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MEDIEVAL LEATHER ARM GUARDS FROM TARTU IN ESTONIA

Abstract:

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During the excavations carried out 2000 in the medieval part of Tartu, outstanding discovery took place. In a latrine pit, dated back to 1350-1550, two completely preserved, leather arm guards, were found. These objects were made out of horse skin strengthened with iron stripes, attached by rivets. Analogous arm guards as these ones found in Tartu, can be seen in the series of knightly depictions from the 14th c. gravestones from Germany, France and Italy. This, strenghten by the chronology of the latrine, indicate that these arm guards can be dated to the 30s as far as the 70s of the 14th c., though we cannot exclude their later use, even in the beginning of the 15th c.

Key words: 14th c., Tartu, arm guards, leather

Introduction

In the Middle Ages a large variety of body protection was used in Europe. Since their iron parts have been found in archaeological excavations more frequently, the essays on arms mostly discuss iron armour and mail. But various nomadic peoples of Eurasia also made body defence of leather already since the 6th c. BC, and in the following centuries these have been used in several regions of Asia, Near East, etc. (for more see: Michalak 2009, 53-57). In written sources of European countries of the 13th-14th c. leather defence coverings and their parts have been sometimes mentioned, but up to now only a few details have been found (Norman 1975; Beaby, Richardson 1997; Michalak, Wolanin 2008). However, the role of leather armour could have been larger also in medieval Europe, which could be verified by every new archaeological find.

The rescue excavations in the old part of Tartu (medieval Dorpat) in 2000, directed by archaeologist Peeter Piirits, brought to light an amazing find – from a timber-curbed cesspit (latrine) two wholly preserved leather guards for lower arm, vambraces, strengthened with rows of iron strips and rivets, were recovered[1]. On the basis of finds the latrine was dated to the period 1350-1550 (Haak, Russow 2012, Tab. 1). Their leather parts are well preserved, some damage can be observed only near elbows. Since the left arm guard was tucked into the right one, it was in somewhat better condition (Fig. 1-2). The prolonged stay in the compact latrine contents had compressed them flat[2].

The arm guards from Tartu and their manufacturing technology

The arm guards from Tartu are most likely made of thicker skin of horse's withers in the technique of *cuir bouilli* (boiled leather). Stiff objects with persistent shape are made of leather tanned with tannic substances (herbal tanning) by scalding it at 75-90° C in water trough (Covington 2006, 23-25). After drying the shape of the object will persist but leather loses its elasticity, becomes stiff and hard, while the shrinking is low owing to the saturation with tannins (Davies 2006, 97). The leather parts of the arm guards of Tartu were probably made in this way.

First the craftsman cut the blanks from tanned leather. Most likely the four slits, 15 mm long and

1 The review of the find was first published in Estonian (Mäesalu, Peets, Haiba 2008, 27-36). The present paper is an improved and elaborated version.

2 The arm guards from Tartu were conservated in the laboratories for archaeobiology and ancient technology of the Institute of History of Tallinn University. The generalizing parts of the paper were written by Ain Mäesalu, sections concerning manufacturing technology and conservation by Jüri Peets.

