



# Archaeological excavations in Tarvastu, castle of the Teutonic Order

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## INTRODUCTION

In 2021 the University of Tartu carried out archaeological investigations in the ruins of the castle of Tarvastu (Germ. *Tarwast*) – a medieval stronghold of the Livonian Order – a branch of the Teutonic Order (Fig. 1). The work was initiated and ordered by Viljandi rural municipality with the aim to get more information about the history of the castle. The ruins of the castle have gradually been conserved since 2016 and they have a high potential to become a tourist site.

From archaeological and historical perspective, the main aim of the excavations was to date the origins of the castle. According to art historical estimation, the stone walls date from the 14th century (Tuulse 1942, 246). Another important task was to find out if the castle was constructed on the site of a prehistoric Estonian stronghold. This idea has repeatedly been noted and the castle area is included in the catalogue of Estonian prehistoric hill forts (Tõnnisson 2008, 279). Formerly no archaeological investigations had taken place in the castle ruins of Tarvastu. The collected finds are stored in the archaeological collection of Tartu University (Trench I TÕ 2958: 1–200, Trench II TÕ 2959: 1–336 and Trench III TÕ 2960).



**Fig. 1.** The ruins of Tarvastu castle, from the north.

**Jn 1.** Tarvastu ordulinnuse varemed, põhjast.

Photo / Foto: Heiki Valk

## WRITTEN DATA

Written data about the history of Tarvastu castle, especially on its early history is limited. According to the chronicle by Hermann von Wartberge the parish of Tarvastu with 200 ploughlands was looted and burnt by the troops of Lithuanian Grand Prince Gediminas in 1329 whereby 400 people were killed, captured or taken away (LNR 1960, 102–103). The presence of the castle at that time remains unclear. Some power centre of the Livonian Order may have existed in Tarvastu during the Estonians' uprising of 1343. According to the chronicle by Johann Renner, the leader of Livonian troops fighting against the Russians near Kirumpää in May 1343, sent letters with calling for assistance to Otepää, which had to be taken to Tarvastu

(*Terveste*) by an Estonian peasant. The letters did not reach, however, the destination in time, because ‘the peasant happened to be at beer (alternative translation: ‘meet a bear’) during the journey and remained laying thereby’ (*Averst de buhr quam underwege by behr und blef darby ligger*) (LNR 1960, 88–89). However, historian Mihkel Mäesalu (TÜ)<sup>1</sup> has suggested that the place name may be misspelled and that the real destination of the letter may have been Tartu: looking for help from remote Tarvastu (Fig. 2) seems logistically complicated, and the names of Tartu (*Tarbat(u)*, *Darpat(u)*), *Dorpt* and Tarvastu (1234 *Tarwis*, 1343 *Terveste*, 1414 *Tarvest*, 1531 *Tarveste*) sound very similar. Moreover, the bayliffs of Karksi and Saccala were already both involved in war activities at Kirumpää at that time. The castle of Tarvastu is mentioned only since 1410 – as a place where the masters of the Order have stayed (Löwis

of Menar 1922, 116). Tarvastu has been considered to be an economic castle of the Order (Tuulse 1942, 247) and the bailiff (*Vogt*) of Tarvastu was subordinated to the commander (*Komtur*) of Viljandi.

Little is known also about the later history of the castle. In 1480 Tarvastu was conquered by Russian troops. During the Livonian War (1558–1583) the castle surrendered to the Russians in 1560, but the next year it was conquered and blown up, according to Renner’s chronicle, by Lithuanian troops (Renner 1995, 148, 170). During the period of Polish rule Tarvastu was the centre of a district (*starostey*), but the Polish inventories from 1583 to 1587 note the castle as ruined (*zburzoni*) (Roslavlev 1973, 142, 184, 219, 241). The Polish inventory of 1599 also confirms that the castle was destroyed by the troops of the Lithuanian Grand Prince (Polska 1915, 17).

The only plan of the castle from the 17th century is stored in the Military Archives of Sweden (Fig. 3). The preserved remains of walls – most of the ruins were demolished in the 19th century to get material for the outbuildings of Tarvastu manor and for extending the parish church – give evidence of its exactness. However, the outer bailey, as well as the Tarvastu River south of it – a part of the defense system – are not marked on the map. Evidently, the outer bailey had fully lost its military importance by the second half of the 17th century.

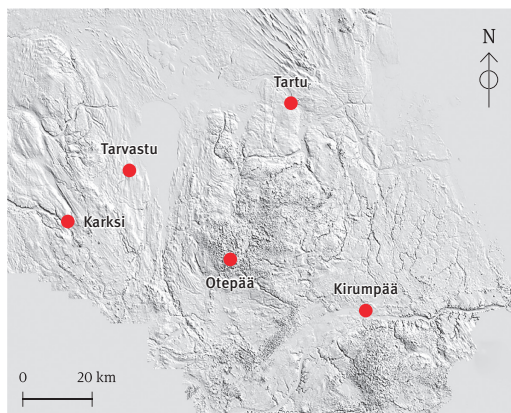


Fig. 2. Sites related to the first mentioning of Tarvastu in 1343.

Jn 2. Tarvastu 1343. aasta esmamainimisega seostuvad paigad.

Map / Aluskaart: Maa-amet



Fig. 3. Plan of Tarvastu castle from the 17th century.

Jn 3. Tarvastu linnuse plaan 17. sajandist.

(SE/KrA/0406H/28/049/001.)

Map / Kaart: The Military Archives of Sweden / Rootsi Sõjarihiiv

<sup>1</sup> Oral comment in Spring 2022.

