

REMARKS ON FINDS OF WOODEN QUIVERS FROM NYDAM MOSE, SOUTHERN JUTLAND, DENMARK*

ANDREAS RAU

Abstract

Due to the extraordinary find preservations in Nydam mose, Southern Jutland, Denmark, larger parts of quivers from organic material have survived as very rare objects from the first millennium AD. Different quiver types and constructions from two different offerings in the fourth century AD are presented and are used as the background for some general remarks on remains of quivers and on archers of the Roman Iron Age and the Migration Period.

Key words: Nydam, quivers, archers, war booty sacrifices, organic material, fourth century AD.

The new Nydam excavations

The excavation campaigns carried out by the National Museum of Denmark in the well-known Nydam engmose in Southern Jutland have produced a vast amount of artefacts of different materials. More than 12,000 objects were discovered in the years 1989 to 1997 and 1999. By far the largest material group is constituted of wooden items, including boat parts, weapons, bowls, musical instruments, saddle boards, tools and all kinds of handles for knives, fire steels, etc.

The extensive history of excavations and research in Nydam from 1858 until 1999 has been dealt with by various authors (eg Bemmann and Bemmann 1998a, pp.27-111; Petersen 1994; Jørgensen and Petersen 2003; Rieck 2003). The finds which are discussed in the following all derive from an excavation area labelled the "boat field" because it is the area in which C. Engelhardt already excavated two large rowing ships in 1863 and which was reexamined in the years 1989 to 1999 (Fig. 1).

At least five different depositions of larger quantities of war booty can be traced in the new material from the boat field, ranging from the second half of the third century AD to the end of the fifth century AD. These sacrifices took place at the same site, but there are some

recognizable differences in the horizontal and vertical distribution of the different offerings.

Among the new finds in Nydam is a large amount of archery equipment. Concerning the studies on bows and arrows of the Roman Iron Age, the material of the war booty sacrifices, and especially Nydam, has always been in particular focus of researchers (Beckhoff 1963; Raddatz 1963, 1985, pp.319-320, 324; Paulsen 1998). In the following, very rare finds of quivers, containers for arrows, from the new material shall be presented, after a short survey of quivers from the Stone Age to early medieval times.

General remarks on prehistoric quivers in western, middle and northern Europe

All recent and ancient cultures in all parts of the world which use bows and arrows as hunting or fighting weapons know containers for arrows (cf Demmin 1886; Mason 1893; Pope 1923, 1947; Vilkuna 1950; Marcotty 1958). First of all these containers ease the carrying of the arrows, but they also protect them from negative influences such as rain or high humidity, which would have damaging effects on the shaft wood and the attached feather fletching. Traditional quivers are usually made from organic material, mostly wood, bark, wattle, leather or even textiles.

The organic material of quivers has vanished in ordinary find contexts and it is sometimes only the densely packed arrow points or some remaining metal or bone parts that indicate the former existence of such a container. Extraordinary circumstances, eg glacier finds, such as the bark quiver belonging to the Iceman from the Tisenjoch, South Tyrol, Italy (Egg 1992, p.255, Pl. 1.3, p.256, Pl. 2), or more recent discoveries at the

* Because the paper "The Late Roman Iron Age and Migration Period War Booty from Nydam: New Finds and Perspectives" given at the conference "Weapons, weaponry and Man" was designed as a short overview on the new material from Nydam, it seemed more suitable to pick out one aspect for the proceedings.

I would like to thank R. Birch Iversen (Aarhus), X. Pauli Jensen (Copenhagen), H. Paulsen (Schleswig), F. Rieck (Copenhagen) and F. Westphal (Schleswig) for support, additional data and discussion, and especially K. Göbel (Schleswig) for creating and operating Nydam GIS.

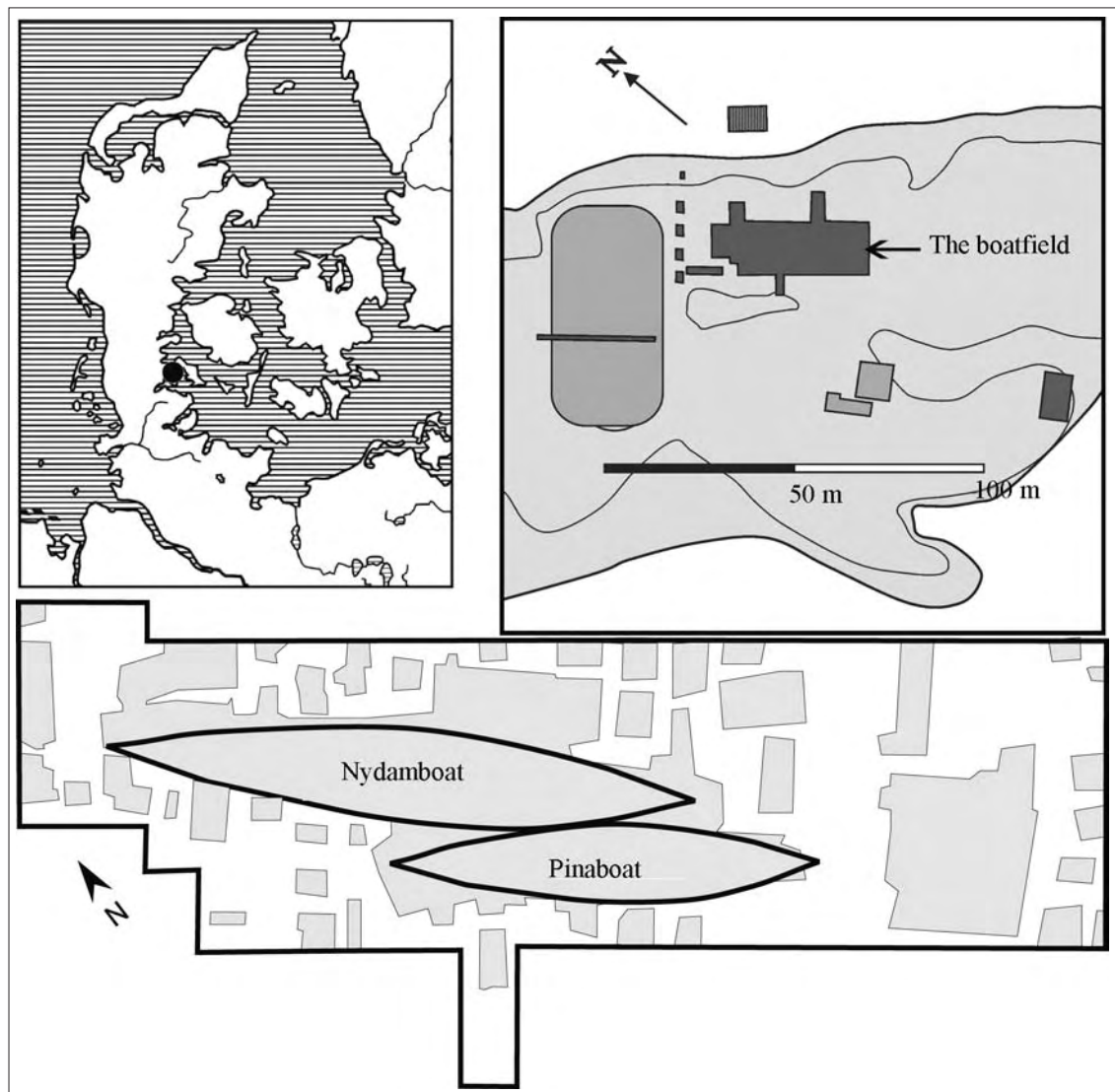


Fig. 1. Nydam mose in southeast Jutland and the “boat field”. Length of the boat field: 43 metres.

Schnidejoch glacier at Bern, Switzerland (Suter 2006, p.56), have thrown casual spotlights on the material and constructions of the oldest known examples. Some remains of quivers from the Neolithic, the Bronze Age and the Hallstatt and La Tène periods have recently been listed and discussed by H. Echardt (1996, pp.79-93), Ch. Clausen (1998) and D. Krauß-Steinberger (1990). In most cases in the metal periods, the bronze or iron fittings are used to determine and typologize the presence and appearance of a quiver, while the organic material has mostly disintegrated (Eckhardt 1996, p.79; cf Wegner 1978).

The East European and Asian nomad cultures, eg the Scythians, Sarmatians, Huns and Avars, with an intensified use of the bow and arrow for both hunting and especially fighting, deserve a more intense discussion of the material, which of course cannot be given here. One characteristic trace of steppe nomad archery is that the arrows were usually carried in quivers with their points up. Consequently, the quivers widened to-

wards the bottom to allow more space for the fletching. Additionally, these cultures made use of special quiver constructions to contain both the bow and the arrows, the so-called goryt, which has been studied on the basis of archaeological as well as pictorial sources (cf Rätzl 1978; Eckhardt 1991, p.143, Fig. 1, 1996, pp.90-93; Lindbom 1997, p.249, Fig. 6; Steuer 2000, pp.82-83; Lebedynsky 2001, pp.179-180; Beilharz 2005, pp.24-25).

Some remarks on “Germanic” quivers from the first millennium AD

Apart from the examples in the war booty sacrifices, organic parts of archery equipment, such as the arrow shafts, the bows or the quivers, are very rarely represented in burial or settlement contexts from the Roman Iron Age and Migration Period. This fact has already been stated by Ebert (1915, p.69), and it has not changed very much since then. A few examples shall be given

in the following, certainly not being a complete list of quiver finds from these particular periods.

