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DWELLING-SITE FINDS FROM THE MIDDLE IRON AGE FIELDWORK AT KALASCHABRÄNNAN IN MAALAHTI, SOUTHERN OSTROBOTHNIA 1987–1989

Abstract

Maalahti (Sw. Malax) is a coastal parish south of the town of Vaasa in Southern Ostrobothnia. A research project was conducted in this area in 1987–1989 by the Department of Archaeology of the University of Umeå, the Svenska Österbottens landskapsförbund association and Österbottens fornsforskningssällskapet, a local amateur archaeological society. The project addressed the problem of settlement continuity in Ostrobothnia in the Late Iron Age. The results have been published in *Järnåldersbygd i Österbotten* (Iron Age Settlement in Ostrobothnia) in 1991. The project's only archaeological excavation was carried out at the Kalaschabrännan (Kalasar) dwelling site in Maalahti. One of the main results of the excavation was the discovery of so-called three-naved dwellings dating back to the Middle Iron Age. Approximately one hundred post holes were interpreted as indicating the sites of two or three partly overlapping house-floors. The terrace formation of the site also revealed crossing plough-marks of an ancient field. The artefact finds include a socketed spearhead, an even-armed brooch, a bronze ring originally belonging to a ferrule, a fragment of an oval fire-striking stone, ceramics, and a great deal of other material typical of Iron Age dwelling sites. This article presents a discussion of the finds, which was mostly lacking in the final report. The present author directed the excavations at Kalaschabrännan under the authority of the National Board of Antiquities, and was also responsible for the plans, maps, and the excavation report. The only dating from the site is of a sample of birch bark, radiocarbon-dated to cal AD 575–659 (Stuiver & Reimer 1986).

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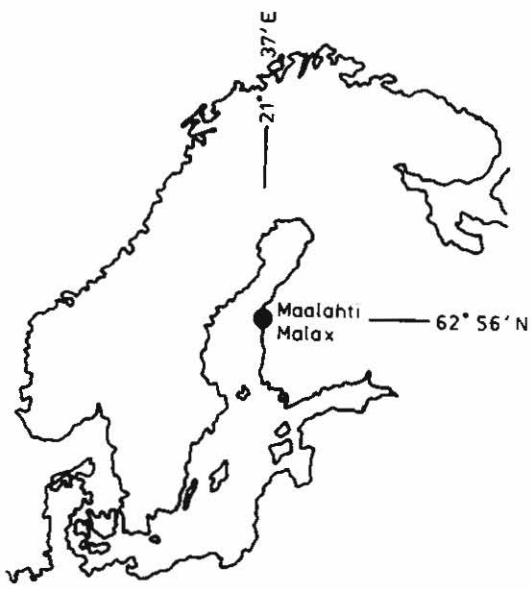
1. Research problem

The results of recent studies on Iron Age settlement history in Maalahti and nearby areas have been published in *Järnåldersbygd i Österbotten* in 1991. This publication presents the work of a project organized by the University of Umeå, Sweden, concerning Iron Age and medieval settlement in the region. The only excavation of this project was carried out at Kalaschabrännan (Kalasar) in Maalahti. *Järnåldersbygd* also reviews stray finds from Southern Ostrobothnia from the perspective of settlement continuity. One of the explicit aims of the project was to present the case for continued settlement, as the experts concerned did not wish to interpret the small number of Viking Period finds as a sign of interrupted or decreased settlement. Owing to this starting point, the discussion of results risks being biased, unless a rigorous approach is maintained. The project did not deal with other Iron Age finds from Maalahti, other sites, or earlier studies in any detail. Accordingly, the Kalaschabrännan material has remained out of context (Fig. 1). The present article can only offer a partial solution to this problem. The site was occupied during the Migration and Merovingian Periods and, as such, does not provide any essentially new information on settlement continuity through the Viking Period. However, the excavation finds and observations are a noteworthy addition to Iron Age settlement studies

in Finland. An independent overview of the problem, containing a grouping of the material into so-called settlement units is included in Katiskoski's (1988) excellent graduate study in archaeology for the University of Helsinki.

2. *Archaeological research in Maalahti*

The first reference to prehistoric antiquities, i.e. cairns, in Maalahti is a reply by the local vicar, Olaus Magni Arenius, to an official order from 1674 concerning the recording of old monuments and antiquities in the parishes of the Swedish realm (Klockars 1930, 13). The cairns and the prehistory of Maalahti were later described by J.R. Aspelin in *Kertomus Maalahden pitäjästä*



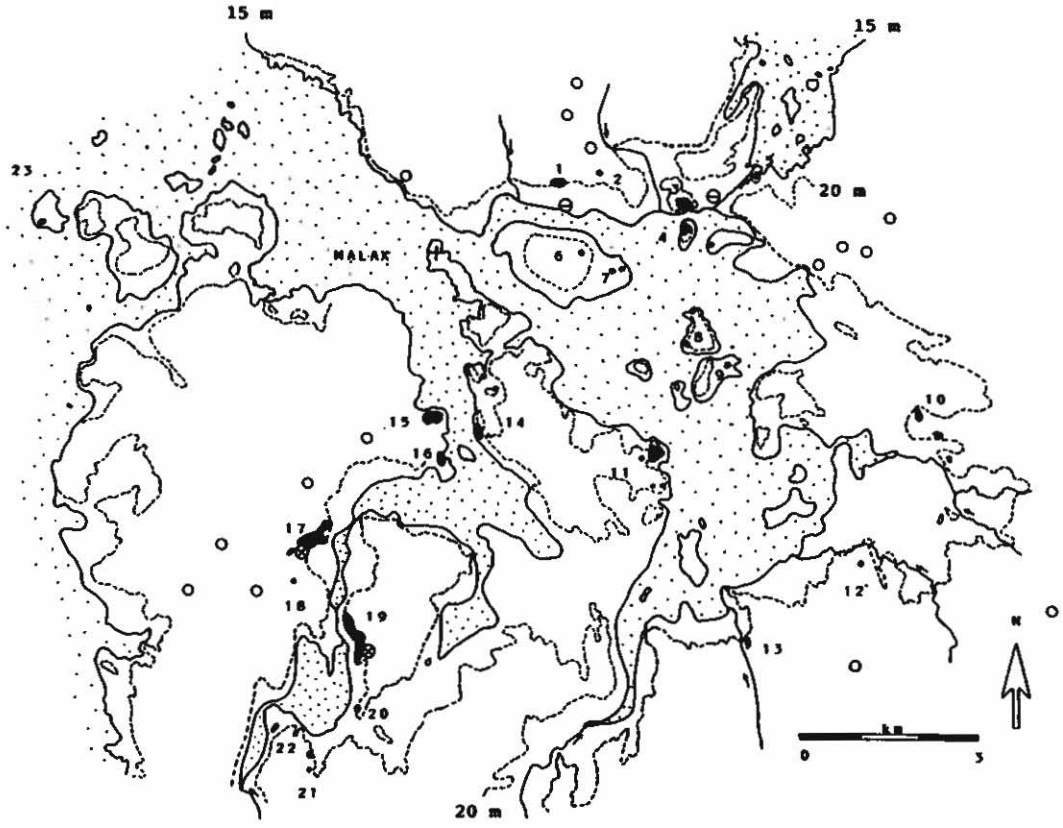


Fig. 1. Iron Age antiquities and sites in Maalahti with the 15 and 20-metre a.s.l. contours. Numbers refer to Table 1.

Key:
- c. 16 – 22 metres a.s.l.
- ○ c. 22–27 metres a.s.l.
- ⊗ pollen sample (Miettinen & Vuorela)
- ⊖ pollen sample (Segerström & Wallin)

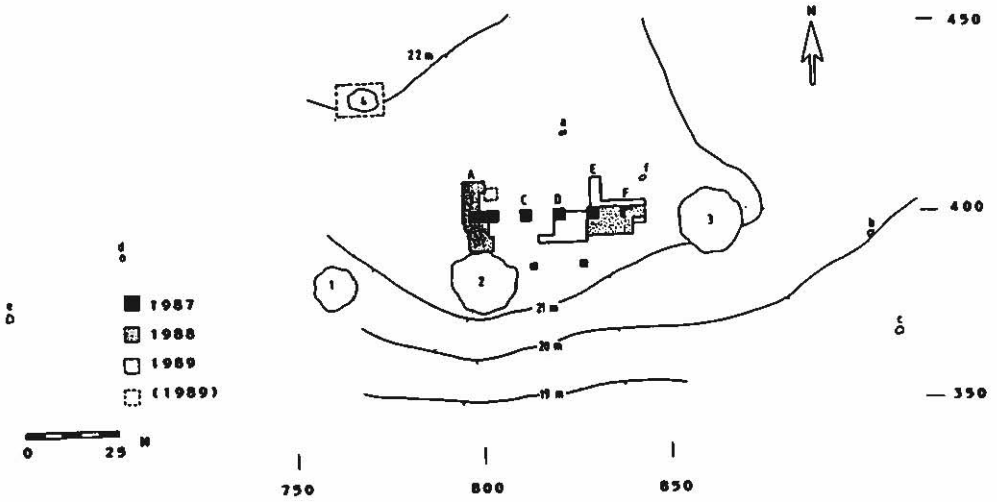


Fig. 2. Maalahti 28 Kalaschabrännan. Excavation areas A, C-F (1987-1989), cairns (1-4), and cup-marked stones (a-f).