## INVESTIGATIONS

The investigations at Tarvastu castle began in spring 2021 by choosing sites for trenches. Eight test pits made in different parts of the courtyard showed a similar result: the uppermost 25–30 cm was ordinary dark soil which contained no archaeological finds. Evidently, this fill layer was added in the 19th century when the area of the castle ruins became a part of Tarvastu manor park. Soil in most of the test pits was fully disturbed and revealed no signs of vertical stratigraphy. In two cases a cobblestone pavement appeared in the depth of ca. 35–40 cm near the castle walls.

Originally it was planned to make a trench also inside the castle building to study the bottom of the cellars, but after making a trial test pit with a small backhoe this idea was abandoned. Although it was dug in the lowest depression in the eastern wing, the backhoe could not reach the bottom of the cellar and until the depth of 2 metres all the removed ground consisted of demolition debris whereby ca. 1/3 of it were large rocks originating from the castle walls. Some pottery fragments were found only from the top soil which had, evidently, formed after exploding the castle.

In summer three trenches were made in the castle area (Fig. 4). Trench 1 was located at the northern edge of the courtyard, in the area covered with cobblestone pavement. Trench 2 was made in the north-western part of the courtyard where drilling had shown intact stratigraphy. The site for trench 3, made in the outer bailey, was indicated by traces of blacksmithing activities, reflected in the presence of slag and hammerscale.

The soil was sieved by using meshes of 6 mm eye size. The finds and features were measured with total station. Photogrammetry was used to document the trenches after digging technical layers. Both in spring and summer metal detecting was performed in the ruins, in their surroundings and in the bottom of the Tarvastu River by Aleksandr Kotkin and Aleksandr Smirnov from history club Taaler.

### TRENCH 1 AT THE CASTLE WALL

Trench 1 (5 × 5 m) was made directly at the castle wall (Fig. 5) which had preserved at the height of up to 3–4 metres. The area was covered by a layer of demolition debris – loose lime mortar, brick and roof tile fragments, and smaller stones from between bigger ones, i.e. mainly material not suitable for re-use, but also some bigger granite stones from the castle walls. The thickness of the layer stretched up to 0.8 m beside the wall. Under the demolition debris there was a

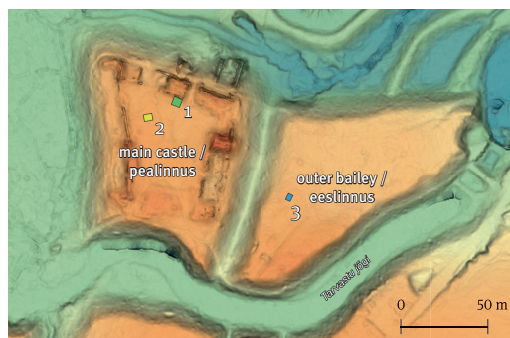


Fig. 4. Trenches of 2021 in Tarvastu castle.

Jn 4. 2021. aasta kaevandid Tarvastu linnuses.

Map / Aluskaart: Maa-amet; Trenches / Kaevandid: Ragnar Saage



Fig. 5. Trench 1 in the northern edge of the courtyard (from the south).

Jn 5. Kaevand 1 linnuseõue põhjapoolses servas (lõunast).

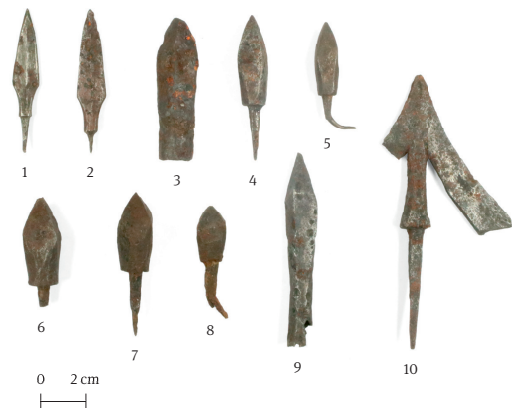
Photo / Foto: Heiki Valk



**Fig. 6.** Finds from Tarvastu castle. 1 – boot calk, 2 – ox shoe, 3 – spearhead tip, 4, 5 – bone toggles, 6, 11 – rivets, 7, 8 – buckles, 9 – crampton, 10 – decorative nail. 1–3, 6 – trench 1, 4, 5, 7–11 – trench 2.

**Jn 6.** Leide Tarvastu ordulinnuselt. 1 – kontsaraud, 2 – härjaraud, 3 – odaotsa katke, 4, 5 – vurrihuud, 6, 11 – needid, 7, 8 – pandlad, 9 – jäänael, 10 – ehisnael. 1–3, 6 – kaevand 1, 4, 5, 7–11 – kaevand 2. (TÜ 2958: 21, 59, 74; TÜ 2959: 54, 55; TÜ 2958: 151; TÜ 2959: 189, 193, 257, 89, 262.)

Photo / Foto: Heiki Valk



**Fig. 7.** Arrowheads and crossbow bolts from Tarvastu castle. 1, 2 – Russian arrowheads, 3–10 – crossbow bolts. 1–3 – trench 1, 4–10 – trench 2.

**Jn 7.** Noole- ja ammunooleotsad Tarvastu linnuselt. 1, 2 – venelaste nooleotsad, 3–10 – ammunooleotsad. 1–3 – kaevand 1, 4–10 – kaevand 2. (TÜ 2958: 123, 4, 171; TÜ 2959: 130, 163, 200, 229, 253, 208, 220.)

Photo / Foto: Heiki Valk

cultural layer with the thickness of 10–20 cm upon the cobblestone pavement with an uneven surface. The layer had formed, evidently, during the Livonian War when the pavement was not cleaned any more. Just beside the wall a patch of charcoal and soot – seemingly, traces of fire, was discovered.