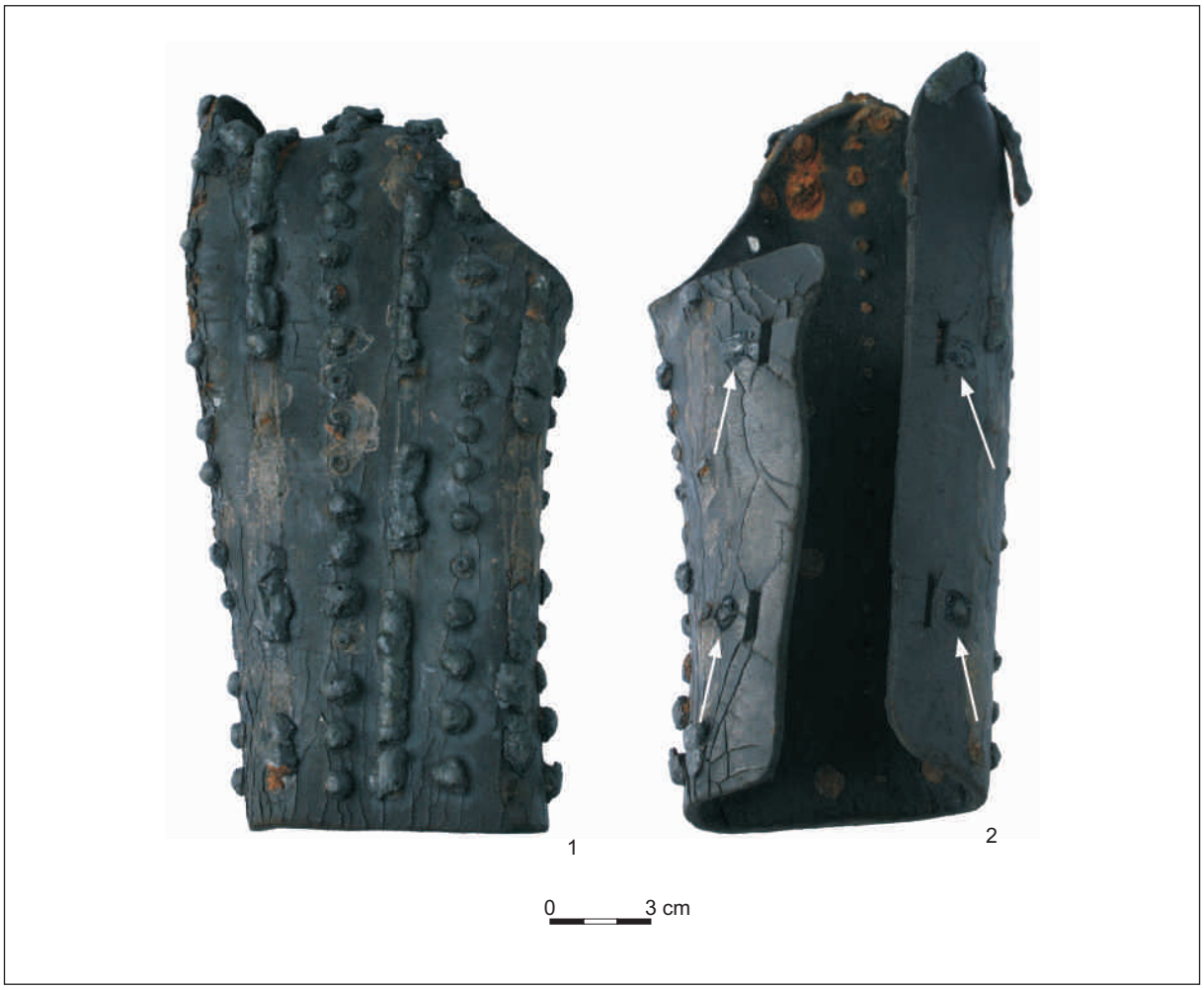

Fig. 1. Left arm guard: 1 – outside; 2 – inside. Arrows point at buckle rivets and a vestige of a buckle. *Photo by A. Haak*.

Ryc. 1. Lewe zarękawie: 1 – strona zewnętrzna; 2 – strona wewnętrzna. Strzałki wskazują miejsce mocowania sprzączek oraz nity od sprzączek. *Fot. A. Haak*.

2-3 mm wide, were then cut in each side of the blank for fastening straps (Fig. 1:2). The maximum length of each of the Tartu arm guards is 25.5 cm, maximum width 27 cm and width at the wrist 19 cm. The thickness of leather varies from 3 to 5 mm in different parts.

Then the process of *cuir bouilli* and the shaping of arm guards followed, after which they were most likely right to dry on a special last. Then metal details were riveted to the leather base – steel strips alternately with rows of rivets, and also buckles.

The four rivet rows consisted of 12-19 round-headed rivets, located at a distance of 5-6 mm from each other. The rivets, with a diameter of 7-8 mm at the base, were attached with iron sheaves. Alternately with rivet rows, five steel strips, about 2 mm thick and 7-8 mm wide, were attached to the arm guard with round-headed rivets. These, too, had iron sheaves on the inner side of the arm guard (Fig. 1:2). A steel strip was attached also to the upper (elbow) edge of the guard, fastened by the end rivets of the rivet rows and straight steel strips (Fig. 3).

