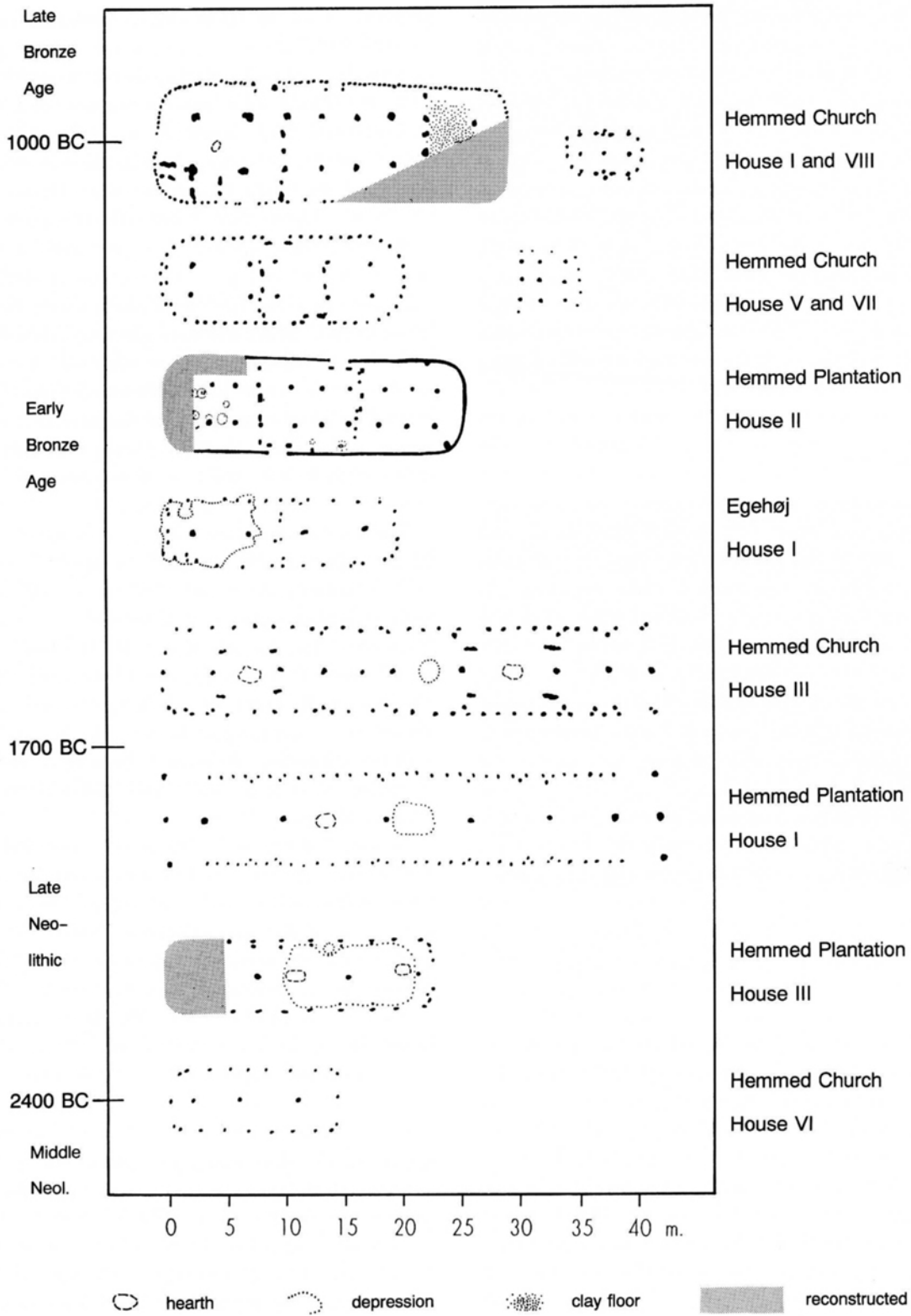


Fig. 23. Development and chronology of the Hemmed houses. (N. A. Boas & J. Bacher *del.*)