The soil on the cobblestone pavement contained several finds – a boot calk (Fig. 6: 1), an ox shoe (Fig. 6: 2), a spearhead tip (Fig. 6: 3), a Russian arrowhead (Fig. 7: 2), a key fragment (: 137), a pendant (Fig. 8: 1), a glass bead (Fig. 8: 2) and a bone bead (Fig. 8: 3), a schilling of the Livonian Order from 1536 (Hermann von Brüggenny), and a Russian copper kopek of Alexey Mikhailovich (1645–1676).<sup>2</sup>

From the trench two fragments of colored stained glass – from a blue round quarrel (Fig. 9: 1) and a piece of strongly melt red glass (Fig. 9: 2) were found. These finds may originate from windows of the castle chapel. The find assemblage includes also pottery fragments from the 16th century, including 9 stoneware fragments of Köln, Raeren or Duingen origin, and a fragment of Russian whiteware.<sup>3</sup>

The cobblestones were of different size: with the average diameter of 12–15 cm, but that of the bigger items reached 20–25 cm. The pavement was not fully preserved but had partly been removed, probably during the Livonian War. The find assemblage from between the stones consisted mainly of nails, but also a Russian arrowhead (Fig. 7: 1), a crossbow bolt (Fig. 7: 3), an arrowhead fragment (: 176), a piece of osmund iron (: 191), two coins – a penny of Tartu prince-bishop Johannes VI Bey (1528–48) and a penny of Danzig from 1554 were discovered. From the trench the total of 74 nails, including 22 horseshoe nails were found.

Since Viljandi rural municipality wanted to preserve the original pavement for heritage

<sup>2</sup> Coins were identified by Ivar Leimus (AM).

<sup>3</sup> All estimations of stoneware by Erki Russow (TLÜ AT).



reasons, most of it was left *in situ* and further investigations in trench 1 were limited with an area of 1 × 1 m in its south-western corner. It appeared that the pavement was laid on a ca. 10–20 cm thick layer of yellow sand under which intact brown natural soil had preserved. The pavement was made of ob-long stones laid in vertical position. The absence of a cultural layer under the pavement was evident also in the trial trench made in spring.

### TRENCH 2 IN THE COURTYARD

Trench 2 (Figs 4, 10) was located in north-western part of the castle courtyard, in the distance of 9.5–14.5 m from the western and ca. 16–20 m from the northern wing of the castle. First, the 25–30 cm thick layer of dark soil, which contained no finds, but only some brick fragments was removed. Under it a cultural layer of brownish colour, containing a considerable amount of animal bones appeared. From the very top of the layer a schilling of Tallinn from 1561 was found. The layer of ca. 30–35 cm thickness was of even consistence, except for a heap of sandstone pieces of 5–8 cm diameter which appeared on its top in the south-western corner of the trench, stretching into it for ca. 1.5 m from the southern and for until 2.5 m from the western side. The heap contained no finds. The cultural layer was followed by light brown intact sandy soil with a transition zone between them.

Trench 2 was very rich in animal bones. Their total weight was ca. 65 kg (after drying and storing in the osteological collection) whereby their amount was the largest in the eastern edge of the trench. Especially in the lower part of the cultural layer they formed almost compact assemblages. Preliminary analysis of a sample of 1314 mammal bones from the lower part of the cultural layer indicates that almost all of them belong to domestic animals.<sup>4</sup> Judging by high fragmentation – the species of only 1/3 mammal bones could be identified –, the bones are kitchen and food remains. In the cases when the species could firmly be identified, ca. 40% of bones belong to cattle, ca. 30% to sheep/goat and ca. 30% to pig. Wild animals were represented only by seven hare bones and there were also two dog bones (cervical



**Fig. 8.** Finds from Tarvastu castle. 1 – pendant, 2–4 – beads (glass, bone), 5 – mount, 6 – dress hook, 7 – fragment of a bone jacket, 8 – centre punch head, 9 – fishing hook. 1–3 – trench 1, 4–9 – trench 2.

**Jn 8.** Esemleid Tarvastu linnuselt. 1 – ripats, 2–4 – helmed (klaas, luu), 5 – naast, 6 – rõivahaak, 7 – luust ümb-rise katke, 8 – kärna või torni (?) pea, 9 – õngekonks. 1–3 – kaevand 1, 4–9 – kaevand 2.

(TÜ 2958: 79, 105, 197; TÜ 2959: 177, 115, 188, 34, 128, 138.)

Photo / Foto: Heiki Valk



**Fig. 9.** Glass finds from Tarvastu castle. 1, 2 – stained glass fragments, 3–5 – beaker fragments.

**Jn 9.** Klaasileide Tarvastu linnuselt. 1, 2 – vitraažikillud, 3–5 – peekrite katked.

(TÜ 2958: 135, 48; TÜ 2959: 133, 236, 152.)

Photo / Foto: Heiki Valk

<sup>4</sup> Estimation by Eve Rannamäe (TÜ).

vertebrae) with cut-marks. In addition, the soil contained numerous fish bones and scales, and bird bones, including chicken, duck, goose, pigeon and black grouse<sup>5</sup> (107 items in the sample).

In the eastern profile of the trench there was a flat ca. 70 cm long and 10–15 cm thick granite stone, lying in a horizontal position – a probable threshold stone. The high concentration of bones and the presumable threshold refer to a building immediately east of the trench: the bones can be interpreted as kitchen waste. The large number of fish scales indicates preparing fish for food.

The cultural layer of trench 2 contained several finds. The most noteworthy of them are seven crossbow bolts (Fig. 7: 4–10) which can be dated to the second half of the 14th and the 15th centuries. A rare find from Estonia is a heavy bolt with a V-shaped ending and two blades (Fig. 7: 10). Such arrows may have been used for military purpose, also as ammunition in primitive fire arms,<sup>6</sup> but also for hunting.