Iron rivets could be observed also at the strap slits of the longer side of each arm guard. These had obviously fixed buckles and strap tags. Unfortunately no buckles were preserved. Nevertheless, an impression of a buckle can be observed on the left arm guard, roughly corresponding to the shape and size of a buckle (fig. 1:2). A small bit of a strap was also preserved.

Arm guards were most likely also treated with wax or grease (evidently repeatedly throughout the period of their use) to make them weatherproof.

The reason why completely whole arm guards were discarded will remain uncertain. One of the reasons could have been, for instance, negligence. If the arm guards had not been waxed or greased properly for some time, they could have dried out and become too stiff and unfit for use.

Fig. 2. Right arm guard: 1 – outside; 2 – inside. Leather is partly destroyed at the elbow end. Arrow points at the steel strap deformed by shrinking of leather. *Photo by R. Vissak*.

Ryc. 2. Prawe zarękawie: 1 – strona zewnętrzna; 2 – strona wewnętrzna. Skóra miejscowo zniszczona w partii łokciowej. Strzałką wskazano żelazną listwę zdeformowaną przez kurczenie się skóry. *Fot. R. Vissak*.

The place of their manufacture and, of course, the armourer who made them are not known either. As a possibility, Tartu or Tallinn, or perhaps some German Hanseatic town can be suggested, since both of these Estonian towns were members of the Hanseatic League, and the towns of the League had very close connections. The use of defensive equipment of this type in Estonia is also confirmed by written sources. For example in Tallinn arm guards for upper and lower arms, evidently made of leather (*armleder, actearmleder*), are mentioned among the defensive equipment distributed to males by town authorities in about 1360 (RGB 1929, 535). Leather arm guards have been also mentioned in written sources of medieval Prussia, sometimes even in large quantities – *134 armleder zu den brongen* (Nowakowski 1994, 65), whereas they have been imported also from Russia (*ibidem*, 74-75).

Leather arm guards in medieval works of art

Arm guards closely resembling those found in Tartu can be seen in several works of art of the 14th c., primarily on tombstones and sculptures of wealthy persons in Germany, France and Italy. In the following, the time of death of each person will be given in the brackets after his name. Although it need not be the date of completion of the sepulchral monument, we may assume that these were mostly erected without much delay. On the basis of minor peculiarities the arm guards on tombstones can be divided into three groups. For example armguards strengthened only by iron strips occur on the bas-relief on tombstones of the following persons in Germany: Gottfried von Bergheim († 1335) in Münstereifel (Gamber 1953, Fig. 41), Otto VI von Orlamünde († 1340) in the cloister in Himmelkron (Жуков, Коровкин 2005, фото 17), Gero Thietmar († 1350) in Nienburg[3],

[3] Image avalaible on: http://effigiesandbrasses.com/monuments/gero_thietmar/image/5345/original/.