(A Description of the Parish of Maalahti) from 1866 and *Kokoelmia muinaistutkinnon alalta* (1871). Information on local antiquities was also gathered by the surveyor Erik Klingius in a written account from 1767, and the vicar Israel Björk in a published article from 1772. Aspelin was the first to survey the antiquities of the parish in detail, and his work was continued in the early 1880s by E.J. Chydenius (1883). Reparcelling of land around the turn of the century led to new fieldwork by the archaeologist A.O. Heikel and the surveyor A. Lönnbohm. By this time, over a hundred cairns had been discovered and recorded in the parish.

Kalaschabrännan – hence Kalasar – was first mentioned by Aspelin (1871, 103) as 'Kalasabrännon'. He refers to three cairns at the site, one of which had previously revealed burnt bones. Describing his own observations, he observes: 'When the excavation was continued, a large stone was found which was flat, but slightly hollowed on the top surface. This find led to speculation that it may be an offering stone' (see Klockars 1930, 18). In the early 1980s local amateur archaeologists discovered several offering stones in the region (Fig. 2). Early sources refer to the area in question, a bog to the south of the dwelling site as *Kalasa-äng* or *Pixne*. Its present name is Vitmossen (see Smeds 1935, appended maps and plans).

The first archaeological fieldwork in Maalahti was conducted by A.O. Heikel in 1900-1901 at the prehistoric cemetery of Kopparbacken, in 1901 and 1903 at the Junkaisbrännan cemetery, and again in 1903 at the Nisseshagen cemetery. A. Hackman excavated at Lönnehagabacken in 1906, and in 1917 at the cemetery of Langerskogen. In 1936 A. Äyräpää conducted an excavation at the Lilltelsar cemetery. After C.F. Meinander's 1951 excavation at Helenelund in Sulva, archaeological activity ceased, and was not revived until the 1980s. Local interest in archaeology speeded excavation projects, and fieldwork was carried out at cemeteries and dwelling sites at Nisseshagen, Holsterbacken and Kopparbacken. Enthusiasm for finding a solution to the problem of depopulation in the Viking Period, and for demonstrating settlement continuity, led to fieldwork in the Kalasar area. As this site is located next to bog suitable for pollen sampling, it was selected as the subject of further study. At present, pollen analyses have been carried out in the environs of four dwelling-site areas in Maalahti (Vuorela 1986; Segerström & Wallin 1988). Cemeteries have been excavated at sixteen locations, and fieldwork has been conducted at the above four sites (see list of sites). Despite the accumulated evidence, there have been no detailed studies of burial structures, the history of settlement, Iron Age economy, ecological development or land uplift in Maalahti.

3. *The Archaeological Record*

Archaeological research in Maalahti has focused on sites and antiquities of the Middle Iron Age. Over 280 cairns have been recorded, of which some 6 per cent have been excavated (Katiskoski 1988, 1,3). This number is small in comparison with e.g. Vähäkyrö, where roughly 30 % of all cairns have been either completely or partly excavated (see Ahtela 1981). According to radiocarbon dates, settlement in the Storsjö area of Maalahti began in the Roman Iron Age (see Chapter 4.2.). Pollen analyses indicate cultivation and pasturing from the third to the eighth centuries A.D. (see Vuorela 1986; Miettinen 1986 & 1989). Most of the excavated cairns are dated, according to finds, to the sixth century, with use continuing until the seventh century at Kalasar. Kopparbacken is the only site in the area with mainly Merovingian Period finds, albeit partly from around A.D. 700 (Salmo 1938, 234–235, 294). The site can be described, with certain reservations, as a level-ground cremation cemetery, possibly including inhumation burials (Salmo 1938, 52; Meinander 1950, 206). The large and high cairns of the area are typical of the Migration Period, while the low and irregular stone structures do not appear to have become common before the end of the sixth century (see Meinander 1950, 62; Keskitalo 1979, 123–125; Ahtela 1981, 96). In outward appearance and shape, cairns 1 and 2 at Kalasar were of the typical Migration Period form, although this dating must remain uncertain. There were still additional burials in the cairns in the Merovingian Period, and many of the stone structures have been observed to be collective graves, where individual finds do not offer direct chronological evidence (cf. Meinander 1950, 66–67).

Approximately half of the cairns known from Maalahti are at elevations between 16 and 20 metres above sea level, and most of the remaining ones are at 20 – 25 metres a.s.l. (Katiskoski 1988, 25-26). The cemetery of Helenelund in nearby Sulva dates back to the Early Roman Iron Age (Meinander 1977, 24), while the rest of the sites are clearly younger. The largest complex is Nisseshagen, where at least 42 cairns have been recorded, as well as seven cup-marked stones, at elevations between 17.5 and 22 metres a.s.l. A location by the shore is not a self-evident criterion for choosing sites; by the Iron Age, economic considerations, such as pastures and arable areas became the main factors. This partly explains the sources of error in relating shore-displacement chronology to Iron Age sites.

Archaeologists throughout the Nordic countries have long since pointed to the proximity of Iron Age dwelling sites and graves (e.g. Kivikoski 1937, 7 and 1948, 81-82; Meinander 1950, 130, 180-181; Haugen 1953, 47, 122, 125; Ambrosiani 1964, 88, 210). In individual cases this locational principle follows local conditions of geography and terrain. It can thus be assumed that most cemeteries are in the vicinity of the original sites to which they belonged. This permits a definition of so-called settlement units around cemeteries (see Ambrosiani 1964, 190; Hyenstrand 1974, 34–35). In Maalahti, eight hypothetical units of this kind can be defined at locations between the 20 and 25-metre elevation contours, and sixteen at lower elevations (Katiskoski 1988, 53–57). This suggests that more than ten settlement units or farm households coexisted in Maalahti in the Migration Period.

Kalasar was one of these Middle Iron Age farmsteads. It is located at the fringe of a forested slope over a hundred metres to the north of a bog (Vitmossen). The nearby area is not settled, nor is there any other land use, and the locality has remained in an almost natural state until the present day. The terrain is 4 to 5 metres above the surface of the bog (c. 16 metres a.s.l.), and the terrace formation of the site is at a mean elevation of 21 metres. Apart from a few ice-transported rocks, the soil cover is mainly of small stones and fine-grained mull, sand, and gravel. The terrace has clearly been levelled at some stage, with stones and rocks piled at its western end and in couple of other locations. The terrain at first becomes slightly lower and then rises in a gentle slope towards the north. To the west is a paludified stand of forest lower than the terrace. The site is bounded by lower areas at the sides, the slope towards the bog, and two cairns on one side. These cairns are over ten metres in diameter and approximately one metre high. They contain several small depressions caused by unauthorized digging. There are also two smaller cairns to the west of the terrace.