Finds from the trench include also two bone toggles (Fig. 6: 4, 5), two iron buckles (Fig. 6: 7, 8), a crampon (Fig. 6: 9), a mount (Fig. 8: 5), a cowry shell, and two similar bone beads (Fig. 8: 4), a dress hook (Fig. 8: 6), a decorated fragment of a bone item (Fig. 8: 7), a fragment of center punch (Fig. 8: 8), a fishing hook (Fig. 8: 9), and at least 104 nails, including 44 horse-shoe nails and a nail with a decorative head (Fig. 6: 10). Two forge slag cakes (: 139, 153) and some slag pieces refer to blacksmithing in the vicinity.

From trench 2 also 134 sherds of wheel-thrown vessels, including 18 redware and 17 stoneware fragments were found. The bottom of the layer – disturbed sand mixed with original brown soil yielded also a few presumably Late Iron Age sherds which are, however, insufficient to indicate a prehistoric settlement site or a hill fort. Stoneware fragments from different depths originate from Siegburg and Raeren vessels and can be dated to the 15th and/or first half of the 16th century. The latest find is a sherd from Raeren (: 44) from the late 15th or early 16th century from the top layer, the oldest – a sherd of Waldenburg from the 15th century.

From trench 2 also twelve fragments of glass beakers of thin semi-transparent colorless glass were found (Fig. 9: 3–5) from all technical layers. One of them was decorated with a white, another with a blue glass thread and there was also a bottom fragment.

Indications about the date of the cultural layers were also provided by coin finds. The earliest, found from the layer with numerous animal bones, is an artig of Tallinn from 1385–1395, and three *lübische* pennies from 1400 to 1420 originate from the upper part of the layer with numerous bone finds. The fact that two coins from the late 15th century were found from the same depth, indicates disturbance of soil, possibly caused by walking or tramping on sandy ground. A radiocarbon date from a bone from the bottom of the trench gave the result 405±30 BP, calibrated with 95.4% probability 1436–1521 (77.6%) or 1580–1624 AD (17.8%).<sup>7</sup> Another sample from the same context resulted in 380±30 BP, calibrated with 95.4% probability 1447–1525 (59.1%) or 1558–1632 AD (36.3%).<sup>8</sup> Judging by these finds the layer of food remains started to form not earlier than in the second quarter of the 15th century. The earliest coin might have been lost, however, before the time when the kitchen- and food-related activities started in the area. Unexpectedly, also a coin from the period of the Livonian War – a Moscovian *denga* of Ivan IV from 1535–1538 – was found from the bottom of the cultural layer.

<sup>5</sup> Identified by Freydis Ehrlich (TÜ).

<sup>6</sup> Information of crossbow bolts from Ain Mäesalu.

<sup>7</sup> Poz-148927, with 68.3% probability 1444–1494 (63.6%) or 1603–1609 AD (4.7%). Isotope values: 1.9‰N 7.5‰C, 4.8‰ coll.

<sup>8</sup> Poz-148926, with 68.3% probability 1455–1510 (48.2%) or 1593–1619 AD (20.1%); (36.3%). Isotope values: 2.7‰N 9.3‰C, 3.2‰ coll.

This find results, evidently, from some later disturbance (by rats or moles?), referring also to the former presence of 16th century layers.

The lack of bigger brick fragments indicates that the presumed kitchen building near the trench was made of wood. Fifty fragments of window glass from different parts of the trench and a big rivet (Fig. 6: 11) might relate to this building, but they also may originate from the stone buildings of the castle, being cast there as a result of an explosion. In addition, also three fragments of stove tiles, one of them with light green, another with yellowish-white glaze were found. These finds should originate from the representation rooms of the castle.

## Burials

From the bottom of trench 2 three human skeletons, laying in one row, in grave pits which cut the cultural layer, were discovered unexpectedly (Fig. 10). All burials were unfurnished and had their heads oriented towards the west. The fact that the grave pits were dug through the medieval cultural layer makes it possible to relate the unfurnished graves to the Early Modern Times.

Burial 1 was a woman aged 17–25.<sup>9</sup> The back part of her skull was broken by a lethal strike from a bladed weapon. Burial 2 was a 5–6-year-old infant whose bones were partly disturbed. Burial 3, an adult woman, aged 30–40, lay in a deeper grave. She had been buried in a coffin, as indicated by five iron nails at the edges of the grave pit. The head part of her grave had cut an earlier pit with the diameter of 0.7–0.8 metres – a presumable post hole which stretched until the depth of 0.8–0.9 m from the present-day ground level. From the western profile of the trench the foot and ankle bones of one more burial (no. 4), with approximately the same direction as the others came to light. The fact that the bottom of the grave pit was only in the depth of ca. 25 cm from the top of the cultural layer with animal bones also shows that the upper part of the cultural layer has been removed when preparing the area for the manor park. During the post-excavation work from among the animal bones, also the remains of a new-born baby and some other human bone fragments were discovered.



**Fig. 10.** Trench 2 with burials and supposed threshold stone in the profile.

**Jn 10.** Kaevand 2 luustikega ja oletatava lävekiviga profiilis.

*Photo / Foto: Heiki Valk*

## TRENCH 3 – A SMITHY IN THE OUTER BAILEY

### The site and methods

A smithy site was discovered during the field inventory in spring when metal detecting revealed a large hearth bottom. Soil sampling from the surroundings showed the presence of *hammerscale*<sup>10</sup> which indicates blacksmithing. After this, the exact location of the trench (Fig. 11) was determined by digging more test pits in the region. The test pit with the highest concentration of *hammerscale* was left at the centre of the trench which measured 4 × 3 m.