to demonstrate so coherent a development in house construction, and the relevant culture layers.<sup>3</sup> The Hemmed settlements extend from the end of the Single Grave Culture to the middle of the Bronze Age, a total of 1,500 years (see fig. 23 and the table of C<sup>14</sup>-datings in the following article by K. L. Rasmussen). Twenty years ago, the author undertook the excavation of the settlement at Egehøj, a good 1 km WNW of Hemmed Church. Here houses from an early part of the Early Bronze Age, three in all, were found for the first time (Boas 1983). They were sturdy, post-built structures with only one row of roof-bearing centre-posts. Like the almost 800 years older Myrhøj houses (Jensen 1973), they had partially sunken floors and a relatively flimsy wall construction. The Egehøj houses still stand as the latest and last link in the chain of development of the centre-post house, from the time when it appears for the first time as house VI at Hemmed Church c. 2500–2400 BC, over the most fully developed form as house I, Hemmed Plantation, until near the middle of the Early Bronze Age. It was completely replaced by the three-aisled house, the oldest example of which is house II, Hemmed Plantation and house V, Hemmed Church, indirectly dated by pit A 203, whose age has been determined as 1310 BC (K-5786). Here a new building type, the small store- or outhouse, which at Hemmed Church seems to have been built in connection with the three-aisled houses, also appears for the first time.

Just as the Hemmed investigations have now made it possible, locally and in detail, to follow the development in house construction, some details of room arrangement have also been ascertained. The culture layers in and around the houses everywhere contain fragments of cooking-stones, which clearly all derive from originally larger stones which have been split into such small pieces by repeated heating that they were unsuitable for further use. Some development can be perceived, for the amount and size of the cooking-stone pieces are slightly smaller in the centre-post houses than in the three-aisled houses. In the north side of house III, Hemmed Plantation, was a well-preserved example of an early oven. This seems to have been built on the surface or set slightly into the ground. Compare also the central pit in house III, Hemmed Church, and the heaps of cooking-stones in houses II and III at the Egehøj settlement (Boas 1983:92–93). With the first three-aisled houses, the oven is set further into the ground very near the fireplace, now as a proper cooking-

pit, often c. ½ m deep, which probably made re-utilization of the small “cooking-stones” more difficult and thus led to a greater consumption of them. Pits that seem to have been used for another purpose than baking and cooking occur only inside the centre-post houses. They were seen, albeit in somewhat ambiguous context, in the bottom of the Single Grave house VI, Hemmed Church, and in the slightly later house III, Hemmed Plantation, with Bell Beaker pottery. The pits were at both places quite deep (0.5–0.7 m), with vertical or slightly sloping sides and quite flat bottom. Unfortunately their function is not known. There are normally only a few finds of flint and pottery, cooking-stones or charcoal. A couple of pits north-west of house VI at Hemmed Church contained several hundred charred cereal grains as in a presumptive storage pit in house II at the Egehøj settlement. With the three-aisled houses, the large pits seem to lie outside the houses (*e.g.* A 57, Hemmed Church).

The three-aisled houses have, as house I at Hemmed Church, presumably all had stamped clay floors and stone fireplaces in the living sections, separated by distinct partition walls, which moreover, as in house V, Hemmed Church, and house II, Hemmed Plantation, may be furnished with distinct doorways just like those in the outer walls. This three-room partition cannot be observed in the centre-post houses whether the “recessed” wall posts indicate partition walls or have merely carried tie-beams to support the “inner skeleton” of these substantial houses.

Despite 3,000 years’ sealing with sand drift, many details of the structures inside and outside the houses have been obliterated by the apparently hasty and repeated cultivation of the occupation layer above the abandoned houses. This phenomenon can be observed at two further settlements in Djursland from the early part of the Late Neolithic – Svapkæret and Diverhøj (Asingh 1988) – where the house remains were in both cases sealed by graves from the middle of the Late Neolithic (Boas 1986, fig. 1–2).

It should be emphasized that the C<sup>14</sup>-datings carried out at all the Hemmed sites support the archaeological datings (*cf.* Rasmussen, this volume) and the postulated development in house types. It is evident that the samples of charcoal from the post-holes must give the most precise datings, whereas the accumulated charcoal of the pits can give a higher age. Possibility of contamination from older settlement is greatest here, but the charcoal samples of the



pits, with a greater variation in type of wood and most often branch pieces, should otherwise have the lowest self-age (Malmros 1991).