4. *Excavation Finds from Kalasar*

4.1. Clay daub

Almost all excavation sections in the terrace area contained burnt clay daub, which was apparently present in each excavated square metre. Most of the daub had dissolved into the fine sandy soil, and could be seen as reddish or grey patches in the discoloured soil. Since only hard pieces could

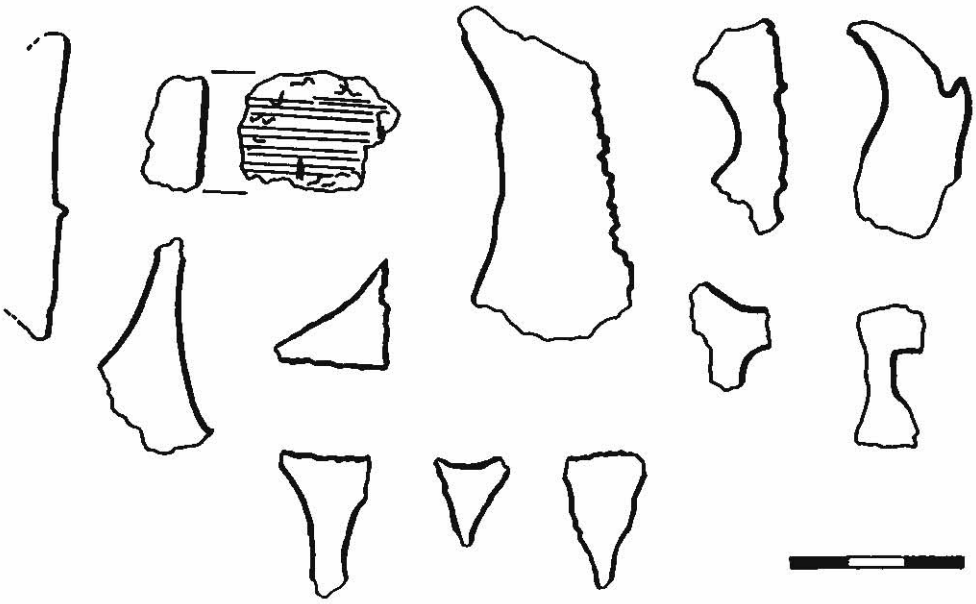


Fig. 3. Imprints in daub fragments. The various impressions can be identified as round supports, sticks, planks, and logs in various combinations. The surface originally facing the wood is highlighted.

be collected, it is not possible to assess the total amount of this material. The burnt clay came from walls that burned with the greatest heat, and possibly from clay-lined hearths. The charcoal-mixed discoloured soil was uniform, dark-coloured and thick in the western end of the terrace, gradually thinning into isolated patches towards the east. The thickness of the occupation layer or discoloured soil is a relative indicator of the length of occupation and its intensity. In the 1987–1988 excavations the discoloured soil was observed to be 15–25 cm thick at the western end of the terrace, 10–20 cm in the middle part, and 1–10 cm thick at the eastern end (Kotivuori 1989, 57). The 1989 excavation focused on the eastern part, with fewer finds and a thinner cultural layer. This permitted enlarging the excavation to search for post holes. There were correspondingly fewer finds, which were mainly concentrated in the western area.

Clay daub was found in the following quantities:

Areas	A	B	D1	D2	E	F
(g)	1352	426	5436	115	4373	950
(g/m^2)	64	47	55	8	58	11
Excavated m^2	21	9	84	15	76	85

The total excavated area was approximately 270 square metres, and some 12.7 kg of daub were recovered. Small amounts of daub were also found in two trial sections on the south slope (Fig. 2).

Depressions in the daub fragments reveal the imprints of various wooden constructions (Fig. 3). Along with the impressions of wattle-and-daub walls and posts, there was also evidence of smooth planks or logs (cf. Ramqvist 1983, 149; Uino 1986, 64, 68–69, 111). The most common form of these fragments resembles a wedge, but also other shapes were created in lining the walls and roofs with clay. The four-sided settings of slabs in some of the post holes may indicate posts hewn into four-sided shape. At the Gene site in Ångermanland, dating to the Middle Iron Age, the floors of three houses contained roughly 200 kilos of daub, most of which was in the south and central parts of one floor area, but not at its ends (Ramqvist 1983, 70–71). Also at Kalasar, the eastern ends of the house floors contained smaller amounts of daub (Fig. 4). These observations suggest that the end walls were not always lined with clay, and may have been straight walls of wood. In the middle part, the daub may have derived from the side walls or at least partly from clay-lined hearths, smoke openings or from the manufacture of metal objects or pottery (e.g. Ramqvist 1983, 149–151).

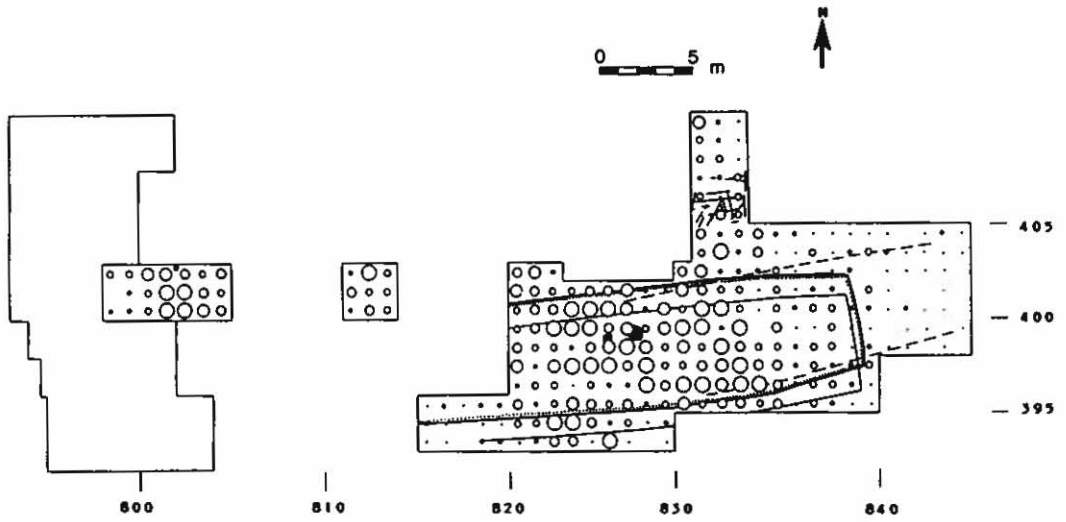


Fig. 4. Distribution of clay daub in the excavated area. The western end was excavated only to level 1 (marked white).

Key: House A, House B, House C

Clay daub (g/m²): 1–10, 11–25, 26–50, 51–75, 76–100, over 100

Ancient field, Hearth

Layers of burnt stones without any clear structure are most probably the remains of hearths, destroyed by later activities. At Kalasar and in house no. I in Gene large amounts of daub were found along the sides of hearths. According to Liedgren (1980, 64; 1985, 7), clay daub from the remains of the house at terrace A at the Iron Age site of Trogsta in Hälsingland was mostly from the lining of a ceiling. Similar suggestions of alternative uses of this material have been made in studies of Iron Age sites in Finland, Russia, and the East Baltic region (Uino 1986, 185–191).

Area 1 of the Ketohaka site in Salo, SW Finland, revealed a large number of post holes, which, however, could not indicate any distinct house floors. A total of 48.7 kg of clay daub (c. 25 g/m²) was recovered from this area of sandy soil on slight slope. At the adjacent Ketohaka 2 site 35.3 kg of daub (c. 80 g/m²) were collected (Uino 1986, 61, 108). It was also observed in this extensive excavation that some of the daub was from hearths, post holes, and refuse pits. Daub from Gulldynt in Vöyri has not been completely weighed, nor separated from brick fragments also found at the site. Accordingly, it cannot be compared with the data from Kalasar.

4.2. Iron Making and the Casting of Metal

The available evidence suggests that iron was made at Kalasar in smelting furnaces lined with clay, although the actual iron-making location was not in the excavated area. In addition to slag, finds included pieces of daub with convex outer surfaces typical of iron-making sites. The outer surface was mixed with sand, and the inner surface was glazed by heat. Sixty pieces of slag were found in the terrace area, weighing a total of c. 1.1 kg. The smelting area was outside the line formed by house floors A-C. There were also finds indicating metallurgical activities from within the house-floor areas (Fig. 5).