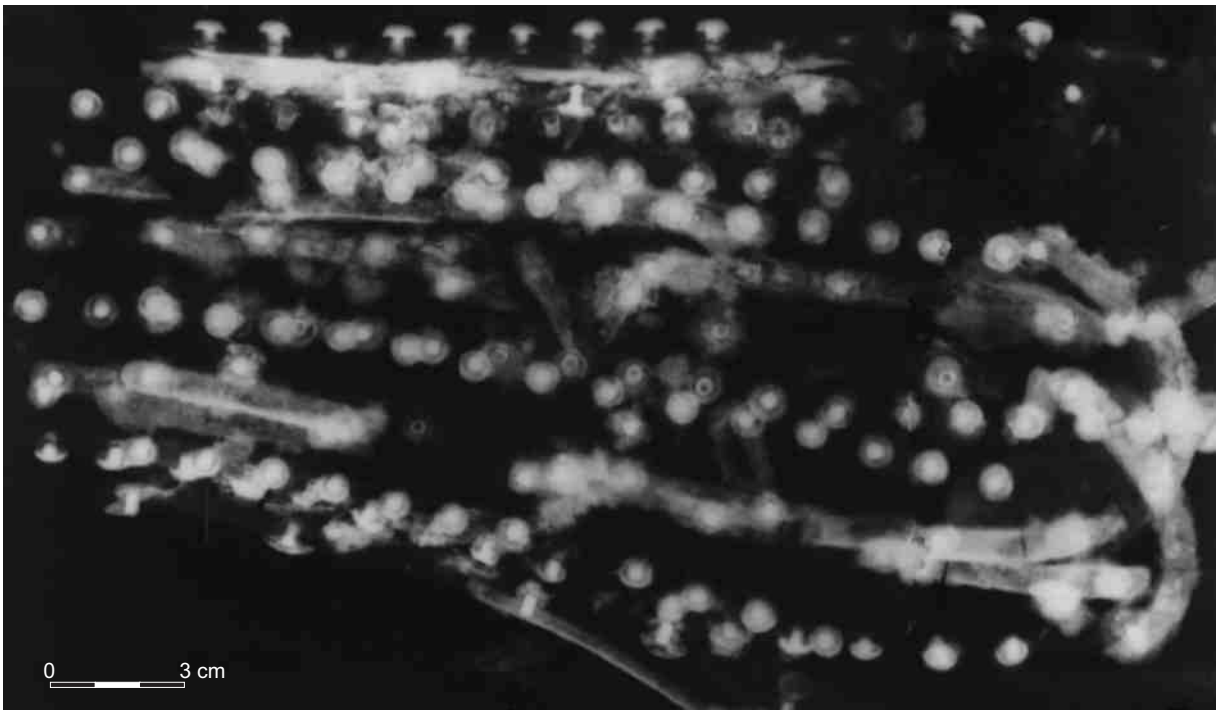

Fig. 3. X-ray photo of the packed arm guards. *Photo by A. Tvauri*.

Ryc. 3. Zdjęcie RTG złożonych ze sobą zarękawii. *Fot. A. Tvauri*.

Walter von Bopfingen († 1359) in Bopfingen (Thordeman 1939, Fig. 327; Gamber 1953, Fig. 42), and in France: Oudart de Jouy († 1333) in Jouy Abbey, Seine-et-Marne (Adhémar 1974, fig. 690) and Jean de Béville († 1351) in Paris (Adhémar 1974, Fig. 776). Arm guards of the same type are recognisable also on the bas-relief of Goliath, dating from about 1370, in the Scharnbeck church in Hannover, Germany (Thordeman 1939, fig. 329).

Arm guards having, most likely, a close row of rivets on each iron strip occur on the tombstone of Johann von Brandscheit († 1370) in Kyllburg (Жуков, Коровкин 2005, фото 2) and the bas-relief on the tomb of Burkhard von Steinberg († 1379) in Hildesheim (Thordeman 1939, Fig. 344; Gamber 1953, Fig. 51).

Arm guards most similar to those from Tartu, with alternate iron strips and river rows, occur on bas-reliefs on tombstones of some men of high social position in Germany – Günther von Schwarzburg († 1349) in Frankfurt[4], Count Adolf I von Nassau († 1350) in Eltville (Demmin 1893, 401) and Günther XXV von Schwarzburg-Blankenburg († 1368) in Arnstadt[5]. Besides, similarly strengthened arm guards occur on the tombstone of Lorenzino Acciaiuoli († 1353) in Florence (fig. 4; Жуков, Коровкин 2005, фото 73).

On the basis of the mentioned tombstones, arm guards similar to those from Tartu appeared during the period of 1335 to 1379. On the basis of other works of medieval art, also mostly tombstones, we may assume that since 1360s arm guards of sheet iron began to spread (Gamber 1953, Fig. 43-44, 46, 48-50, 52-53). Still, we must keep in mind that the mentioned tombstones depict wealthy persons who surely wore most up-to-date defensive equipment of the time. Common warriors, including townsmen, probably continued to use leather arm guards reinforced with iron strips and rivets for some time. Hence the arm guards of Tartu may date primarily from the 2nd or 3rd third of the 14th c., but the beginning of the 15th c. cannot be precluded either.

Conservation

The conservation of the arm guards of Tartu was carried out in the laboratory for geoarchaeology and ancient technology of the Institute of History of Tallinn University. Before conservation the find was X-ray-photographed (Fig. 3) and the outline

4 Image avalaible on: http://effigiesandbrasses.com/monuments/gunther_von_schwarzburg_a/image/749/original/.
5 Image avalaible on: http://www.themcs.org/armour/14th%20century%20armour.htm.