It is quite obvious that organic remains of quivers are absent in cremation burials, which occur in regionally differing intensity in the Germanic cultures. Furthermore, the rite of furnishing the deceased with weapons or hunting gear has been exercised in changing intensity and spatial distribution and, additionally, archery equipment is underrepresented in weapon graves. The sparse evidence for archery equipment in the graves of the Early Roman Iron Age (Eggers phase B) mainly consists of finds of iron arrowheads in very few cremation burials (Weski 1982, pp.38-39; 246 Fundl. 39; Karte 33; Droberjar and Peška 2002, pp.114-115).

There are some more finds to be discussed for the Early Roman Iron Age and the Migration Period. Remains of leathery material have been detected in connection with arrowheads from graves at Häven, Mecklenburg-Vorpommern, Germany. Two graves (grave 2/1967 and grave 1/1968) from the second half of the third century AD (Eggers phase C₂) each included three bronze arrowheads with remains of ash wood in the sockets, which originally were contained in organic quivers (Hollnagel 1968, p.267, Fig. 181b, pp.269-270 and p.275 with Fig. 188a-c; Schuldt 1969, p.187, Fig. 1; p.189, Fig. 2.g-i). Bronze and silver arrowheads, often in threes, occur as symbolic weaponry in some of the richest male graves of the Haßleben-Leuna group of burials (cf Werner 1955; Dölle 1977).

Some definite warrior graves in Central and Western Europe from the fourth and fifth centuries contained a number of iron arrowheads, on which traces of leather were observed and which may consequently indicate a quiver. H.W. Böhme (1974, p.111 inc. footnote 460) has given a number of find spots with so-called "quiver-graves" from Germanic contexts dated to the late Roman Iron Age and Migration Period. In a later publication on indications for quivers of the Migration Period and Merovingian times, D. Beilharz (2005) has published an extensive find list with more than 100 entries. But, with the exception of the Altdorf grave (see below), none of the graves have produced larger parts of actual quivers which might help in judging their former appearance.

The inhumation burial at Högom, Medelpad, Sweden, from the northern end of the Germanic world, deserves a special mention in this context. In the chamber grave, dated to the late fifth century AD, 36 arrows with red paint on their shafts were found lying closely packed on the left side of the deceased. On the right side of the body an originally 60 to 70-centimetre-long tube-like object was found, of which only the lower third is preserved today (Fig. 2). The object could be identified

as made from long strips of birch bark, sewn together and supported by horizontal bands of birch bark (Ramqvist 1992, pp.60-63, Pl. 10-11). P. Ramqvist (1962, pp.62-63) hesitatingly interprets this object as a quiver, although it was found without arrows in it and he was not able to give parallels.

A wooden object from Engelhardt's Nydam finds has repeatedly been discussed as a quiver (Engelhardt 1865, Pl. 13.63). H. Paulsen (1998, p.422) has stated that the object is much too short (39.4cm) and the diameter (varying between 5.1 and 6.3cm) too small to consider it a quiver, while P. Lindbom (1997, p.243, Fig. 1c), without any signs of doubt, has classified it as a quiver to which a leather top has to be added. The piece indeed has a similar round bottom plate just like one of the quivers discussed in the following. On the drawings in Engelhardt's volume (1865, Pl. 13.63; cf Bemmann and Bemmann 1998b, Pl. 221, 2193a) a hole for a rivet to hold the plug in place is clearly visible. Unfortunately, the lower part of the wooden object has in some places broken off afterwards (cf Bemmann and Bemmann 1998b, Pl. 221, 2193). P. Lindbom (1997, p.243, Fig. 1, pp.246-248) suggested that the drawing of the bottom plug made by Magnus Petersen for the Nydam publication is a misinterpretation of an original round and loose bottom disc. But there is no reason to mistrust M. Petersen's excellent illustrations. H. Engelhardt (1863, Pl. 13, 64), and following authors (cf Ebert 1915, p.69; Steuer 2000, p.79) have also misinterpreted parts of a drinking horn as fittings of a quiver (cf Lindbom 1997, pp.243-244).

A fragmentary wooden object from the war booty sacrifice of Vimose, Funen, Denmark, has already been identified by H. Engelhardt (1869, p.23) as a quiver. This item, which was originally approximately 65 centimetres long and has two incised strap segments 46.5 centimetres apart from each other, has a diameter of approximately ten centimetres (Mackeprang 1935, pp.85-86, Fig. 12-13; Lindbom 1997, pp.249-251). It is entirely carved. Since most of the Vimose material can be dated to the second or third century, the quiver is likely to belong to this period of time.

Quite surprisingly, no remains of quivers have been discovered among the vast amount of war booty found at Illerup sites A-C, dating from the first half of the third century AD and the second half of the fourth century AD. Whether this is due to the fact that they have been made from disintegrated materials such as leather, or whether they simply were not sacrificed remains unanswered. The first option may be supported by the fact that several of the arrows were found in bundles and may have originally been deposited in quivers¹.

¹ Personal communication X. Pauli Jensen, Copenhagen.

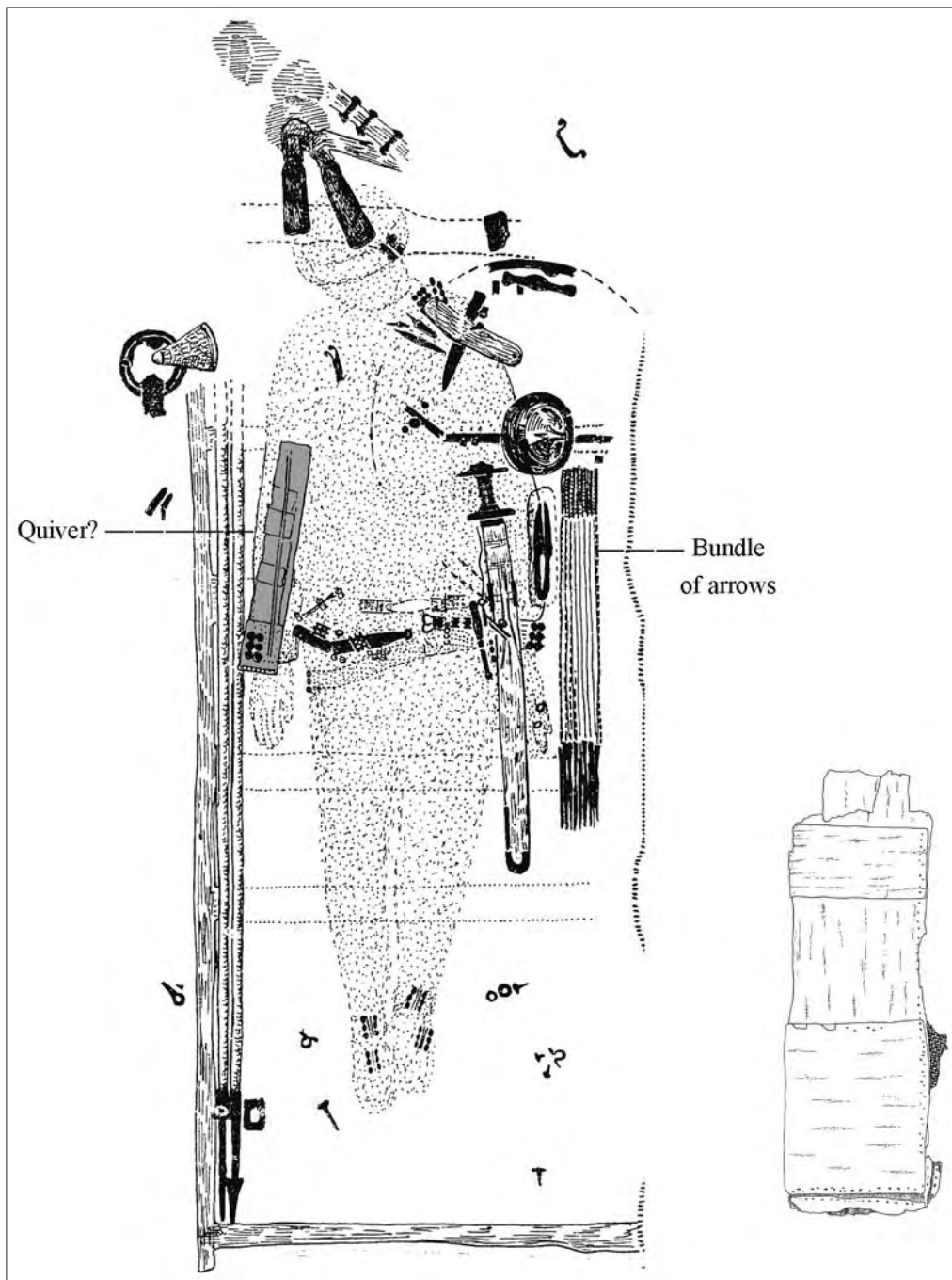


Fig. 2. A section from the chamber grave at Högom, Medelpad, Sweden (left), and the lower remains of the tube-shaped birch-bark object (right) (after Ramqvist 1992). Not to scale. Length of the remaining part: 28 centimetres.

The at least 201 arrows and six bows that can be assigned to Illerup site A or B show that a certain amount of archers formed part of military groups (Ilkjær 1994, p.236, Tab. 1).