<sup>9</sup> Age estimations and analysis of bones by Martin Malve (TÜ).

<sup>10</sup> *Hammerscale* is iron oxide, which forms as a thin crust on the iron when it is being heated in the forge. As it is brittle, it falls off when iron is being worked on the anvil and thus it is an important marker of iron working.

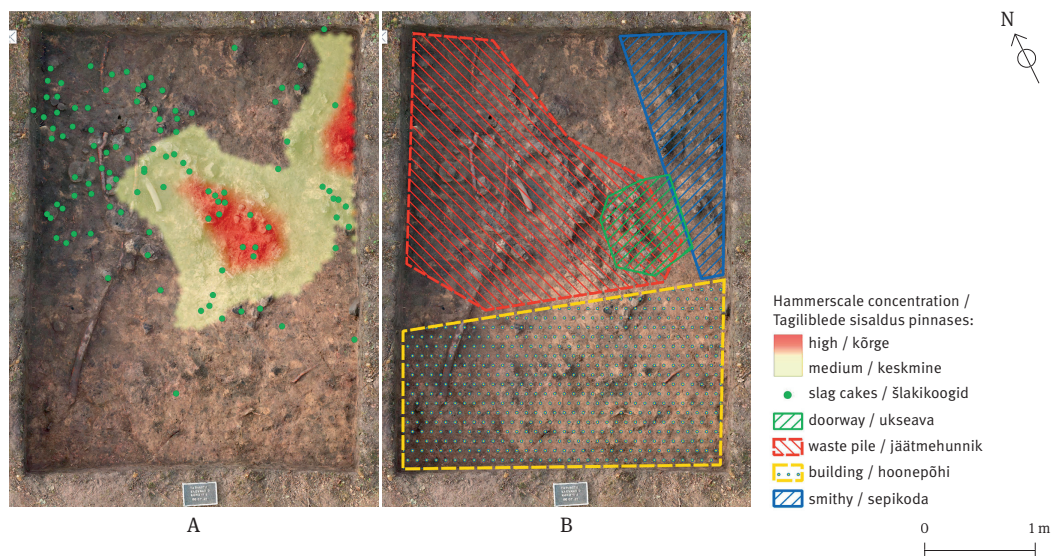


**Fig. 11.** Trench 3 from the south at the depth of the most numerous slag cakes and other finds.

**Jn 11.** Kaevand 3 sügavusel, kus esines kõige enam šlakki ja sepikojaga seotud leide, lõunast.

Photo / Foto: Sandra Sammler

The smithy was excavated with technical layers (either 5 or 10 cm thick, depending on the depth). The systematic sampling of soil proved to be very valuable in determining the location on the smithy. In total 64 soil samples were collected from two separate depths, which revealed the spread of hammerscale in the trench. Hammerscale was extracted from the soil samples with a magnet. Then the hammerscale and soil were weighed separately and the percentage of hammerscale in the sampled soil was calculated. The results were visualized in the QGIS software using the TIN interpolation tool (Fig. 12).



**Fig. 12.** Metalworking waste (A) and its interpretation (B) from trench 3.

**Jn 12.** Metallitööstusjäätmed (A) ja nende tõlgendus (B) kaevandist 3.

Figure / Joonis: Kristo Oks & Ragnar Saage

Base map: orthophoto from the 3D model / Aluskaart: ortofoto 3D mudelist

## Finds and metalworking waste

The most numerous find category was smithing slag – in total 154 kg; it was present in every technical layer. On the average, 12.8 kg slag was gained per sq. metre. In the top 20 cm the slag fragments were small, but deeper their amount and dimensions increased. Slag pieces weighing more than 200 grams were collected and measured with a total station, others were weighed and disposed of afterwards. The slag was concentrated in the northwestern part of the trench and formed a pile of waste there (Fig. 12). From the northern part of the trench seven finds of clay with burnt or melted surface were also found. Three clay pieces had been exposed to intense heat that vitrified their surface. These finds are fragments of a forge



wall. Two other clay finds are possibly fragments of clay tuyeres: their clay was porous and swollen and the finds were semi-circular whereas in both cases the traces of air ducts were visible.

From the excavated 12 m<sup>2</sup> many iron objects were found, among them iron lumps, wrought iron bars, finished and semi-finished products, knife blades, 588 nails (including 548 horseshoe nails), two rivet fragments and a lot of iron scrap. The number of horseshoe nails indicates that shoeing of horses took place near the smithy.

In order to determine the properties of the iron, eight objects were chosen for metallographic analysis.<sup>11</sup> Among them were two osmund iron bars (Fig. 13: 3, 4), two wrought iron bars (Fig. 13: 5, 8), two semi-finished products (Fig. 13: 6, 7) and two iron pieces of irregular shape (: 52 and 56). The cross sections from the iron bars no. 3 and 108 revealed a porous slag-rich surface which had not been hammered. Both samples revealed a variable carbon content (with hardness respectively 126–208 HV and 155–267 HV). From the microstructures of all samples small iron pockets were found (Oks 2022). These pockets have been characteristic to all the recently discovered Swedish osmund iron pieces found in Estonia. Finds no. 81 and 94 were etched with Klemm's II reagent to investigate their phosphorus content. Nital etching had previously exposed ghost structures in the cross-sections of finds no. 81 and 94 that indicate a high phosphorus content in iron. Klemm's II reagent confirmed the phosphorous areas. Using an equation proposed by Thiele and Hošek (2015) the phosphorus content of the sample no. 81 was ranging from 0.5% to 1.7% (Oks 2022).