The closest parallel in this respect is the Holsterbacken site near Storsjö. There are fifteen cairns at this site at elevations of 18–23 metres a.s.l., and excavations have revealed finds indicating an Iron Age dwelling site (see Miettinen 1988, 49–50). Over 17 kg of slag were found in the 1985 excavation of the site as well as large amounts of daub used to line the smelting pit (National Museum of Finland [hence NM] 22849). A radiocarbon sample (Hel-2549) from the smelting pit was dated to 1680 ± 110 BP, cal. AD 265 (359, 369, 384) 393, 1 sigma (Stuiver

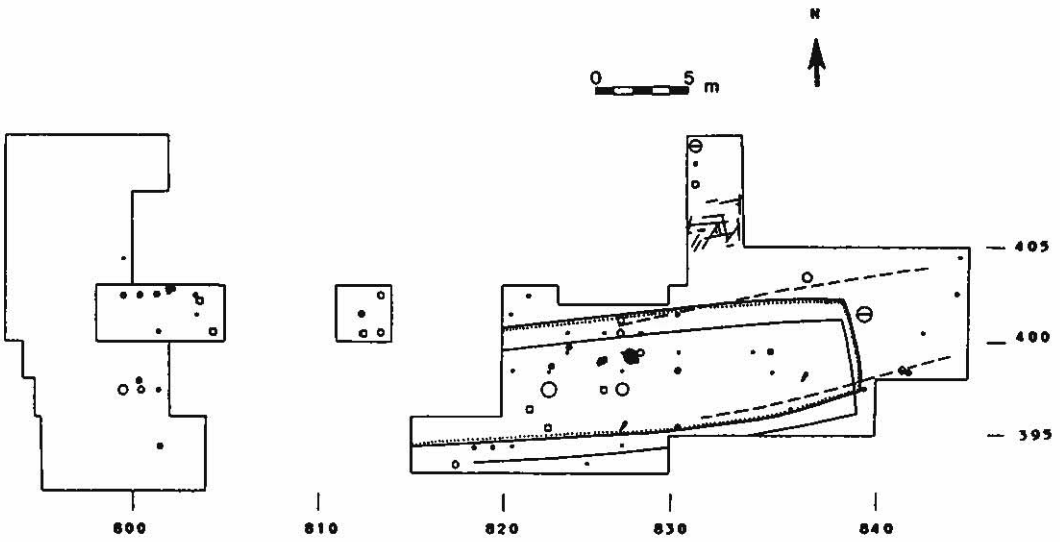


Fig. 5. Finds of iron artefacts, crucible fragments and iron slag.

Key:
- Crucible fragment
- Fragment of iron artefact
- Arrowhead
- House A
- House B
- House C
- Ancient field
- Hearth

Iron slag (g/m²)
- 1–10
- 11–25
- 26–50
- 51–75
- 76–100
- over 100
- clay lining of hearth pit

& Reimer 1986). A carbon sample from the Nisseshagen site (Hel-2550) gave precisely the same result. These sites thus appear to have been in use around the end of the Late Roman Iron Age and in the early part of the Migration Period. As mentioned above, pollen analyses indicate a much longer period of human activity in the Storsjö area (e.g. Vuorela 1986, 165–168).

Fragments of crucibles apparently used for casting bronze objects have been found at Holsterbacken (Fig. 6). The finds from Kalasar include two egg-shaped fragments of crucibles with handle-knobs that were originally in two pieces (NM 23804:109 and 24537:311). The metal for melting was placed in the upper part, to which the lower part with the knobs was attached. An intact crucible found at Gene gives a good idea of the method used (Ramqvist 1983, 11, Fig. 2:3 and 134, Fig. 4:86). The shell, which is mainly of fire-resistant quartz-mixed sand, became heavily glazed when the crucible was heated to the melting point of the metal. Analyses showed that one of the crucible fragments contained only a 10 % admixture of clay, and could withstand temperatures up to 1200° C (Ramqvist 1983, 177). Unless the crucible had a hole for emptying, it had to be broken after the melting process. The knobbed crucible appears to have had such a hole.

Iron Age farms appear to have practised their own iron smelting and metal casting since the Migration Period. The relatively small number of excavated Iron Age dwelling sites does not permit further conclusions concerning metallurgical processes and furnaces or ovens. The only available information on Early Iron Age smelting furnaces is from Northern Finland and dates back to around the beginning of the common era. Neitilä 4 in Kemijärvi is a northern riverside site that was recurrently occupied for thousands of years. Excavations in 1962-1964 revealed a total of 230 kg of iron-making refuse, stratigraphically dated to around the Birth of Christ (Kehusmaa 1972). Less than 200 kg of this material is actual slag, while the rest is from ovens and furnaces.

Three subterranean smelting ovens lined with stone slabs have been excavated in Northern Finland. These structures are clearly related to the eastern tradition of iron making. One of these was at Äkälänniemi in Kajaani (Schulz 1986, 169-173). In 1989-1991 this author exca-

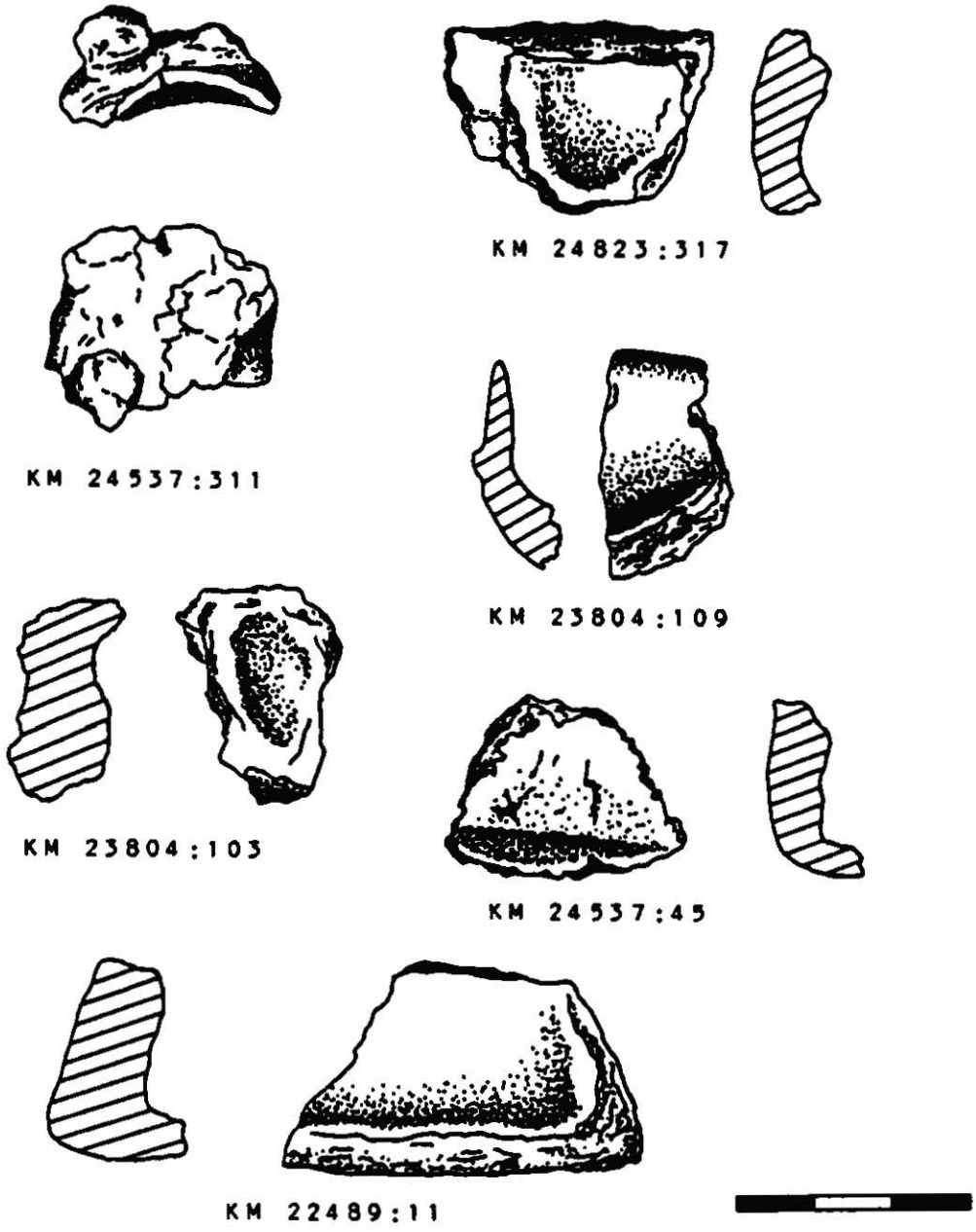


Fig. 6. The most distinct crucible fragments from Holsterbacken (bottom) and Kalaschabrännan (others). Drawing by H. Kotivuori.

vated two Early Metal Period slab-lined subterranean ovens and two surface-laid oven structures at Sierijärvi in Rovaniemi. In all the above cases dates indicate that the ovens were used some two thousand years ago. These finds are from the area of the inland hunting-fishing culture, and they indirectly suggest that similar iron-making methods were also known in the coastal regions.