The Merovingian Period and the Vendel Period also produced densely packed arrows in graves as evidence for the former existence of a container (Steuer 2000, pp.79-81; Lindbom 1997, pp.244-246). Rather exceptional is the beautifully ornamented piece from 660/680 AD from Altdorf, Canton Uri, Switzerland, where a richly equipped horseman was furnished with a long sword, a short sword, a shield, a bow and with

an approximately 70-centimetre-long quiver containing eight arrows (Fig. 3) (Marti 1995, p.86, Fig. 5, pp.96-98, Fig. 14-18). The nicely ornamented quiver made of lime wood (*tilia sp.*) was covered with a thin leather coating and broadens towards its bottom. It could be closed at the top by using a movable lid made of leather (Marti 1995, p.97, Fig. 16). The arrows were put into the quiver with the heads pointing upwards, a position which can be observed in other Merovingian archer-graves, too (cf Beilharz 2005, p.12, Fig. 2; Moosbrugger-Leu 1971, pp.99-102 with Figs.33-35). This way of putting the arrows into the quiver represents influences of steppe-nomad weaponry, which in

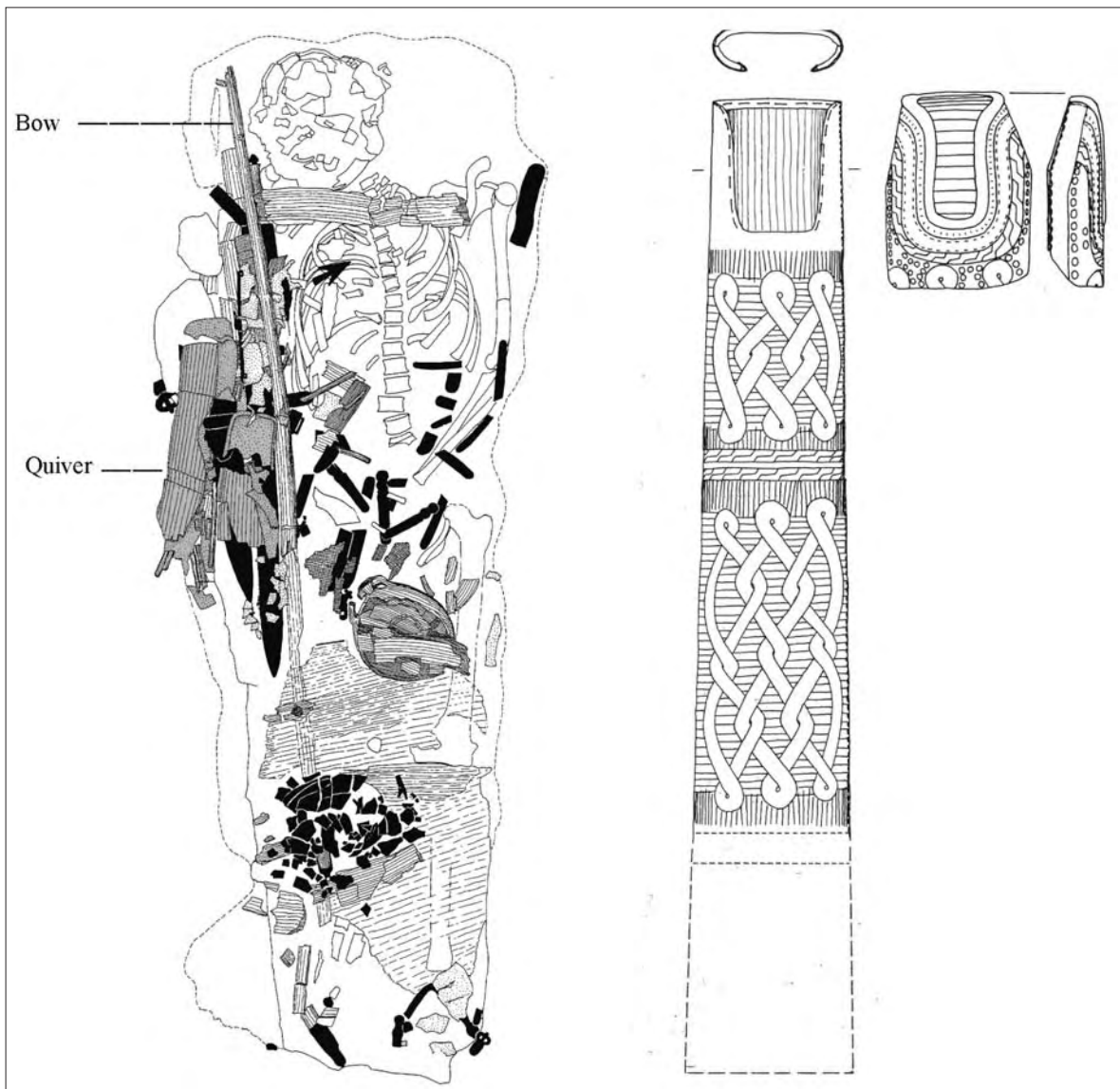


Fig. 3. The grave from Altdorf, Canton Uri, Switzerland (left), and the reconstructed quiver with the movable lid made of leather (right) (after Marti 1995). Not to scale. Length of the reconstructed quiver: 70 centimetres.

the case of Bülach grave 18 is confirmed by the existence of a composite reflex bow (Beilharz 2005, p.25).

The equipment of archers in the Central and Western European Carolingian Period, which is short of well-equipped grave finds, is to a certain extent compensated for by literal and pictorial sources, such as the so-called diptychon from Halberstadt, the psalterium aureum from St Gallen (Ebert 1915, p.69), or the psalterium from Utrecht (Marti 1995, p.99, Fig. 21; Beilharz 2005, p.19, Fig. 7).

Especially noteworthy are finds from the Viking Age settlement of Haithabu, Schleswig-Holstein, Germany. Here, larger fragments of leather were convincingly interpreted as pieces of at least two different quivers (Groenman-van Waateringe 1984, pp.38-40, Pl. 25-27). The reconstruction (Groenman-van Waateringe 1984, p.39, Fig. 22.1; Paulsen 1999, p.121, Fig. 16.1) gives a 62-centimetre-long quiver with two arrangements in

the upper half to carry the quiver at the waist, and resembles quivers depicted on the Bayeux tapestry.

The Nydam objects

There is evidence of different kinds and parts of quivers of various materials and appearance in the new material from Nydam. On the basis of their vertical and horizontal position in relation to other characteristic finds, the three categories of quivers, which are under discussion here, can be assigned to two different offerings in the fourth century AD.

The solid wooden quiver

The first quiver from Nydam to be dealt with was found during the campaign of 1997. It was excavated in four larger and a few smaller fragments, some of

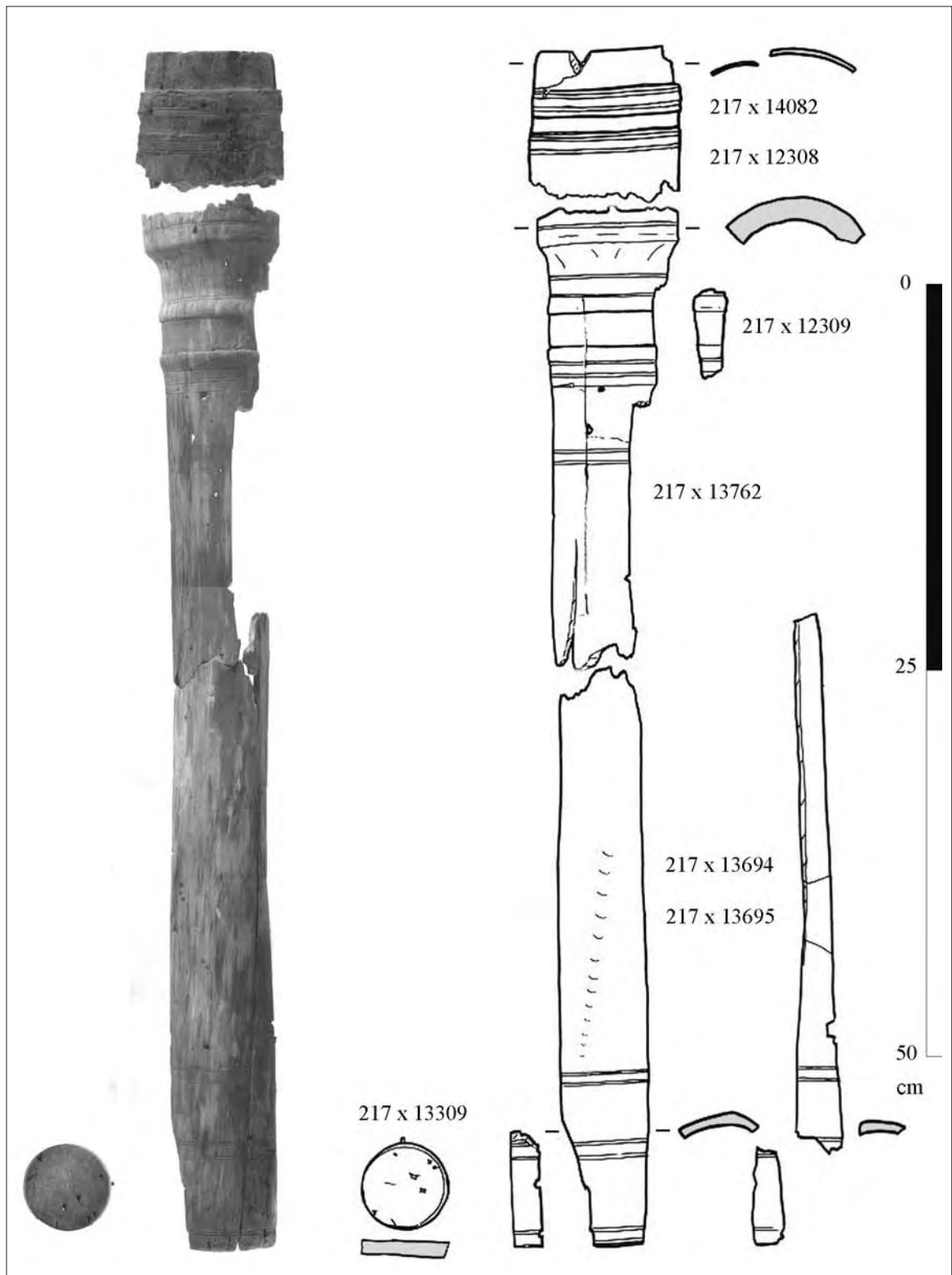


Fig. 4. The partly assembled fragments of the solid wooden quiver (left), and the single fragments immediately after the discovery in 1997 (right).