Fig. 4. The tombstone of Lorenzino Acciaiuoli († 1353) in the family chapel – Cappella di San Tobia, the church of Certosa del Galluzzo monastery in Florence (after *Boccia, Coelho 1975, cat. 58*).

Ryc. 4. Płyta nagrobna Lorenzino Acciaiuoli († 1353) z kaplicy rodzinnej – Cappella di San Tobia, kościół klasztorny Certosa del Galluzzo we Florencji (wg *Boccia, Coelho 1975, cat. 58*).

of the location of its details was drawn. Some of the iron rivets and buckles were evidently missing already before the arm guards were cast away, some probably perished gradually in the latrine. The latter have left traces of rust upon the leather of the arm guards (Fig. 1:2). To eliminate chlorides from metal and leather the find was soaked in distilled water for about six weeks, replacing water every week. The arm guards softened to some extent in water and were easily detached from each other without damage to metal details. Plant roots and traces of mould fungus spawn could be observed between arm guard details. At the elbow of the right arm guard fungous and bacterial damage could be observed, as a result of which a part of leather was destroyed (Fig. 1:1-2). The damage on the left arm guard was of a similar nature but smaller extent – leather was wholly preserved but considerably darkened and deformed.

In the damage of leather the chemical effect of the environment also played an important role. The complete rusting of iron details was evidently advanced by the high acidity of the leather. After the elimination/removal of chlorides the armour details were soaked in the solution of PEG 400 with ethanol additive during three weeks to compensate to some extent the decrease of tannin in leather. Owing to the prolonged soaking of arm guards in water and PEG solution they somewhat softened and it became possible partly to restore their original shape. Iron details were mechanically cleaned. Loose details were glued to their places with acetone glue made of acrylic polymer Paraloid B-72. Next, metal was treated with water solution of tannin with the addition of ethanol and a little ortophosphoric acid. Beeswax softened to creamy consistence in turpentine was used to cover the metal details treated with tannin solution.

Summary*

The medieval leather arm guards found in Tartu allow us to suppose that many warriors depicted on 14th c. tombstones could wear analogous parts of leather defensive equipment. On the basis of works of art, preserved primarily in Germany, we may presume that analogous arm guards were used already in 1330s. The Tartu find can be dated primarily to the 2nd and 3rd third of the 14th c., but the beginning of the 15th c. cannot be precluded either.

The discussed arm guards are now stored in the Tartu City Museum.

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ŚREDNIOWIECZNE SKÓRZANE ZARĘKAWIA Z TARTU W ESTONII

Streszczenie

W trakcie badań ratowniczych prowadzonych w 2000 r. w średniowiecznej części Tartu dokonano fantastycznego odkrycia. W datowanej na l. 1350-1550 latrynie odkryto dwa zachowane w całości skórzane zarękawia. Przedmioty te wykonane były z końskiej skóry, która najpierw została utwardzona poprzez gotowanie w wodzie zawierającej taninę, w temperaturze 75-90° C, a następnie odpowiednio uformowana i wzmocniona żelaznymi taśmami, osadzonymi za pomocą nitów. Całość uzupełniały nie zachowane sprzączki, które pozwalały na dopasowanie i zapięcie zarękawia do przedramienia.

Niestety, niemożliwe jest określenie, gdzie wykonane zostały omawiane elementy uzbrojenia ochronnego. Niewykluczone, że było to Tartu bądź Tallinn, lub któreś z innych miast hanzeatyckich, z którymi oba ośrodki utrzymywały ożywione kontakty handlowe. Na możliwość miejscowego pochodzenia tego typu zabytków wskazują źródła pisane, gdzie elementy te pojawiają się w 2. połowie XIV w.

Analogiczne ochrony przedramienia jak te odkryte w Tartu pojawiają się na szeregu przedstawień rycerskich, głównie na XIV-wiecznych płytach nagrobnych w Niemczech, Francji i Włoszech. Na tej podstawie i na bazie chronologii latryny zarękawia należy datować od ok. l. 30. po l. 70. XIV w., aczkolwiek nie można wykluczyć nieco późniejszego ich używanie – nawet w początkach XV w.

Tłumaczył Piotr Kotowicz