4.3. Ceramics

Only 27 sherds (total weight 75 g) of the Kalasar material represent pottery types and forms

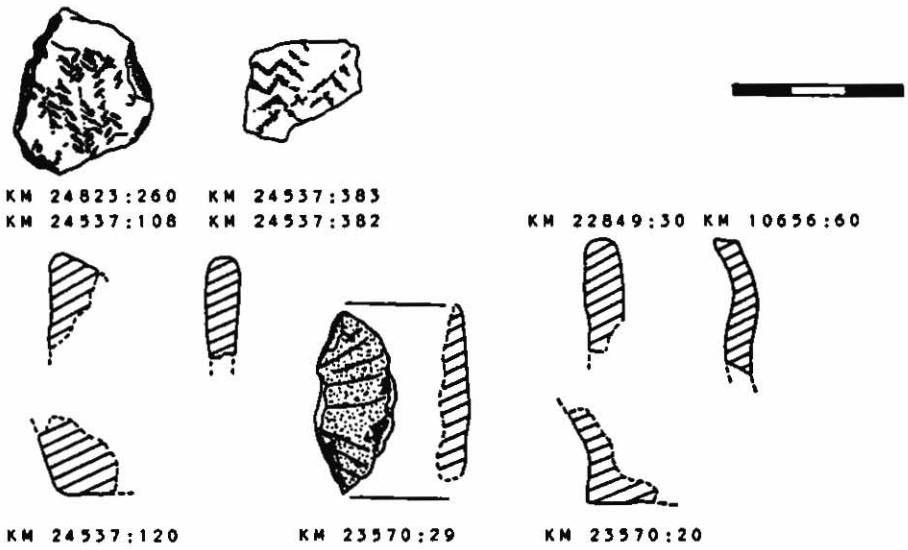


Fig. 7. Two textile-impressed pieces of daub (top) and profiles of rim and base sherds of vessels. In the centre is a sherd with scratched decoration from Holsterbacken. Drawing by H. Kotivuori.

known from Iron Age sites elsewhere in Finland. Despite their small number, the sherds permit a few important observations. Roman Iron Age pottery was tempered with a quartz-sand mixture. The vessels had smoothed surfaces and were decorated only in rare cases (e.g. Salo 1984, 245; Uino 1986, 70-79, 112-115). Although Finnish Migration Period pottery has been described as inferior in quality in comparison with other prehistoric pottery traditions and types, smoothed surfaces were still a typical feature of this ware (Carpelan 1980, 191-192). The range of types in Finland remained homogeneous, and apart from the Baltic region, there are no clear parallels elsewhere.

Pottery of this kind has not been found in Iron Age contexts in West Norrland, where the ceramic traditions indicate contacts with Central Norway (Selinge 1977, 283). The ceramics from Maalahti appear to be paralleled by similar materials elsewhere in Finland (see Meinander 1950, 94). The pottery assemblage from Ketohaka in Salo is dated to 1300 BC - AD 300, but almost the same forms and features persisted until the Migration Period. In most cases, the rim is S-shaped, and the vessels were even-based (Fig. 7). Rim thickness varies between 5 and 12 mm. In the Kalasar material, this basic form is best represented by a sherd from excavation area A (NM 23804:136). It was covered with a black carbon deposit, indicating that the original vessel was probably used for cooking, although vessels were also used for storing foodstuffs.

In the Merovingian Period a finer paste was introduced, and decoration became more common. One of the Kalasar sherds (NM 24357: 120), possibly tempered with crushed limestone or steatite and burnished jet black on the outside, may have belonged to the finer ware of the 7th century, or it may be older. It is matched by a line-decorated sherd from Holsterbacken (NM 23570:29). Coarse-tempered household ware has been found at Nisseshagen and Kopparbacken in Maalahti, and Gulddynt in Vöyri. The Kalasar sherds were not found in any direct relation to the house floors, but were to some degree associated with the hearths. (Fig. 8).

4.4. A Socketed Spearhead

In 1989 local amateur archaeologists working with a metal detector at Kalasar found a socketed iron spearhead with an evenly tapering blade part rounded at the base (NM 28823:1; Fig. 9). The socket extends as a tapering ridge to the middle part of the blade. In its overall shape this artefact resembles the so-called Vendel spearheads, found in large numbers in Gotland. One specimen of this type has been found in a cairn burial of the 7th century in Ångermanland (Selinge 1977, 287-289, Fig. 53). Only three certain finds of this type are known from Finland

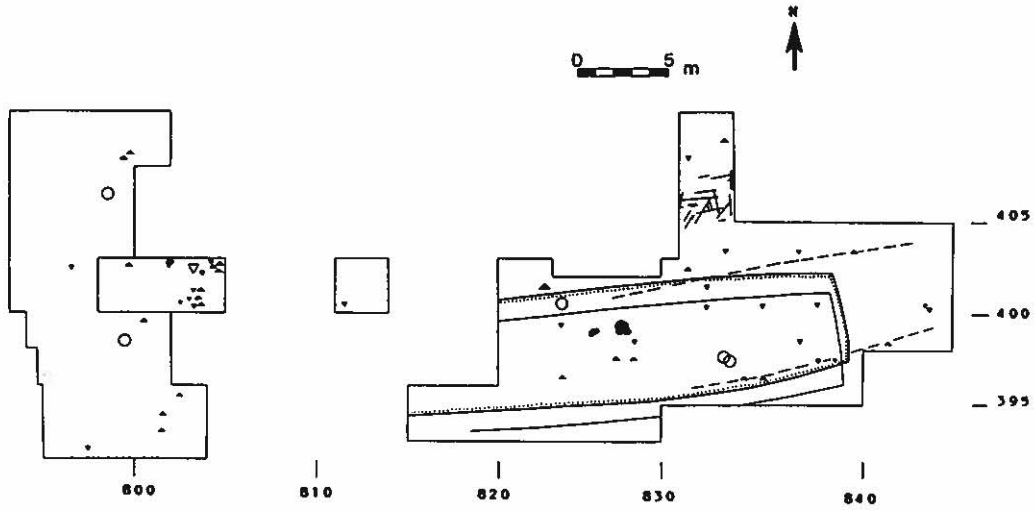


Fig. 8. Finds of ceramics, loom-weight fragments (?), and various stone artefacts in the excavated areas. The sections in the western end of the area were not completely excavated.

Key:
- ○ Fragment of a loom weight (?)
- ▽ Coarse-tempered pot sherd
- ▲ Fragment of a fire-striking stone
- ▲ Pot sherd with black surface
- • Flint flake
- ▲ Quartz flake

- House A
- House B
- House C
- Ancient field
- Hearth

Fig. 9. A socketed spearhead recovered as a stray find from under the humus layer in the terrace area of Kalaschabrännan (NM 24823:1). Scale 1:2. Photograph by R. Bäckman 1991. National Board of Antiquities.

(Salmo 1939, 176, Abb. 49; Kivikoski 1973, 78, Abb. 536). The spearhead from Kalasar lacks certain distinctive features of the type, e.g. in the part where the socket is joined to the blade. In this specimen, the socket is relatively large, and close to the widest part of the blade.

Vendel-type spearheads are believed to have originated in Central Europe, and Nordic finds of the type are dated to the 7th century (Gjessing 1934, 34-50). A Vendel-type spearhead from around AD 600 has been found in Isokyrö (Salmo 1938, 67, Abb. 15 & 16; cf. Lehtosalo-Hilander 1982 II, 24). In the light of present finds, wide-bladed spearheads were used until the 8th century in Finland, but not later (Salmo 1939, 201-203). A spearhead (NM 2272:2) from grave c at Kopparbacken in Maalahti, which may have been a cremation cemetery on level ground, is also dated to the 7th century on the basis of other material from the site (Salmo 1938, 52, 179-181, 192, 220 etc., Tf. XXXVI:4). This spearhead differs to such a degree from the Vendel type that it has been described as a variant made by a local blacksmith (Salmo 1938, 180). Grave c at Kopparbacken also contained a long-bladed socketed spearhead, a spearhead of the so-called Yliskylä type, a spike-shaped spear-

head, two so-called typical Finnish angons, and an oval striking stone. Similar suggestions have been made concerning a spearhead found at Kaparåkern in Vöyri (Miettinen 1988, 53, fig. 7b; Norrman 1988, 174). Amateur archaeologists have suggested that this wide-bladed spearhead belongs to type G of the Viking Period (Norrman 1986, 117). In source-critical terms, this find from 1834 does not tell much of settlement continuity, as the finds had become mixed with other material in predecessor of the National Museum of Finland, and the spearhead's original provenance must remain uncertain (Meinander 1950, 178). The spearhead from Kalasar was probably made in the 7th century, and may have been a local variant of the Vendel type.