which were found lying more than three metres apart from each other. Thus, it seems quite probable that the quiver was intentionally shattered before the deposition of the different pieces. Fortunately, the larger pieces could firmly be reassembled, while other parts can be attached. These are not glued together, in order to prevent a reduction of the stability. Especially the bro-

ken-off upper part has deformed during the centuries and cannot be reassembled with the rest of the quiver, although small sections fit each other (Fig. 4).

The length of the quiver is 77 centimetres, the formerly round diameter at the upper rim can be reconstructed with nine centimetres (inner diameter 8.4cm). At 14

centimetres below the upper rim, the tube narrows to a diameter of seven centimetres (inner diameter 6cm), which is largely the same at the very bottom (6.5cm/5.3cm). The general thickness of the wood is about four millimetres.

The outer surface of the object was shaped by turnery. An approximately 80-centimetre-long piece of wood from a log of a maple tree (*acer sp.*) was finely turned and incised. Afterwards, the piece was split into two halves by the longitudinal axis and hollowed out by carving. Then the disc-shaped bottom plate made from elder (*alnus sp.*) was inserted and fixed with four small oak rivets (*quercus sp.*). Finally, the two halves may have been glued together. Very thin organic wire-shaped fragments in the incised grooves are likely to represent the remains of sinew bands to firmly hold the two halves in place.

A thin additional cover from leather or raw hide could be imagined, as it is preserved in very small parts on some sword scabbards and some shield boards in Nydam, but no actual traces of such a coating could be observed.

There are two deepened horizontal bands on the quiver. One has a small width of 1.15cm, approximately nine centimetres from the top rim, and a second broader one (2.2cm) is a distance of 17 centimetres from the top. The upper and thinner furrow might have been used for attaching a strap with a lid made of organic material to protect the feather fletching from humidity or mechanical harm. However, a possible lid could not be identified among the new finds, but it may very well have consisted of leather. The broader furrow still shows very slight discolorations where an organic strap with a width of approximately 17 to 20 millimetres has originally been in contact with the wood.

The schematic reconstruction helps to give a more complete impression of the former appearance of the quiver (Fig. 5). By looking at the cross-section, it becomes obvious that the widened part fits very well with the fletching sections of the arrows. In this regard, it has to be mentioned that the length of the arrows varies in accordance with the height of the archer. A tall archer with rather long arms must have preferred a rather long bow, and consequently longer arrows (Beckhoff 1972). Most of the arrow shafts in the old finds from Nydam show lengths between 75 and 80 centimetres without the points (Paulsen 1998, p.407), and this can be confirmed by the new finds. Since the large group of arrow shafts has not been examined closely as yet, it remains possible to a certain degree to find differences in the lengths, construction details etc, of the arrows in the different offerings from the third to the fifth century.

In almost all cases the arrows were found without points attached to them. Some complete arrow shafts without points, which can likely be assigned by their horizontal and vertical position to the same offering as the quiver, have lengths of between 70 and 85 centimetres. Adding five to 12 centimetres as the length of the point blade, the entire lengths in most cases must have been between 75 and 97 centimetres long, averaging between 80 and 90 centimetres. The arrows that were carried in the wooden quiver had to exceed the quiver by at least two to three centimetres in length, making it easy for the archer to grab them at the nock. Thus, with its length of 77 centimetres the Nydam quiver fits absolutely perfect with most of the Nydam arrows.

There are smaller and very fragmented turned pieces of poplar (*populus sp.*), maple wood (*acer sp.*) and pomaceous fruit wood (*pomaceae*) indicating at least three more solid wooden quivers, but the pieces are too small and cannot be reassembled. The existence of three more round wooden discs, which might be interpreted as bottom plates of quivers, fits very well with this observation. They are made from poplar (*populus sp.*), elder (*alnus sp.*) and from a pomaceous fruit species (*pomaceae*). Two of them also have rivets of oak wood. One of the pieces bears a half-circular iron crank on the small side, probably for fastening a strap.

The find material from the votive site at Kragehul, Funen, Denmark, contains a very similar disc-shaped object of poplar (*populus sp.*), with a diameter of 3.5 to 3.7 centimetres and a thickness of 0.4 to 0.6 centimetres, which has eight small iron rivets regularly placed on the sides (NM Copenhagen Inv.-Nr. 22440).² Considering the pieces from Nydam, the Kragehul disc may very well belong to a cylindrical wooden quiver similar to the Nydam one. But it has to be mentioned that slightly smaller wooden discs with diameters of between 25 and 30 millimetres have also been found in the offering of Illerup site A, functioning as repair discs for shield boards (cf Ilkjær 2001, pp.46-47, Figs.41-42, p. 49, Figs. 45-46, p.51, Fig. 59).

The usage of turnery for the shaping of the object is a bit surprising at first, because a larger lathe for objects longer than 80 centimetres was needed. But the general usage of the lathe for the shaping of wooden objects is probably very much underestimated. There are some finds of turned bowls from settlement sites in the Germanic area (Capelle 1976, pp.31-32; 1983), which demonstrate that this craft was widely known and probably performed locally (cf Haarnagel 1979, pp.289, 294-295). The well-furnished graves from the fourth and fifth century AD discovered in the marsh

² I kindly thank R. Birch Iversen (Aarhus) for the information on this object.

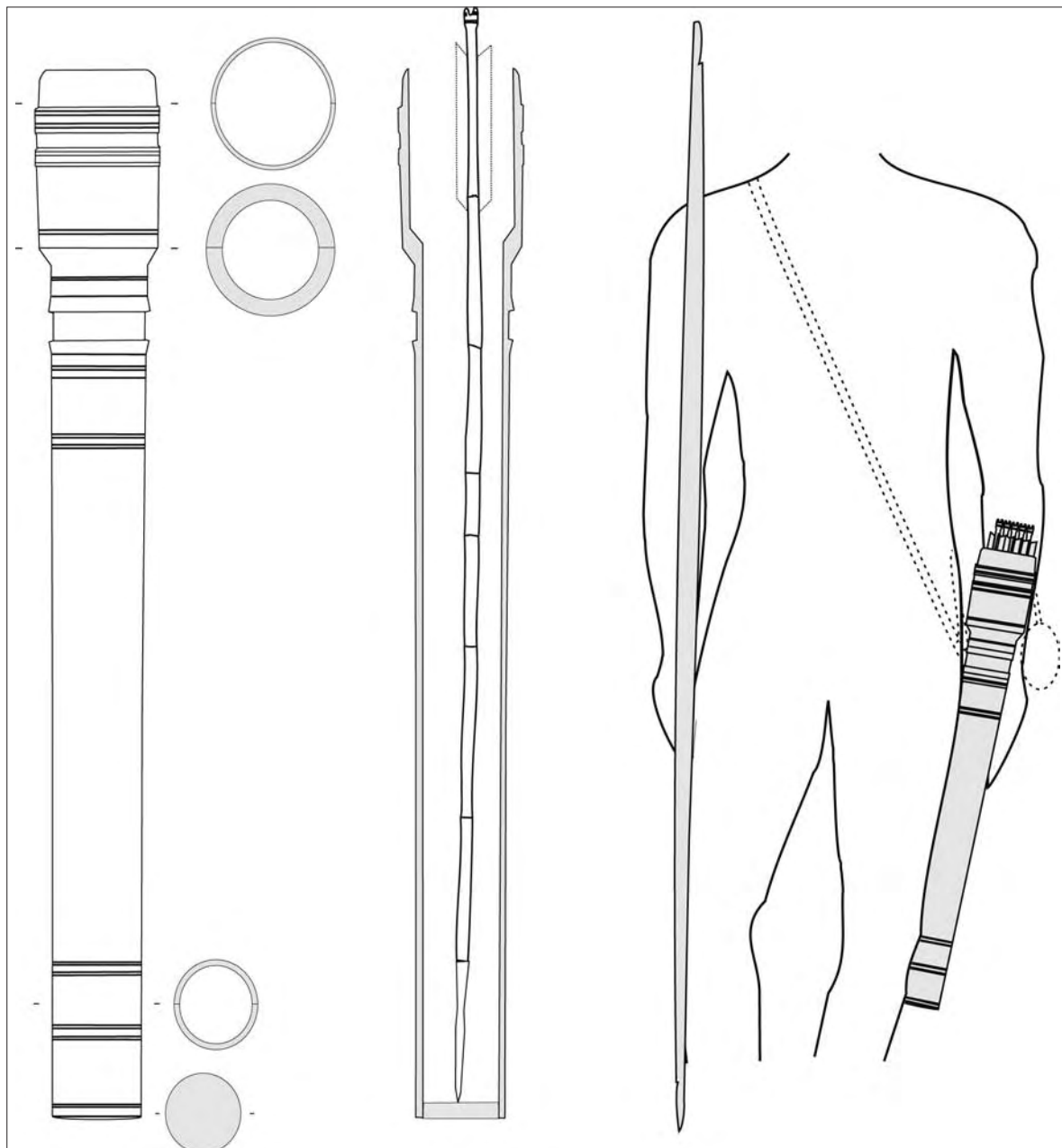


Fig. 5. Schematic reconstructions of the solid wooden quiver (left and middle), and a suggested suspension using a shoulder strap (right).