Non-ferrous metalworking was also practiced in the Tarvastu smithy. This was indicated by 14 finds of copper alloy, mostly sheet metal, but also one drop, and a crucible fragment. All finds were analyzed with portable X-ray fluorescence spectrometer. Analysis showed that the copper alloy used in the smithy was mostly impure copper, with only two pieces of gun-metal. Lead and copper residues in the crucible indicate that it was used to melt and cast either lead-rich copper or lead and copper separately.

In addition to the finds related to metalworking, there were a few fragments of wheel-thrown pottery and three fragments of Siegburg stoneware (type Siegb3b, ca. 1350–1550; Russow 2006). These pottery fragments, along with a modest number of animal bones were found from the southern half of the trench from an area which lacked hammerscale and slag.

The location of the hammerscale distribution pattern indicates that the smithy was located partly in the eastern part of the trench. The largest slag concentration was in the



**Fig. 13.** Iron finds from Tarvastu castle: osmund iron from the moat (1–2) and from the smithy (3–4), 5–8 – iron bars from the smithy.

**Jn 13.** *Raualeide Tarvastu linnuselt: osmundiraud valli-kraavist (1–2) ja sepikojast (3–4), 5–8 – raudkangid sepikojast.*

(TÜ 2950: 161, 193, TÜ 2950: 3, 108, 81, 94, 2, 51.)

*Photo / Foto: Ragnar Saage*

<sup>11</sup> The objects were cut with a precision saw, mounted in phenolic thermoset resin, grinded with diamond suspensions (45, 9, 3 and 1 µm), polished with aluminium oxide and colloidal silica paste, and etched in a 3% nital solution for 6 seconds. The samples were examined with an optical metallographic microscope (Oks 2022).

north-western part of the trench, which was probably the slag disposal heap just outside the smithy door. This kind of behavior by the smiths was also documented at the 14th–17th century smithy in Käku on the island of Saaremaa (Peets *et al.* 2013). The door was probably in the area where the hammerscale overlaps with the slag heap, where it was carried by the smiths' boots moving back-and-forth through the smithy door. Something was blocking the hammerscale and slag from reaching the southern part of the trench. This was most likely a wall or another building.

The cultural layer of the smithy lay on a ca. 1-metre-thick layer of disturbed loam which contained a few charcoal particles, as shown by a test pit made in the north-western corner of the trench. Most likely, the soil originates from the moat which had been dug between the main castle and the outer bailey.

### METAL DETECTING FINDS

Metal detecting on the slopes and in the vicinity of the castle, including the bottom of the moat also yielded several finds<sup>12</sup> which partly may have been thrown out of the castle windows. The finds include several coins from the 15th to the 17th centuries (Table), an arrowhead (Fig. 14: 1), two osmund iron bars (Fig. 13: 1, 2), a decorative pin with a twisted body (Fig. 14: 2), a pin from a late medieval penannular brooch (Fig. 14: 3), a heart-shaped pendant from a horse harness (Fig. 14: 4), a fragment of an Orthodox cross (Fig. 14: 5), a signet ring with a bird image (Fig. 14: 6), two closed rings – a simple item (: 88) and one with a groove (: 79),



**Fig. 14.** Finds from the slopes and the vicinity of Tarvastu castle. 1 – arrowhead, 2 – decorative pin, 3 – pin of a penannular brooch, 4 – pendant, 5 – fragment of an Orthodox cross, 6 – signet ring, 7–9 – spindle whorls (?), 10 – lock shield, 11 – brooch (?), 12 – pendant. 1–8, 10–12 – from the hill fort slopes and outer bailey, 9 – settlement site.

**Jn 14.** Leide Tarvastu linnuse nõlvadelt ja eeslinnusest. 1 – nooleots, 2 – ehtenõel, 3 – hoburaudsõle nõel, 4 – ripats, 5 – kaelaristi katke, 6 – pitsatsõrmus, 7–9 – värtakedrad (?), 10 – lukukilp, 11 – sõlg (?), 12 – ripats. 1–8, 10–12 – linnuse nõlvadelt ja eeslinnusest, 9 – asulakohast.

(TÜ 2950: 3, 39, 37, 86, 164, 129, 79, 33; TÜ 2966: 7; TÜ 2950: 49, 100, 165.)

Photo / Foto: Heiki Valk

<sup>12</sup> TÜ 2950: 1–195. Investigations by Aleksandr Kotkin, Sergei Smirnov and Igor Tsakuhhin.

two lead alloy discettes with a penetrating hole, probably spinning whorls (Fig. 14: 7, 8), a tiny lock with beast images from a Russian purse (Fig. 14: 10), a supposed penannular brooch of iron (Fig. 14: 11), a round pendant (Fig. 14: 12) that has parallels from the churchyard of Tarvastu (ÕES 1861b: 88–106), and several boot calks (: 1, 35, 38, 45, 141, 144). The finds of two gun barrel fragments are of octangular section. One of them (inner diameter ca. 23 mm; wall thickness 14–16 mm) is 21 cm long (Fig. 15: 7), the other, a smaller fragment (TÜ 2810: 166) has a 24–26 mm thick wall.

Near the river also an axe with a triangular eye section (Fig. 15: 1) was found. A most noteworthy find was a small anvil (Fig. 15: 2). Metal detector finds from the castle slopes and the moat include also a lock body (Fig. 15: 3), a lock (Fig. 15: 4), over fifty small lead bullets, a bigger lead bullet with a 33 mm diameter (Fig. 15: 5), a broken cast iron bullet (Fig. 15: 6), and a D-shaped iron buckle (: 153). From the castle hill slopes also several fragments of 15th–16th centuries' pottery were found.