Because of the original discovery of the spearhead by amateurs, its relation with the rest of the archaeological context on the dwelling-site terrace is unclear. It was found to the north-west of cairn no. 3 immediately under the humus layer, and it may thus derive from this cairn, which had been illicitly dug in earlier years. Links between the graves and the dwelling site have not been studied, although they are strongly suggested by the available evidence. As an individual object, the spearhead does not provide a reliable date for the whole site. As early Merovingian Period finds, this spearhead and an equal-armed brooch (discussed below) lend support to the only radiocarbon dating from the site (see p. 71). These, however, indicate only one chronological point in the period when the site was in use.

4.5. An Even-Armed Brooch and a Bronze Ring

A rarity among dwelling-site finds is a small Merovingian Period bronze brooch, found in sieving soil at Kalasar (NM 24823:5; Fig. 10). There are three parallels to this object in the Kopparbacken finds, of which the possibly oldest one is a brooch with a hatched incised design on the arc. There are similar designs on a Migration Period brooch from Junkaisbrännan and a number of brooches found in Sweden (Kivikoski 1973, Abb. 212; see Selinge 1977, Fig. 49). The brooch from Kopparbacken most probably dates to around AD 600, and it may be a local variant of earlier forms. Even-armed brooches are usually found in pairs in graves, together with a so-called crayfish brooch that was worn on the breast. The Swedish even-armed brooches of the Merovingian Period are wider and more profusely decorated than the Finnish specimens. They are dated partly to the 6th century, whereas Finnish archaeologists prefer to date the local specimens to the following century (Cleve 1943, 75-76). The dotted-line decoration of the Kalasar brooch is also found in brooches from Köyliö, dated to the 7th century (Cleve 1943, 75, Fig. 23). Parallels thus date the Kalasar find to the early 7th century. The even-armed brooches of Finland, of which over 250 variants have been found, are believed to have originated in Scandinavia (Kivikoski 1973, 61-62). The earliest specimens have been found in excavations at Köyliönsaari in Köyliö, Kvarnbacken in the Åland Islands, and Luistari in Eura, among other locations (Cleve 1943, 74-76; Kivikoski 1963, 72-73, Tf. 3:9; Lehtosalo-Hilander 1982 II, 86-89, Fig. 24:5).

These brooches are believed to have been modelled after the so-called Husby type, dated to the early 6th century (Cleve 1943, 71). Only four, degenerated, variants of the type are known from Finland. Three are from Gulldynt in Vöyri and one is from Kirstinmäki in Vähäkyrö, all in Southern Ostrobothnia. An even-armed brooch with incised ornament and facetted knobs at the ends was found in a cairn at Junkaisbrännan (NM 3975:12). This western import, unique in the Finnish material, is dated to the 5th century or c. AD 500 (Hackman 1905, 172, Tf. 5:3; Kivikoski 1973, 43, Abb. 212). The Junkaisbrännan find also included a bronze strap divider or ferrule from the Ural-Kama region, and a grooved bronze ring with ferrules, possibly belonging to the strap of a sword (NM 4263.1; see Hackman 1905, 75-76, 80-81, Tf. 15:10). The latter find is an important parallel to the Kalasar finds. Also found in the cairn were two bronze pins of western origin. Excavations of cairn no. 4 at Kalasar, a low and irregularly shaped structure, revealed a similar grooved ring of bronze (NM 24823:2; Fig. 10). Corresponding rings from other contexts are clearly of Migration Period date, which suggests that occupation began at Kalasar at least in the early 6th century. Shore displacement chronology and the standard interpretations of pollen results permit an assumption of longer occupation (cf. Segerström & Wallin 1991, 36). Unfortunately, only the surface parts of cairn no. 4 were excavated, but the bronze ring suggests the existence of a Migration Period male burial.

The so-called Maalahti brooch from Nisseshagen (NM 21916:55) is unique in the Finnish material, with its nearest parallels in Central Europe, where it is dated to the early period of the Merovingian rulers (AD 481 – 639/751; see Miettinen 1988, 49-50, Fig. 3). Found in the

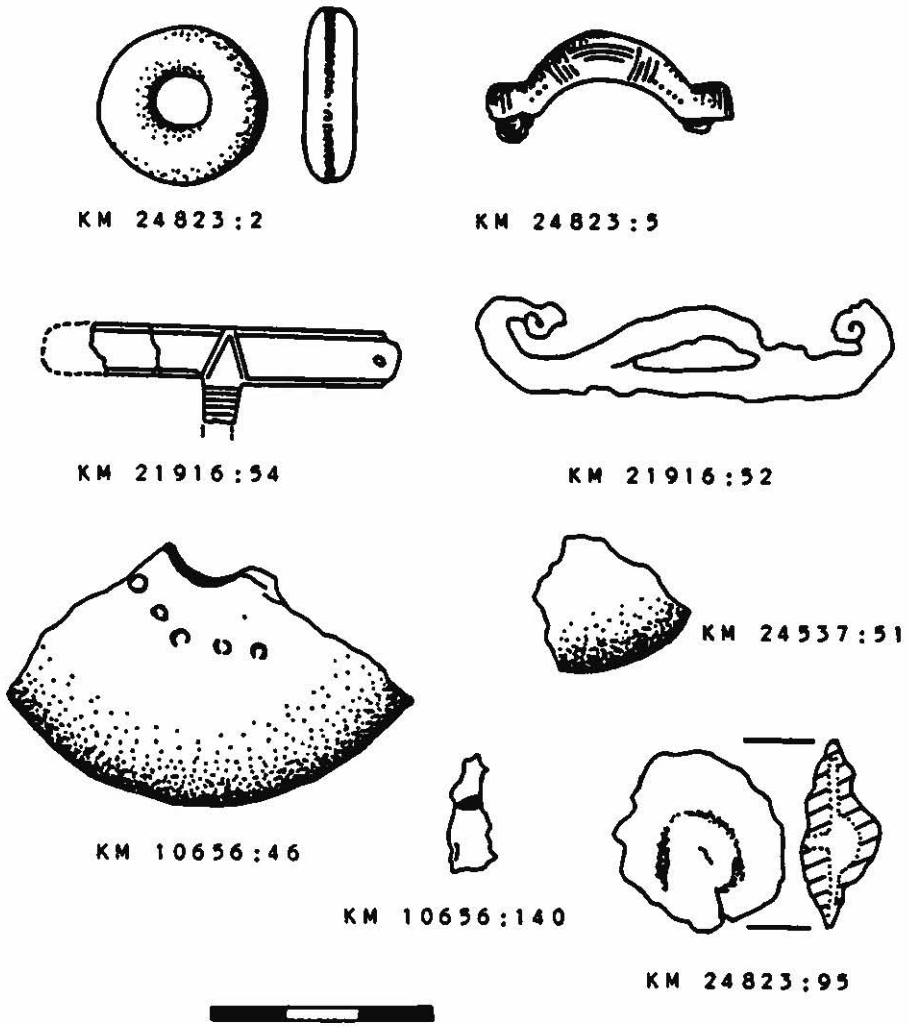


Fig. 10. A bronze ring and an even-armed brooch from Kalaschabrännan (top row); a ferrule and a strike-a-light from Nisseshagen (middle row); a loom-weight fragment from Gulldynt in Vöyri and an undefined fragmentary object from Kalaschabrännan (bottom). Also found at Gulldynt was a piece of clay daub with the imprint of a cereal grain. The rivet covered with iron oxide was found at Kalaschabrännan. Drawing by H. Kotivuori.

same excavation section was a fragment of a bronze rod with incised ornament, to which the ring originally belonged (NM 21916:54). A similar ferrule has been found at Huikari in Karkku, Satakunta, and two similar rings with ferrules have also been found at Hiidentöykkä in Loimaa, Huittinen (Kivikoski 1937, 17, Fig. 19:2 and 7, Fig. 11:1-2; 1973, 56, Abb. 344). There is also a parallel from a cairn at Palomäki in Uskela, SW Finland (Hirviluoto 1991, 149).

In most cases, these bronze rings and their attached ferrules are found in the same graves as Migration Period even-armed brooches with straight ends and line ornament. The distribution of this brooch type centres on Ostrobothnia; thirteen specimens have been found in Southern Ostrobothnia, and three from the above-mentioned sites in Huittinen and Salo. There are also three finds from Central Sweden (Kivikoski 1937, 4, Fig. 4; Lehtosalo-Hilander 1984, 260; Salo 1986, 141-142; Hirviluoto 1991, 144). One of these artefacts is from the Kopparbacken assemblage, which in other respects is mainly from the 7th century (NM 9956:3).