at Wremen, Niedersachsen, Germany, have shown how elaborated Germanic woodworking techniques in carving and turnery actually were (Schön 2000). The wooden vessels found in Nydam clearly support this impression. An estimate from the different fragments leads us to the conclusion that at least 13 of the more than 20 wooden bowls without handles were not carved but produced by turnery.

The birch-bark quiver

Some of the arrows in Nydam were found together in a position which indicates that they must have been deposited while tied together or in a container, probably

a quiver. A bundle of arrows was already excavated by J. Brøndsted and C.J. Becker in 1939 (cf Bemmann and Bemmann 1998a, pp.96-107, esp. pp.99-102 with Fig. 56) and has been discussed by H. Paulsen (1998, pp.419-421). C. Engelhardt mentions finds of at least four arrow bundles in his excavation diary (Bemmann, and Bemmann 1998a, pp.48-49, 58). The fact that almost all the arrows lie very close together with the points all in the same direction has to indicate that they were originally deposited in an organic container. It has already been mentioned that leather, hide and textiles generally did not survive the chemical processes in the watery context in Nydam, and they can only be observed as imprints on rusty iron objects, eg shield bosses or when they were in close contact with bronze

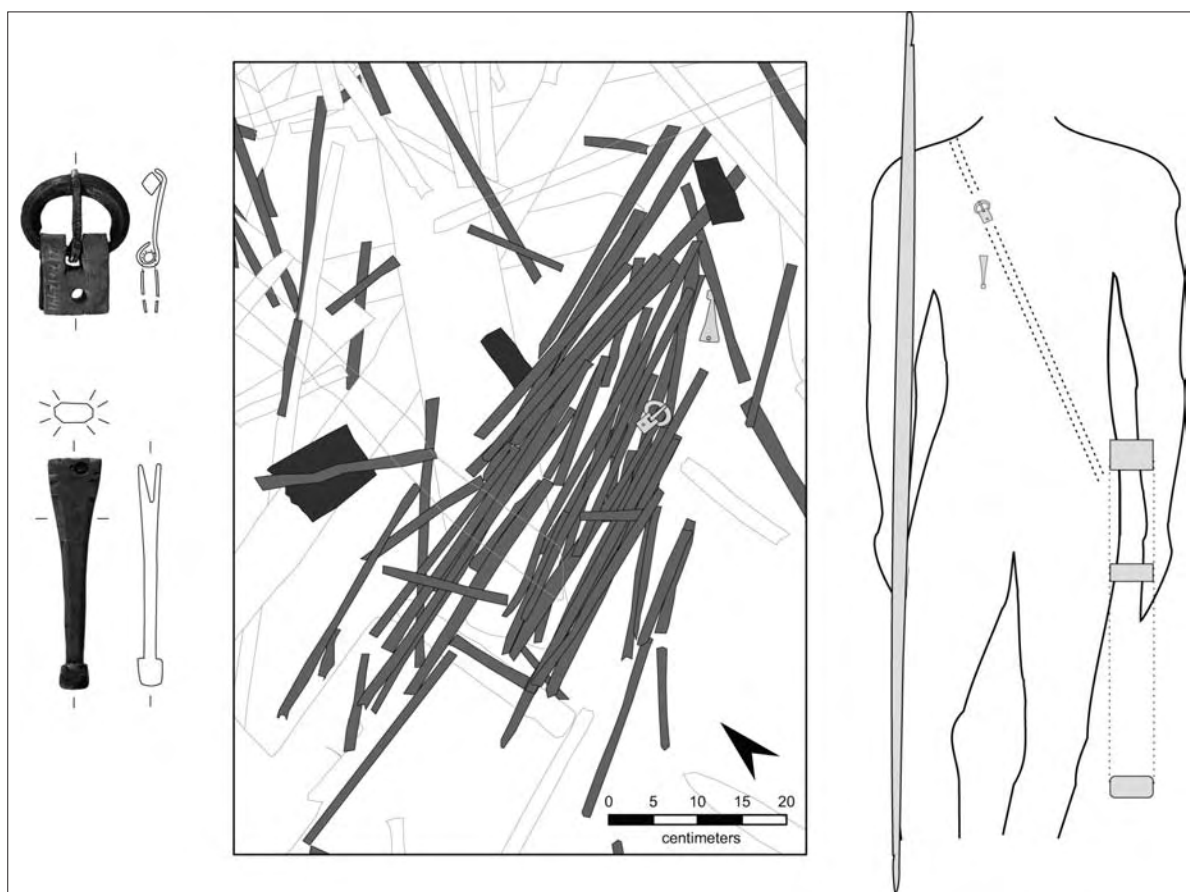


Fig. 6. Left: the buckle and the strap end from the bundle of arrows. Middle: the bundle of arrows with the remains of birch-bark rolls (dark grey) and the buckle and the strap end (light grey). Right: a suggested suspension using a shoulder strap.

objects, eg shield board fittings or scabbard mountings.

There are some more bundled arrow shafts from the new excavation campaign, among them a slightly disturbed bundle of approximately 25 arrows, which was also found in the western part of the boat field (Fig. 6). The observation on this bundle supports the aforementioned interpretation of the tube-shaped object of birch bark from the Högom grave as a quiver. The Nydam arrows were lying very densely together, making it obvious that they must have been deposited in some kind of container. Unfortunately, post-depositional disturbances have broken some arrows and slightly changed their position. It is noteworthy that all the intact shafts indicate that the southern direction of the nock end was identical to all pieces. Besides, under and on top of the pile three larger and some tiny fragments of birch bark were discovered, unfortunately in a very disintegrated state. Only a few fragments could be observed *in situ* and were measured. The fragments are described in the documentation as circular rolls made from birch bark. The position of the three larger and better-preserved rolled-up stripes and their similar widths indicates how the outline of the birch-bark object once might have been. The length of the entire object must have exceed-

ed 60 centimetres, while the best-preserved pieces, as well as the measurements taken from the excavation plan, might indicate a diameter of the bark tube of approximately ten centimetres.

By comparing the position of the birch-bark rolls from Nydam with the remaining parts of the object from Högom (Ramqvist 1992, Pl.102) (Fig. 2), the function of the bark rolls as supportive tubes for a quiver may be the best explanation. It is likely that the rest of the quiver was of disintegrated material. It should be mentioned in this context that the hunnic grave from Aktöbe II, Tchimkent, Kazakhstan, contained a 77-centimetre-long, cylindrical quiver made from birch bark (Bóna 2002, p.120, Fig. 102).

There is another noteworthy aspect to this bundle. On the top of it a small belt buckle with an oval frame was found lying approximately ten centimetres away from a small strap end with a polyedric knob at the end (Fig. 6). The find position indicates that both objects were originally still attached to a now vanished leather strap when deposited. It cannot be stated with certainty, but it is very likely due to the positions of the items that the buckle and strap end belong to the leather strap that was carrying the quiver.

The one-piece oval buckle with rhombic cross-section belongs to Type H 16 according to R. Madyda-Legutko (1987, pp.65–66, Pl. 19), who dates them to the very early phase of the Migration Period. In the Merovingian Period grave 509 from München-Aubing, an iron buckle similar in shape and size to the Nydam piece has convincingly been interpreted as part of a strap for the quiver (Beilharz 2005, p.12, Abb. 2. 6, p.13, Abb. 3-4). There is no close parallel to the strap end with the knob, but a slightly broader piece from the fortified hill at Runder Berg near Urach, Baden-Württemberg, Germany, shows a similar polyedric knob at the end (Koch 1985, p.523, Fig. 26.5).

Wooden supportive tubes for leather (?) quivers

Already in the old excavations, Engelhardt discovered a hollowed-out cylindrical object. This piece has not survived to today. But in Engelhardt's inventory of the Flensburg museum collection, we find the following entry for the object: "7301. A wooden cylinder; 6 1/2 Tommer (~17cm) in length; 2 8/12 Tommer (~7cm) in the lower diameter; 2 5/12 Tommer (~6,5cm) in the upper diameter. The thickness of the wood varies, the largest part in the middle - 1/4 Tommer (~0.6cm) – It seems, that the object is not complete" (translated by the author). Fortunately, Engelhardt added a good drawing to his description (Fig. 7). Additionally, it can also be taken from Engelhardt's excavation diary that the object was found in his excavation pit no. I from 1862, in a position right beside a bundle of arrows. This bundle consisted of approximately 20 arrows, all of them with the arrowheads pointing in the same direction. The entire object has been published with Engelhardt's drawing as a "wooden cylinder" by Bemmann and Bemmann (1998b, p.213, Pl.221 and 2194).