## CONCLUSION

The very considerable find material will in the near future be carefully analysed and will, with the technical analysis of the organic find material from the houses and the area around them, without a doubt reveal new details of human behaviour through the c. 1,500 years of settlement. A few of the area's burial mounds from the Late Neolithic and Early Bronze Age have been well investigated.<sup>4</sup> A further 6 preserved and 3 ploughed-down tumuli can be investigated at Hemmed to further illuminate the relationship between living and dead in the Bronze Age. One of the nearby barrows on Emmelev Mark, which was investigated in 1980, contained quantities of early Late Neolithic settlement material and two different burial phases from the Early Bronze Age. The graves were placed in a barrow surrounded by two kerbs containing a total of 19 stones furnished with the Bronze Age fertility symbol, cup-marks (Boas 1980). Although the soil at Hemmed can be fertile, sand drift presumably made extraordinary measures necessary to preserve fertility.

*Translated by Peter Crabb*

Niels Axel Boas, Djurslands Museum, Søndergade 1, DK-8500 Grenå.

## NOTES

1. The case numbers for Hemmed are: Hemmed Church DJM (Djurslands Museum) 2215 and Hemmed Plantation DJM 2049.
2. The investigation was an emergency excavation necessitated by imminent tree planting and was financed by the State Antiquary. It was directed by the author assisted by Lisbeth Wincentz Rasmussen, Gert Hougård Rasmussen, Karsten Kristiansen, and Ole Poulsen, with great help from the amateur archaeologists Frank Jensen and Niels O. Boas, Hemmed.
3. At Mortens Sande in Northwest Jutland, remains of drift-covered houses with culture layers, i.a. from a phase parallel to the oldest at Hemmed Church (house VI) (Liversage 1988).
4. Egehøj, KHM (Kulturhistorisk Museum, Randers) file 160/69, Galtenhøj DJM 2147, Rimsø DJM 2361, Emmelev Mark DJM 1887, Brunhøj NM (The National Museum) B 4183.

## REFERENCES

- ASINGH, P. 1988: Diverhøj – A Complex Burial Mound and a Neolithic Settlement. *Journ. Dan. Arch.* vol. 6, 1987, pp. 130–154.
- BJÖRHEM, N. & SÄFVESTAD, U. 1989: *Fosie IV. Byggnadstradition och bosättningsmönster under senneolitikum*. Malmöfynd 5. Malmö.
- BOAS, N. A. 1980: Bronzealdergravkult ved Rimsø på Djursland. *Adoranten Bulletin* 1980. Scandinavian Society for Prehistoric Art, pp. 4–9.
- 1983: Egehøj. A Settlement from the Early Bronze Age in East Jutland. *Journ. Dan. Arch.* vol. 2, 1983, pp. 90–101.
- 1986: Tidlige senneolitiske bosættelser på Djursland. In C. ADAMSEN & K. EBBESEN (eds.): *Stridsøksetid i Sydskandinavien*. Arkæologiske Skrifter 1, pp. 318–324. København.
- 1991: Bronze Age Houses at Hemmed Church, East Jutland. *Journ. Dan. Arch.* vol. 8, 1989, pp. 88–107.
- ETHELBERG, P. 1987: Early Bronze Age Houses at Højgård, Southern Jutland. *Journ. Dan. Arch.* vol. 5, 1986, pp. 152–167.
- GLOB, P. V. 1945: Studier over den jyske Enkeltgravskultur. *Aarbøger for nordisk Oldkyndighed og Historie* 1944, pp. 1–283.
- HANSEN, M. 1986: Enkeltgravskulturens gravmateriale fra Sydvestjylland. In C. ADAMSEN & K. EBBESEN (eds.): *Stridsøksetid i Sydskandinavien*. Arkæologiske Skrifter 1, pp. 77–83. København.
- JENSEN, J. AA. 1973: Myrhøj, 3 hustomter med klokkebægerkeramik. *Kuml* 1972, pp. 61–122.
- LIVERSAGE, D. 1988: Mortens Sande 2. A Single Grave Camp Site in Northwest Jutland. *Journ. Dan. Arch.* vol. 6, 1987, pp. 101–124.
- MALMROS, C. 1991: Wood Anatomical Investigations of Charcoal from a Bronze Age Settlement at Hemmed Church, East Jutland. *Journ. Dan. Arch.* vol. 8, 1989, pp. 108–110.
- NIELSEN, F. O. & NIELSEN, P. O. 1985: Middle and Late Neolithic Houses at Limensgård, Bornholm. *Journ. Dan. Arch.* vol. 4, 1985, pp. 101–114.
- RASMUSSEN, K. L. 1993: Radiocarbon Dates of Late Neolithic and Early Bronze Age Settlements at Hemmed, Højgård and Trappendal, Jutland, Denmark. *Journ. Dan. Arch.* vol. 10, 1991, pp. 156–62.