The Kälvesta find from Spånga, near Stockholm, included a supporting ring with a

ferrule, a pin with a profiled end, and an even-armed brooch of the Migration Period. This combination appears to have been typical of men's graves in the period (Biörnstad 1963, 27, Abb. 2). The bronze ring may have belonged to a scabbard, belt, or shoulder-strap, as suggested by the well-known bog finds from Nydam (Kivikoski 1937, 16).

The ring is of iron in many of the older finds, while the ferrule is of bronze. In grave no. 36 at Hovgårdsberget in Vendel, these artefacts were dated to c. AD 475, but in the Haga find from Stockholm an ornamental button of Salin's style I dates the ring and ferrule to around AD 550 (Arne 1932, 10-11). This specimen, however, does not have a groove around the arc, which, according to Kivikoski (1937, 17) is a typical detail of the older form. There are grooves in the specimens from Huikari in Karkku and Nisseshagen and Kalasar in Maalahti, which suggest an older date than the Haga find, i.e. the early 6th century or even around AD 500. This artefact form is common in Gotland in periods VI:1 and 2 of the Iron Age (Nerman 1935, figs. 194, 195, 516, 517).

4.6. Fragments of Iron Objects

A few corroded iron objects from Kalasar can be interpreted as nails, rivets, broken implements, and two arrowheads. These ten finds were mainly from within a line formed by house floors A and B. One of the arrowheads measured 105 mm x 4-10 mm (NM 24537:1), but without conservation measures, it cannot be defined in further detail. The other arrowhead (NM 24823: 282) appears to have a rhomboid blade part, now measuring c. 70 x 35 mm, with a small part of the tang attached to it. The blade resembles Hiekkanen's (1979, 21) types D and E, in which the widest part of the blade is near the tang, which is an important chronological detail. Both specimens are thin-bladed (thickness c. 3-5 mm). Of the previous arrowheads found in Maalahti, two are from the Merovingian Period assemblage of Kopparbacken, and one was found at Langerskogen (Hiekkanen 1979, 74-75, 139, 146; Meinander 1950, 206). The latter arrowhead was found in a cairn together with Migration Period artefacts (Hackman 1918, 43-44; 1938, 27-30).

The two arrowheads from Kalasar cannot yet be identified or classified in any further detail. Finds from the Gene dwelling site in Ångermanland include a parallel to the long arrowhead from Kalasar (Ramqvist 1983, 93, 172). In most cases, arrowheads, knives, rivets and other general-purpose objects can only be dated through other finds, as in these contexts.

4.7. Stone Artefacts

The use of stone as artefacts or implements is often ignored in studies of Iron Age sites and antiquities. One of the datable finds from Kalasar is a fragment of an unfinished oval fire-striking stone (NM 23804:134), found in the lower strata of the thick cultural layer at the west end of the terrace. The closest parallel to this object (Fig. 11) is a fire-striking stone (NM 9956:1) found in a bog approximately three kilometres to the east. The oldest oval fire-striking stones in Finland are dated to the Early Roman Iron Age, but of the 500 known fire-striking stones, most of the specimens found in datable contexts are from the Late Roman Iron Age or the Migration Period (e.g. Meinander 1950, 135; Salmo 1952, 180; Kivikoski 1964, 146, Fig. 137; 1973, 27, 39, Abb. 72; Salo 1984, 238-239; Baudou 1989, 18; 1991b, 172, fig. 6:5).

Large numbers of these stones have been found in areas along the Kyrönjoki River in Southern Ostrobothnia, where the youngest known specimen is from the Rintaulvinen cemetery in Isokyrö, dated to c. AD 700 (Kivikoski 1973, 186-189). The striking stones from Kopparbacken (NM 2272:33; NM 10341:140) are also relatively young, possibly from the beginning of the 7th century (Salmo 1938, 70, 79, 220, 294). The Kalasar specimen was found under a thick accumulation of cultural layer, which suggests an earlier date than the beginning of the 7th century. Striking stones found in outlying locations have often been described as votive gifts left in swiddens or burn-cleared fields (cf. Meinander 1977, 40; Huurre 1979, 176-177; Salo 1984, 238-239; Taavitsainen 1988, 215-216). The Swedish finds appear to be more closely associated with prehistoric agriculture (see Ramqvist 1983, 108, Fig. 4:56; Lindqvist 1985, 444, Fig. 3; Baudou 1989, 18).

In the Merovingian Period the striking stones were gradually replaced by simple pieces of flint or quartz, which were used to light tinder by striking with iron strike-a-lights of different types (e.g. Cleve 1943, 150). It has been suggested that this new technique was adopted in Sweden and Norway around AD 600, and in the Baltic regions a hundred years later. Knife-blades may have been used for striking at first, but a lyre-shaped strike-a-light from Nisseshagen (NM 21916:52, Fig. 10) may be from as early as the 6th century, as indicated by the rest of the ma-

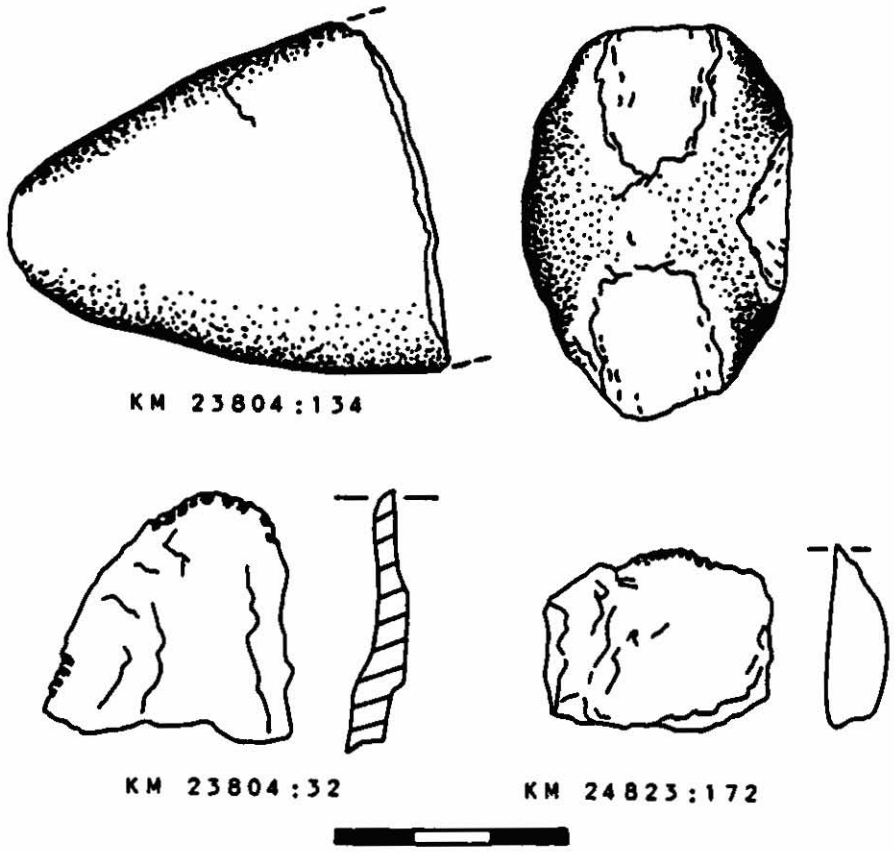


Fig. 11. Stone artefacts from Kalaschabrännan: unfinished tip of a fire-striking stone, a possible scraper of sandstone, and a quartz scraper. Drawing by H. Kotivuori.

terial. Pieces of quartz and flint found at Kalasar may have been used in making fire. Most of these finds were from within the lines formed by the house floors, close to the locations of hearths and ceramics. Some of the quartzes appear to bear signs of retouch, and may be actual artefacts. In inland and Northern Finland quartz and flint are known to have been used by hunters in the points and blades of small implements until the Middle Ages, and possibly even later (e.g. Siiriäinen 1964, 36; Vuorinen 1982, 52, 56). Sixty-four quartzes were found at the Iron Age site of Ketohaka in Salo; some of these objects have been defined as scrapers (Uino 1986, 81–83).

The Kalasar finds include red sandstone, which was even used for making scrapers (Fig. 11). Sandstone and quartzes have also been found at Nisseshagen and Holsterbacken. At all three sites sandstone slabs with crossing scratchmarks were found, and they appear to have been used for striking fire. Also among the finds are traditional sandstone whetstones. The five striking stones from Kalasar may have been used in metalworking, but it is difficult to relate them to any known Iron Age use of lithic materials.