Three very similar cylindrical wooden objects were dis-

covered during the campaign in 1993 (Fig. 7). They are all made from alder log wood and are carved out in one piece. A fragment of a probable fourth piece from birch wood was found in 1993 as a stray find. The lengths of the complete pieces are 13.3 centimetres, 15.8 centimetres and 20.8 centimetres, respectively. One piece has two incised furrows on its middle part, in which parts of undetermined organic material have been observed. There is no obvious connection with bundles of arrows as was recorded for the object found in the old excavations. The original inner diameter of the slightly deformed three complete pieces can be calculated at 6.5 to 8.5 centimetres, and thus, they very much resemble the find from 1862 as well as the solid wooden quiver. A possible interpretation of these wooden cylinders may be as supporting pieces of leather quivers. These cylinders may have had the same function as the birch-bark rolls.

Datings

By the horizontal and vertical position of the fragments, the solid wooden quiver from Nydam can be connect-

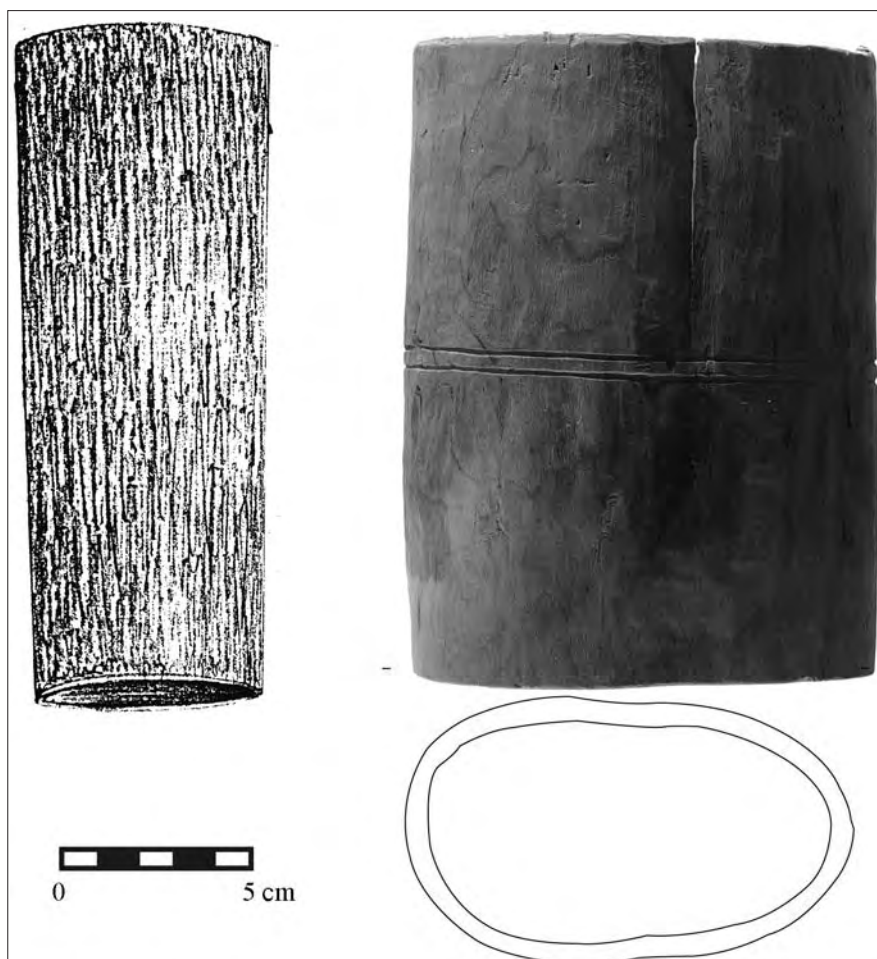


Fig. 7. Two probable supportive tubes from Nydam. Left: the "cylinder" found in connection with a bundle of approximately 20 arrows by Engelhardt in 1862. Right: one from three similar pieces found in 1993.

ed with a larger sacrifice of spoils-of-war, which were deposited in the lake at the end of the fourth century AD. Judged on the basis of the find context as well as the dating of the strap mountings, the bundle of arrows can be assigned to the same offering as the solid wooden quiver from the late fourth century AD. This offering contains a lot of weapons and also Late Roman belts with so-called “Tierkopfschnallen” (animal head buckles), as well as fibulas of the Nydam type variants 2–4 according to J. Bemann (1993), which indicate a date for the deposition sometime between 370 and 410 AD.

The work on the personal equipment and the dress items from these offerings as indications for the provenance of the material is still in progress, but the general composition of the material points to a region in northern Germany, especially to the areas of Schleswig-Holstein and Western Mecklenburg.

The find positions of all four cylindrical objects from the new excavations allow a connection with an offering from the first half of the fourth century, more precisely dated on the basis of dendrochronological dates to around 315 to 340 AD. This offering contains personal items and dress fittings that show strong connections to the Scandinavian Peninsula and the Baltic islands of Öland and Gotland.

Concluding remarks on the “Germanic” archers and their quivers

The question if bow and arrow were used for hunting or warfare naturally has to be answered individually for every single find. The bows, arrows and quivers of the war booty sacrifices in southern Scandinavia undoubtedly were primarily used as weapons of war.

Although the assigning of the objects to the different depositions in Nydam has not been carried out for the archery equipment, the large find numbers underline the importance of bows and arrows in Late Roman Iron Age warfare. The arrows in the new Nydam excavations occupy more than 3,300 entries in the database. This also includes a lot of fragmented pieces, so that the actual number of complete arrows after the refitting will certainly be much less. This also applies to the bows and bow fragments, which have been listed with 153 find numbers. While the number of arrows is not easy to estimate, approximately 35 bows should be represented in the new finds, about 20 of them belonging to the same offering as the solid wooden quiver. Considering that the boat field is only a very limited part of the area with votive material and that at least 30 bows are already among the old finds, the actual number of bows, each representing a single archer,

must have been much higher, taking into account that they may belong to different sacrifices, though. It may still not be overestimated to think of formations with more than 50 archers for the two offerings in the fourth century. It is, of course, the relation between the archery unit and the total size of the warrior group that has to be focused on.

The solid wooden quiver from Nydam provided space for 18 to 25 arrows with an average diameter of the arrow shafts of nine millimetres. This number fits very well the average amount of arrows per quiver given by H. Steuer (2000, p.81). P. Lindbom (1997, p.251) estimated a number of 12 arrows to fit into the uncertain quiver from the old Nydam material.

C. Engelhardt mentions four bundles of arrows from his campaigns in 1862 and 1863: for three of them he has counted approximately 20 arrows, for one he estimates 15 pieces (Bemann and Bemann 1998a, pp.48-49, 58). The bundle from Nydam which was excavated in 1939 contained 24 arrows. During the new campaigns a rather undamaged bundle with 18 arrows was excavated, and another one with 24 arrows. The bundle in the Högom find contained 36 arrows (Ramqvist 1992, p.60). The bundles in the war booty sacrifices certainly must not represent the contents of quivers in each case. It can of course very well be that the bundles contain arrows collected from the battlefield by the victorious party for the sacrifice. In any case, the repeating numbers of 12, 18, 24 and 36, representing the concept of the dozen and half-dozen, are striking. This observation has most recently been discussed by P. Ramqvist (1992, 64) and P. Lindbom (1997, pp.251-252) for the Iron Age, without including the new Nydam finds. Since S.O. Jansson (1936, p.37) stated that in the Swedish Late Middle Ages the unit in which arrows were counted was the dozen (Swedish *tolfter*), it becomes more likely that this concept was already known and used during the Roman Iron Age.

On average, the quivers provided enough space for 20 to 25 arrows. A calculation considering seven to ten seconds for grabbing, aiming and shooting each arrow leads to a time span of two to four minutes until an archer had shot all the arrows in his quiver (cf Lindbom 1997, p.252). A trained and commanded formation of 50 archers was thus able to fire 1,000 to 1,250 arrows in a very short time.

In Ejlsbøl North, Jutland, Denmark, which has recently proven to be a separate place of a larger sacrificial area with war booty (Andersen 2003), more than 675 arrowheads were found and almost all of them can be connected with an offering from the first half of the fourth century AD (Eggers Phase C₃) (cf Ørsnes 1988, pp.72-83, Pl. 137-144). Considering 20 to 25 arrows

as the average value for a single archer or his quiver respectively, around 30 archers might be represented in the Ejsbøl material.³ It can be calculated on the basis of spearheads, that at least 210 individuals are represented in the Ejsbøl North deposition of phase C₃. If the archers themselves did not use spears as projectiles, which is rather unlikely, the relation between the number of persons in archery units and infantry units may have been around 1:7, which should indicate how important the usage of the bow and arrow had become at the beginning of the fourth century. It has to be stressed though that in Illerup site A (ca. 210 AD) only six bows have been found among the weaponry equipment for more than 350 warriors. Very recent studies on the bows and arrows from the Danish war booty sacrifices seem to indicate a change from rather not professionalized, heterogeneously equipped archers in the early third century AD to archers with standardised equipment in the fourth century AD (Pauli Jensen, forthcoming).