Metal detecting of the settlement site provided a fragment of a round gun barrel (Fig. 15: 8; inner diameter 10 mm, wall thickness 9 mm), 10 small (diam. 10–13 mm) and five bigger (diam. 19–25 mm) lead bullets, and one bigger (32 mm diameter) item (: 10), as well as a probable lead alloy spinning whorl fragment (Fig. 14: 9), a simple closed ring (: 2), and a schilling of Riga Free Town from 1575 (: 1). The result was poor because of former repeated looting of the site by illegal metal detectorists.<sup>13</sup>



**Fig. 15.** Finds from the slopes and the vicinity of Tarvastu castle. 1 – axe, 2 – anvil, 3 – body of a padlock, 4 – lock, 5, 6 – bullets (cast iron and lead alloy), 7, 8 – fragments of firearm barrels. 1 – by the river, 2–7 – from the castle slopes, 8 – from the settlement site.

**Jn 15.** Leide Tarvastu linnuse nõlvadelt ja lähedusest. 1 – kirves, 2 – alasi, 3 – luku korpus, 4 – lukk, 5, 6 – kuulid (malmist ja pliisulamist), 7, 8 – tulirelvatoru katked. 1 – jõe lähedusest, 2–7 – linnuse nõlvadelt, 8 – asulakohast. (TÜ 2950: 192, 44, 180, 13, 185, 184, 94; TÜ 2966: 5.)

Photo / Foto: Heiki Valk

<sup>13</sup> Information from local inhabitants and the landowner.

**Table.** Coins found during the excavations and detector investigations.**Tabel.** Kaevamistel ja detektoriga otsinguil leitud mündid.

Compiled by / Koostanud: Heiki Valk

No. / Nr	Items / Münste	Issued by / Müntija	Denomination / Vääring	Location / Asukoht
<b>MEDIEVAL, Before the monetary reform of 1420s</b>				
1	1	Livonian Order, Tallinn, ca. 1385–1395	artig	trench 2
2	1	Tartu BR, ca. 1400–1420	lübische	trench 2
3	1	Livonian Order, Tallinn, ca. 1400–1420	lübische	trench 2
4	1	Livonian Order, Tallinn, ca. 1400–1420	lübische, fake	trench 2
<b>MEDIEVAL, After the monetary reform of 1420s</b>				
5	1	Livonian Order, Tallinn, ca. 1480–1505	penny	trench 2
6	1	Tartu BR, Johannes II Bertkow, 1473–1485	penny	trench 2
7	1	Lithuania, Grand Duke Alexander, ca. 1495–1503	1/2 grosch	detector
8	1	Livonian Order, Wenden, Wolther von Plettenberg, ca. 1494–1505	schilling	detector
9	1	Tartu BR, Johannes VI Bey, 1528–1543 (1530s)	schilling	trench 1
10	1	Livonian Order, Tallinn, ca. 1526–1531?	penny	detector
11	1	Livonian Order, Riga, Wolther von Plettenberg, 1535	schilling	detector
12	1	Livonian Order, Riga, Hermann von Brüggenei, 1536?	schilling	trench 1
13	1	Danzig, 1554	penny	trench 1
14	1	Livonian Order, Tallinn, Gotthard Kettler, 1561	schilling	trench 2
<b>LIVONIAN WAR (1558–1583) AND LATER</b>				
15–17	3	Russia, Ivan IV, Moscow, 1535–1547	denga	detector
18	1	Russia, Ivan IV, Moscow, ca. 1535–1538	denga	trench 1
19	1	Russia, Ivan IV, Pskov, since 1547	denga	detector
20–21	2	Russia, Ivan IV (?), Novgorod	denga	detector
22–25	4	Riga free town, 1562, 1566–72, 1577, 1575	schilling	trench 1 (1); detector (2); settlement (1)
26	1	Sweden, Tallinn, Eric XIV, 1568	schilling	detector
27	1	Sweden, Eric XIV, 1560–1568	1/2 öre	detector
28–29	2	Sweden, Tallinn, Johan III, ca. 1572–1585	schilling	detector
30	1	Russia, Aleksei Mikhailovich, 1645–1676	kopek	trench 1

## DISCUSSION

The finds and findings give evidence of different functions of the different areas of the castle.

Trench 1 represents the edge of the courtyard directly beside the main corpus of the stone buildings. Due to the cobblestone pavement the finds remain limited mainly with those from the final stage of the castle in the middle of the 16th century when no attention was paid to upkeep and cultural layers started depositing on the pavement during the Livonian War.

Finds from trench 2 with very high concentration of animal and fish bones indicate kitchen- and food-related activities. The area can be interpreted as a kitchen ‘backyard’ whereby also a possible open air field canteen for the castle staff cannot be excluded. The kitchen has started to function, judging by coin finds, stoneware and radiocarbon dates in the second quarter of the 15th century. It can be observed until the turn of the 15th and 16th centuries: later deposits have been removed when preparing ground for the manor park. It seems likely that sand has regularly been added to the area to avoid getting muddy in wet seasons. The finds of glass beaker sherds from different parts and depths of the trench show that the



kitchen or canteen area was used by representatives of higher social strata. The fact that redware fragments were gained only from the top layers, gives evidence of rather intact stratigraphy. The high number of 15th century finds, when compared with trench 1, is, evidently, caused by the absence of cobblestone pavement, the cleaning of which would have hindered the formation of cultural layers.

The character of finds from the smithy trench (trench 3) greatly differs from that of other trenches. In addition to huge amount of slag, mainly iron artefacts, predominantly horseshoe nails were found, but the number of finds indicating consumption of food, like pottery and animal bones, was most limited. The peculiarities of the smithy site are expressed also by the number of horseshoe nails per square metre which was 0.88 in trench 1, 2.2 in trench 2 and 45.67 in trench 3.