5. The Results of the Excavations and the Project

In 1987-1989 a total area of approximately 270 square metres was excavated at the Middle Iron Age dwelling site of Kalasar. This corresponds to c. 20 % of the assumed total area of the site. The main result of fieldwork was the discovery of assumedly Iron Age houses, as indicated by post holes (see Liedgren 1991). Patches of discoloured soil extending below the cultural layer were interpreted as post holes. In most cases, they were lined with stone slabs in upright position as supports for the posts. Some 100 soil features of this kind were interpreted as the post

holes of three different houses. However, only some fifteen of these features were investigated completely (Liedgren 1991, 112-123). The location of the site in an untouched stand of forest had a direct effect on the nature of observations. The dense, fine sandy soil and the cultural layers had preserved the finds in a better state than in average conditions. The overlapping remains of the dwellings at the eastern end of the terrace show that the houses were rebuilt at least three times. The house floors were defined according to the rows of post holes and observations from similar contexts. According to Liedgren (1991, 144), the houses at Kalasar belonged to the three-naved types of the Nordic countries and Northern Europe.

An important discovery was an ancient field to the north of the house floors. This was indicated by crossing plough-marks (Liedgren 1991, 127-129, fig. 5:16-17). There are no doubt other formerly ploughed and cultivated areas on the uninvestigated sides of the terrace. It can also be proved that the level area may have been cultivated even after the destruction of the dwellings. At any rate, this find is the first ancient field found in Ostrobothnia. Only one other Iron Age field is known from Finland, at Rapola in Sääksmäki. It dates from the end of the Iron Age, and was discovered around the same time as the Kalasar field (see Vikkula 1990). In Northern Sweden, ancient fields have been discovered in layers under grave structures (e.g. Selinge 1977, 353-357; Broadbent 1985, 392, Fig. 2). Sickles and grinding stones, related to agricultural practices have been found at Maalahti, e.g. in the Merovingian Period assemblage from Kopparbacken.

Research at Kalasar was limited with respect to scientific dating results; the only radiocarbon date from the site was of a piece of birch bark found on top of a post hole apparently belonging to the youngest house at the site (Kotivuori 1989, 65; Liedgren 1991, 131). The age of the sample is 1425±70 BP (St 11690), cal. AD 575 (630), 659, 1 sigma (Stuiver & Reimer 1986). A single dating result is neither comparable nor otherwise sufficient in view of the considerable costs and importance of the project. As a result, the duration of occupation at the site remains open, permitting premature interpretations. Liedgren (1991, 103, 144), for example, describes Kalasar as a Merovingian Period site in the heading of his important article, although he clearly informs the reader that occupation had already begun in the preceding period. In my opinion, narrow periodization is not possible in this context, although the last stages of the farmstead were most probably in the 7th century.

The aims of the project were altered during the fieldwork to suit finds and observations, which may be regarded as a correct procedure. However, it is strange that the actual finds are not given much weight in the presentation and discussion of the results. Often unassuming in character, Iron Age dwelling-site finds have been published to only a minor degree in Finnish archaeological literature. Prior to the present article, there has been no detailed discussion of parallels to the Kalasar finds, although they were excavated in the actual project. On the other hand, the well-known Viking Period finds of Southern Ostrobothnia are included in the discussion on settlement continuity, which is *de rigeur* in any serious study (see Baudou 1988, 9-22; 1991b, 179-190). The relevant point in reviewing settlement continuity is the fact that Viking and Crusade Period finds are along the upper reaches of the Kyrönjoki River and elsewhere in the inland. In speaking of a *de facto* depopulation of Ostrobothnia, Finnish archaeologists imply substantial changes indicated by an almost total cessation of finds and a disruption of the archaeological record in central areas that were formerly rich in finds.

In Meinander's (1950, 158) opinion, the few Viking Period finds from Ostrobothnia are evidence of wilderness hunters and wayfarers along water routes, and also of 'real, though sparse, settlement'. This is also Baudou's (1991b, 175-192) conclusion in his lengthy synthesis of the material. In its discussion on settlement continuity the project publication makes only slight reference to the results of Finnish archaeologists and geologists regarding the well-known phenomenon of rapid land uplift in Ostrobothnia and its relation to the relocation of past settlements (e.g. Meinander 1947; 1950; Siiriäinen 1974; 1978; Salomaa & Matiskainen 1983). Ancient settlement is known to have been oriented according to the shorelines of its day. This phenomenon is now proposed as an explanation for the small number of Viking Period finds in Ostrobothnia. Baudou (1991b, 192) suggests that the growing over of bays as a result of land uplift led to 'structural change' in the old central sites of settlement, causing people to move partly into forested areas. He refers in this connection to Luoto (1984, 205-208), in whose opinion the old centres of settlement split, but Ostrobothnia as a larger area was not depopulated. Baudou, however, does not take into

TABLE

Iron Age dwelling sites and areas of cairns in Maalahti (c. 16–25 metres a.s.l.)
Numbers as in Map 1 (1989)

No. Name	Dwelling-site finds	No. of cairns	Excavated	Elevation m a.s.l.
1. KALASCHABRÄNNAN	x	4	1987–1989	19–22
2. KALASAR (B)	–	1	–	22
3. LANGERSKOGEN	x?	<10	1917	18–21
4. SVARTSULAN/HALLONSULAN	–	<4	–	16–20
5. LASSMABERGET (MUSTASAARI)	–	<4	1983	16–20
6. SMULTERBACKEN	–	<1	–	20
7. FÄRDISBRÄNNAN	–	2	–	16–18
8. JUNKARSBRÄNNAN	–	<4	1901/1903	16–17
9. LILLTELSAR	–	<2	1936	16–17
10. HELENELUND (SULVA/MUSTASAARI)	–	<10	1951	18–23
11. KOPPARBACKEN	x	(<4)	1900/1901/1981/1985	16–19
12. LÅNGÅMINNE	–	1	–	20
13. MOLPANE	–	4	–	20
14. LÖMNEHAGABACKEN	–	<5	1906	18
15. KUTSKINNSMOSSHAGEN	–	<10	–	16–18
16. BERTLASSMOSSA	–	<5	–	17–19
17. HOLSTERBACKEN	x	15	1985–1986	18–23
18. LILLÅNGSVÄGEN	–	7	–	20/25
19. NISSEHAGEN	x	<42	1903/1982–1985	17–22
20. ORRMOSSEN	–	<2	–	17
21. STORSJÖN 3	–	<2	–	17
22. LÅNGSJÖN	–	1	–	20
23. HUDHOLMEN 1 and 2	–	2	–	17

The names and ortography of locations vary according to source. The number of cairns is the minimum estimate. Elevations are mainly based on basic survey maps.

account further discussion and criticism of Luoto's model (see Seger 1982 and 1985; Luoto 1986).

It must be stressed here that the significant excavation results from Kalasar have no direct bearing on the discussion on settlement continuity in Late Iron Age Ostrobothnia. In view of finds and remains dating to the Viking and Crusade Periods, the situation in Southern Ostrobothnia remains the same as before the project – they are still few in comparison with earlier periods, and are located far from the old centres of settlement. Baudou (1991b, 188) mentions that some 20 artefacts of these periods have been found in the old central area of settlement, but he does not give any comparative figures for earlier periods. The main emphasis of the three-year project was to gather and interpret scientific data, and the assessments of results largely rely on this basis (e.g. Baudou & Engelmark 1991, 13).

There has been little discussion of the meanings and semantics of terms and concepts such as 'depopulation', 'interrupted cultivation or settlement' or 'finds vacuum' (cf. Baudou 1991a, 18-19) that are used by different researchers in their reviews of the end of the Iron Age in Southern Ostrobothnia. We must also remember that meanings may vary in different languages. It may be misleading to evaluate earlier archaeological results from today's perspective of mainly natural-scientific evidence. Even here, the 'truth' is at best a well-argued claim. The small number of artefacts cannot be attributed to chance or insufficient fieldwork; it also reflects a definite situation in the past. On the other hand, no area can ever be completely depopulated. We may speak of local interruptions of settlement in archaeological terms, when the number of finds in a certain context becomes significantly lower than previously. One of the requirements of this is that there is no corresponding decrease of material in the surrounding area. Archaeology as a discipline becomes meaningless without its primary material of remains and finds. The results of the natural sciences are an important addition to our picture of the past, but their weight in comparison with archaeological material must be individually addressed in each case.

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