It remains unknown how the different types of quivers were carried in the first half of the first millennium AD. There are generally different ways of carrying a quiver. The most common perception among non-archers, probably in great part influenced by Robin Hood or cowboy-and-Indian movies, is the quiver on the back of the archer. This arrangement has indeed been known from all times and regions, and there are different ways of positioning the quiver on the back. But there is also the possibility of carrying the quiver at the side of the body, either fixed to a belt horizontally running around the waist, or hanging from a strap running from the shoulder across the chest. Furthermore, mounted horsemen used quivers hanging from the horse's saddle.

The Altdorf quiver shows a groove 22 centimetres below the upper rim (Marti 1995, p.96, Fig. 14), the piece from Nydam has a large groove 17 centimetres below. R. Marti (1995, pp.98-99 with Fig. 18; cf Steuer 2000, p.80, Fig. 14; Beilharz 2005, p.9, Fig. 1) suggests two similar strap furrows on the reconstruction of the Altdorf quiver (Fig. 3), but the Nydam example shows that this must not necessarily have been the case.

In the undisturbed late third century grave 2/1967 from Häven, Mecklenburg-Vorpommern, Germany, a small omega-shaped buckle was found next to the right shoulder of the deceased. The three arrowheads found next to the upper end of the right leg of the dead male individual were contained in a badly disintegrated leathery container (Hollnagel 1968, p.267, Fig. 181b). Adding approximately 80 centimetres for the vanished

arrow-shafts, the buckle might have belonged to a strap fastened to the upper end of the quiver. The position of the quiver in relation to the body of the deceased does not give hints as to the question of how the quiver was carried.

It may be suggested that quivers for hunting game in the woods were rather carried on the archer's back, because they might be obstructive while running or while moving through brushwood. Recent and sub-recent cultures in wooded areas of northeast Europe and Siberia characteristically carried the quiver on the back using a two-strap arrangement, similar to backpacks (Vilkuna 1950, p.379). For example, the third-century mosaic from Lillebonne, France, with a hunting scene, depicts an archer who carries the quiver on the back (Darmon, 1978, p.80, Fig. 24).

In a slowly moving formation of archers on a battlefield, a position next to the waist could have been the favoured setting. It may have been a major disadvantage if the archer had to raise his hand in order to grab the arrows on the back, thus disturbing the sight of others and risking being hit in the hand by arrow shots from behind. Sassanid reliefs from the third century show fully equipped mounted warriors who carry their long tube-like quivers at their waists (Junkelmann 1992, p.113, Figs. 112-113). Central European graves from the sixth and seventh centuries AD have produced evidence for very different strap constructions and carrying methods, but most quivers seem to have been attached to a belt around the waist (Beilharz 2005, pp.10-19). Most of the archers depicted on the Bayeux tapestry, from the late eleventh century, carry their quivers on a belt around the waist as well (cf Stenton 1957; Groenman-van Waateringe 1984, p.39, Fig. 22.2). The findings from Nydam do not give any supportive hints to this question. The solid wooden quiver has been reconstructed as a quiver hanging at the side from a shoulder strap (Fig. 5). Because indications for a second carrying strap for this piece are missing, a two strap arrangement for a back-quiver seems less probable. A single strap might also be assumed for the birch-bark quiver because of the single buckle and strap end (Fig. 6). Generally, it may be assumed that the carrying arrangement could be changed by the archer and adjusted in accordance with his other (fighting) equipment or the actual situation during a battle (cf Beilharz 2005, p.19).

Summary

Since their discoveries and excavations, the Iron Age bog finds with military equipment from south Scandinavia have always been cited as special sources when

³ It has to be kept in mind that this is a very schematic calculation, neglecting the possibility that the archers could have used spare quivers, although there are no indications from graves or iconographics that could support this.

it comes to the preservation of organic material. The Nydam bog has been known for its good preservation of wood, mostly due to the well-known rowing ship the “Nydam boat”, which was reassembled very shortly after its discovery and has been a quite extraordinary example of the preservation conditions in this bog find ever since.

This article presents some remains of quivers and possible quivers from the fourth century AD as seldom recorded parts of the military equipment of the Germanic sphere in the younger Roman Iron Age and the Migration Period. Although a thorough analysis of the comparative material from contemporary grave finds is still missing and could not be given here, the example of the Nydam quivers demonstrates how strong the impact is which the material from the war booty sacrifices has on the archaeologist’s conception of the “living culture” of the military sphere.

Translated by the author

References

- ANDERSEN, H.C.H., 2003. Nye undersøgelser i Ejsbøl mose. In: L. JØRGENSEN *et al.*, eds. *Sejrens triumf. Norden i skyggen af det romerske imperium*. København, 246–256.
- BECKHOFF, K., 1963. Die eisenzeitlichen Kriegsbögen von Nydam. *Offa*, 20, 39–48.
- BECKHOFF, K., 1972. Über die Größenbeziehungen zwischen dem prähistorischen Bogenschützen und seiner Waffe. *Die Kunde N.F.* 23, 1972, 49–61.
- BEILHARZ, D., 2005. Vergangenes Inventar. Formale und interpretative Überlegungen zur Köcherbeigabe in merowingerzeitlichen Gräbern Mitteleuropas. In: C. DOBIAT, ed. *Reliquiae gentium*. Festschrift für Horst Wolfgang Böhme zum 65. Geburtstag. Teil. I. Internationale Archäologie. *Studia honoraria* 23. Rahden/Westfalen, 9–35.
- BEMMANN, J., 1993. Die Nydamfibeln. Eine Fibelform der Stufe C3? *Germania*, 71, 139–182.
- BEMMANN, G. AND BEMMANN J., 1998a-b. Der Opferplatz von Nydam. Die Funde aus den älteren Grabungen: Nydam-I und Nydam-II. Bd. 1-2. Neumünster.
- BÖHME, H.W., 1974. Germanische Grabfunde des 4. bis 5. Jahrhunderts zwischen unterer Elbe und Loire. Studien zur Chronologie und Bevölkerungsgeschichte. *Münchner Beiträge zur Vor- und Frühgeschichte* 19. München.
- BÓNA, I., 2002. *Les Huns. Le grand empire barbare d’Europe (IV-V. siècles)*. Saint-Germain-du-Puy.
- CAPELLE, T., 1976. Holzgefäße vom Neolithikum bis zum späten Mittelalter. In: H. JANKUHN *et al.*, eds. *Münstersche kleine Schriften zur Ur- u. Frühgeschichte* 1. Hildesheim.
- CAPELLE, T., 1983. Zur Produktion hölzerner Gefäße im vor- und frühgeschichtlichen Mittel- und Nordeuropa. *Das Handwerk in vor- und frühgeschichtlicher Zeit. 2 Archäologische und philologische Beiträge. Bericht über die Kolloquien der Kommission für die Altertumskunde Mittel- und Nordeuropas in den Jahren 1977 bis 1980*. Göttingen, 397–344.
- CLAUSING, CH., 1998. Zu Köchern der Urnenfelderzeit. *Archäologisches Korrespondenzblatt*, 28, 379–390.
- DARMON, J.-P., 1978. Les restaurations modernes de la grande mosaïque de Lillebonne (Seine Maritime). *Gallia*, 36, 65–88.
- DEMMIN, A., 1886. *Die Kriegswaffen in ihrer historischen Entwicklung von den ältesten Zeiten bis auf die Gegenwart*. Leipzig.
- DÖLLE, H.-J., 1977. Bemerkungen zu den spätkaiserzeitlichen Pfeilspitzen aus Bronze und Silber. In: F. HORST ed. *Archäologie als Geschichtswissenschaft* [Festschrift K.H. Otto]. Berlin, 291–297.
- DROBERJAR, E. AND PEŠKA, J., 2002. Die Waffen. In: J. PEŠKA and S. TEJRAL, eds. *Das germanische Königsgrab von Mušov in Mähren. Teil 1. RGZM Monographien* 55,1. Bonn, 97–125.
- EBERT, M., 1915. s.v. Köcher. *Reallexikon der germanischen Altertumskunde* Bd. III. Straßburg 1915/1916, 69.
- ECKHARDT, H., 1991. Der schwirrende Tod – die Bogenwaffe der Skythen. In: R. ROLLE *et al.*, eds. *Gold der Steppe. Archäologie der Ukraine*. Neumünster, 143–149.
- ECKHARDT, H., 1996. *Pfeil und Bogen. Eine archäologisch-technologische Untersuchung zu urnenfelder- und hallstattzeitlichen Befunden*. Espelkamp.
- EGG, M., 1992. Zur Ausrüstung des Toten vom Hauslabjoch, Gem. Schnals (Südtirol). In: F. HÖPFEL *et al.*, eds. *Der Mann im Eis. Bd.1. Bericht über das Internationale Symposium 1992 in Innsbruck*. Innsbruck, 254–272.
- ENGELHARDT, C., 1865. *Nydam mosefund 1859–1863*. København.
- ENGELHARDT, C., 1869. *Vimose fundet*. København.
- GROENMAN-VAN WAATERINGE, W., 1984. Die Lederfund von Haithabu. *Berichte über die Ausgrabungen in Haithabu*, 21. Neumünster.
- HAARNAGEL, W., 1979. Feddersen Wierde. Die Ergebnisse der Ausgrabungen der vorgeschichtlichen Wurt Feddersen Wierde bei Bremerhaven in den Jahren 1955–1963. Bd. II. Die Grabung Feddersen Wierde. Methode, Hausbau, Siedlungs- und Wirtschaftsformen sowie Sozialstruktur. Wiesbaden.
- HARDY, R., 1992. *Longbow, a social and military history*. London.
- HOLLNAGEL, A., 1968. Zwei neue Körpergräber der spätrömischen Kaiserzeit in Häven, Kr. Sternberg. *Jahrb. Bodendenkmalpf. Mecklenburg* 1968 (1970), 265–282.
- ILKJÆR, J., 1994. Das Mooropfer von Illerup Ådal – Der Stand der Bearbeitung im Jahr 1994. In: C. von CAR-NAP-BORNHEIM, ed. *Beiträge zu römischer und barbarischer Bewaffnung in den ersten vier nachchristlichen Jahrhunderten. Akten des 2. Internationalen Kolloquiums in Marburg a.d. Lahn, 20. bis 24. Februar 1994*. Lublin & Marburg, 233–248.
- ILKJÆR, J., 2001. Illerup Ådal 9. Die Schilde. Textband. *Jutland Archaeological Society Publications* XXV: 9. Aarhus.
- JANSSON, S.O., 1936. Mått, mål och vikt i Sverige till 1500-talets mitt. In: SVEND AAKJÆR, ed. *Maal og vægt. Nordisk kultur* 30. København & Oslo & Stockholm, 1–57.
- JUNKELMANN, M., 1992. Die Reiter Roms. Teil III: Zubehör, Reitweise, Bewaffnung. *Kulturgeschichte der antiken Welt* 53. Mainz.
- JØRGENSEN, E. AND PETERSEN, P.V., 2003. Nydam mose – nye fund og iagttagelser. In: L. JØRGENSEN *et al.*, eds. *Sejrens triumf. Norden i skyggen af det romerske Imperium*. København, 246–284.

- KOCH, R., 1985. Die Tracht der Alamannen in der Spätantike. *Aufstieg und Niedergang der römischen Welt* II.12.3. Berlin & New York, 456-545.
- KRAUSSE-STEINBERGER, D., 1990. Pfeilspitzen aus einem reichen Latène-A-Grab von Hochscheid, Kr. Bernkastell-Wittlich. *Archäologisches Korrespondenzblatt*, 20, 87-100.
- LEBEDYNSKY, I., 2001. *Armes et guerriers barbares au temps des grandes invasions* (IV^e au VI^e siècle apr. J.-C.). Paris.
- LINDBOM, P., 1997. Koger, pilregn och logistik – från Nydam till Mary Rose. *TOR*, 29, 241-263.
- MACKEPRANG, M., 1935. De store mosefund fra folkvandringsstid. *Fra Nationalmuseets Arbejdsmark*, 79-92.
- MADYDA-LEGUKTO, R., 1987. Die Gürtelschnallen der Römischen Kaiserzeit und der frühen Völkerwanderungszeit im mitteleuropäischen Barbaricum. *BAR International Series* 360. Oxford. B.A.R.
- MARCOTTY, T., 1958. *Bogen und Pfeile*. München.
- MARTI, R., 1995. Das Grab eines wohlhabenden Alamannen in Altdorf UR, Pfarrkirche St. Martin. *Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte*, 78, 83-130.
- MASON, O.T., 1893. North American bows, arrows, and quivers. *Smithsonian report*, 631-679.
- MOOSBRUGGER-LEU, R., 1971. Die Schweiz zur Merowingerzeit. *Die archäologischen Hinterlassenschaften der Romanen, Burgunder und Alamannen*. Bd. A. Bern.
- PAULI JENSEN, X., forthcoming. The Use of Archers in the North Germanic Armies – evidence from the Danish war booty sacrifices. In: T. GRANE, ed. *Beyond the Roman Frontier: Roman Influence on the Northern Barbaricum*. *Analecta Romana Instituti Danici*.
- PAULSEN, H., 1998. XII.2. Bögen und Pfeile. In: J. BEMMANN AND G. BEMMANN, eds. *Der Opferplatz von Nydam. Die Funde aus den älteren Grabungen: Nydam-I und Nydam-II*. Neumünster, 387-425.
- PAULSEN, H., 1999. Pfeil und Bogen in Haithabu. In: K. SCHIETZEL, ed. *Berichte über die Ausgrabungen in Haithabu 33. Das archäologische Fundmaterial VI*. Neumünster, 93-143.
- POPE, S., 1923. A study of Bow and Arrows. *University of California Publications in American Archaeology and Ethnology*, 13, 103-152.
- POPE, S., 1947. *Hunting with Bow and Arrow*. New York.
- RADDATZ, K., 1963. Pfeilspitzen aus dem Moorfund von Nydam. *Offa*, 20, 49-56.
- RADDATZ, K., 1985. Die Bewaffnung der Germanen vom letzten Jahrhundert vor Chr. Geb. bis zur Völkerwanderungszeit. *Aufstieg und Niedergang der römischen Welt* II.12.3. Berlin & New York, 281-361.
- RÄTZEL, W., 1978. Die skythischen Gorytbeschläge. *Bonner Jahrbücher*, 178, 163-180.
- RAMQVIST, P., 1992. Högom. The excavations 1949–1984. Högom Part I. *Archaeology and Environment*, 13. Neumünster.
- RIECK, F., 2003. Skibene fra Nydam mose. In: L. JØRGENSEN et al., eds. *Sejrens triumf. Norden i skyggen af det romerske Imperium*. København, 296–309.
- SCHÖN, M.D., 2000. Germanische Holzmöbel von der Fallward in Niedersachsen. In: L. WAMSER, ed. *Die Römer zwischen Alpen und Nordmeer. Zivilisatorisches Erbe einer europäischen Militärmacht*. Mainz, 231-235.
- SCHULDT, E., 1969. Ein weiteres Körpergrab der späten römischen Kaiserzeit von Häven, Kr. Sternberg. *Ausgrabungen und Funde*, 14, 186-191.
- STENTON, F., 1957. *The Bayeux tapestry*. London.
- STEUER, H., 2000. s.v. Köcher. § 2. *Archäologisches. Reallexikon der germanischen Altertumskunde*, Bd. 17. Berlin & New York, 77-83.
- SUTER, P.J., 2006. Das Eis gibt Schätze frei. *Archäologie in Deutschland*, 2006/2, 56-59.
- PETERSEN, P.V., 1994. Einige Ergebnisse der neuen Ausgrabungen im Mooropfer von Nydam, Südjütland (Dänemark). In: C von CARNAP-BORNHEIM, ed. *Beiträge zu römischer und barbarischer Bewaffnung in den ersten vier nachchristlichen Jahrhunderten. Akten des 2. Internationalen Kolloquiums in Marburg a.d. Lahn, 20. bis 24. Februar 1994*. Lublin & Marburg, 249-259.
- VILKUNA, K., 1950. Über die ogurischen und samojedischen Pfeile und Köcher. *Commentationes Fenno-Ugricae in Honorem Y.H. Toivonem. Mémoires de la Société Finno-Ougrienne* 98, 343-384.
- WEGNER, G., 1978. Ein Grab der jüngeren Hallstattzeit mit Köcher und Pfeilen aus Kleinostheim, Ldkr. Aschaffenburg. *Germania*, 56, 94-124.
- WERNER, J., 1955. Pfeilspitzen aus Silber und Bronze in germanischen Adelsgräbern der Kaiserzeit. *Historisches Jahrbuch*, 74, 38-43.
- WESKI, T., 1982. Waffen in germanischen Gräbern der älteren römischen Kaiserzeit südlich der Ostsee. *BAR International Series* 147. Oxford.
- ØRSNES, M., 1988. Ejsbøl I. Waffnopferfunde des 4.-5. Jahrh. nach Chr. *Nordiske Fortidsminder Serie B*, 11. København.

Received: 19 January 2007; Revised: 26 May 2007-

PASTABOS APIE MEDINES NYDAM PELKĖS STRĖLINES (PIETINĖ JUTLANDIJA, DANIJĄ)

Andreas Rau

Santrauka

Pietų Skandinavijos geležies amžiaus pelkių radiniai (ginkluotė, išlikusios organinės medžiagos) visada yra minimi kaip ypatingas šaltinis. Nydam pelkė pagarsėjusi gerai išlikusiais mediniais radiniais. Didžiausią atgarsį sukėlė irklinis laivas, vadinamas „Nydam laivu“, kurio būklė, išbuvus pelkėse daugelį amžių, išliko tokia gera, kad šis eksponatas laikomas pavyzdiniu pelkių sąlygomis išlikusiu radiniu.

Straipsnyje nagrinėjamos strėlinių liekanos ir strėlinės skiriamos IV amžiui. Strėlinės retkarčiais yra aprašomos kaip ankstyvojo romėniškojo laikotarpio – iki tautų kraustymosi laikų – germanų ginkluotės dalys. Lyginamosios medžiagos – dabar rastų kapų radinių ir Nydam strėlinių – pavyzdžių analizė rodo, kokia didžiulė yra karinio grobio aukų įtaka kuriant archeologines koncepcijas apie karinės srities „gyvąją kultūrą“.