The smithy was located by the main road leading to the castle gates. Its position outside the high castle could mean several things: it could have been a measure to diminish fire hazard or to reduce the noise from hammering. The smiths could have also been outside the castle because of their non-German status. However, the large number of horseshoe nails show that they were a part of the castle infrastructure, literally keeping the Teutonic war machine moving. The occurrence of Swedish osmund iron both as iron bars and semi-finished artefacts, indicate that the Teutonic order was connected to the iron trade across the Baltic Sea. Osmund pieces have also been found in the rural village of Põrga (Saage 2020, 44), which is only 17 km away. It is unclear how exactly the iron trade took place, but the Teutonic order could have acted as the mediator between the urban merchants and the rural smiths.

The fact that some pieces of forge slag and slag cakes were found also from other trenches indicates that blacksmithing activities took place in different parts of the castle, because secondary re-allocation of blacksmithing waste to far-away distances does not seem likely.

The excavations gave some indirect information also about buildings in the castle. The stone buildings had tiled roofs and glass lattice windows with lead comes whereby also a few fragments of stained glass, maybe from the chapel in the northern wing were found. The dispersed presence of simple window glass fragments from different parts of trench 2 from different depths makes it possible to suggest glass windows also for the kitchen during the whole period of its functioning. Glass fragments from the smithy site also refer to glass windows. Neither the kitchen nor the smithy seems to have had a tiled roof.

The artefacts do not give much information about the ethnic affinity of people in the castle. A penannular brooch pin and a cowry shell – finds typical for rural sites might indicate native Estonian population. Female presence is shown by a cowry shell and a round pendant. Distinct Russian presence during the Livonian war is shown by eight coin finds (27.6% of their total number), an Orthodox cross fragment, two Russian arrowheads, a lock fragment with beast images, some fragments of whiteware and probably also a large part of 16th century wheel-thrown pottery.

Burials from trench 2 from the Early Modern Times indicate a burial site with regular planning. The presence of a cemetery in the castle courtyard has no explanation. Traces of violence on the female skeleton refer to war activities, but the regular location of graves in a row makes the cemetery different from the 16th century mass grave discovered in front of Vastseliina castle (Malve *et al.* 2018). There is no information whether the people were inhabitants of the castle or war refugees from the vicinity. It also remains unclear why the dead were not buried in the churchyard, located only at the distance of ca. 1 km, as the crow flies, but in the ruins of a deserted castle. Information about their ethnic affinity might be provided by ancient DNA studies.

## CONCLUSIONS

The investigation results show that the relief in the courtyard of Tarvastu castle has greatly been changed in preparing ground for the manor park – the ground was levelled and the cultural layer was greatly disturbed and partly removed, and a layer of top soil was added for greening.

Excavations revealed no traces of a pre-crusade Estonian hill fort, but shed light upon the chronology of the site, especially its early phase not reflected in written data. There is no archaeological evidence about medieval activities in the castle area before the second half of the 14th century. The earliest find – a coin possibly from 1385–1395, represents the initial phase of the castle.

As special findings, an area with abundant kitchen waste in the main castle courtyard and a smithy site in the outer bailey must be outlined. The find assemblage as a whole reflects different aspects of everyday life in the medieval castle.

Trenches 1 and 2 in the main castle represent different time periods – respectively, the 16th century, especially its middle part, and the 15th century. The chronology of the smithy remains, due to the low number of datable finds, unclear and the structure may date, judging by stoneware, from ca. 1350 until 1550 AD. Iron finds from the castle show that osmund iron, imported from Sweden, was used for blacksmithing.

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## ARHEOLOOGILISED KAEVAMISED TARVASTU ORDULINNUSES

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Tarvastu ordulinnuse varemets (jn 1, 3) toimusid 2021. aasta suvel Viljandi valla algatusel ja tellimisel arheoloogilised probleemkaevamised, et saada uusi teadmisi linnuse, eriti selle varasema ajaloo kohta. Kirjalikes allikates esmakordselt 1410. aastal mainitud linnuse rajamisaeg oli teadmata. Selle asukohas on varasemalt oletatud eestlaste muinaslinnust.

Kevadiste eeluuringute käigus tuvastati, et mõisapargi rajamisel on pealinnuse õuealale toodud 25–30 cm paksune haljastusmulla kiht ning enamasti on tegemist täies ulatuses segatud pinnasega. Plaanist teha üks kaevand linnuse keldripõhja uurimiseks tuli loobuda, sest väikse kopaga idatiiva sügavaimasse kohta kaevatud prooviaugus jätkus keldrit täitev kiviruru kuni masina tööulatuse piirini 2 m sügavusel. Linnusekünga nõlvu ja ümbrust ning eeslinnuse ala kontrolliti metallidetektoriga.

Suvel tehti linnusesse kolm kaevandit – kaks pea- ja üks eeslinnusesse (jn 4). Esimene, 5 × 5 m mõõtmetega kaevand (jn 5) rajati õue põhjapoolsesse serva, linnusehoone müüri äärde. Ülemise pinnaseladestuse moodustas kuni 90 cm paksune peamiselt mõrdipurust, tellisetükkidest ja vuukide täitekiividest varingukiht, milles leidis ka suuremaid maakive. Sellele järgnenud 10–15 cm paksune kultuurkiht sisaldas mitmeid 16. sajandi leide ja oli sügavamal asuval 10–15 cm, vahel ka kuni 20–25 cm läbimõõduga muna-kividest sillutisele tekkinud tõenäoliselt Liivimaa sõja ajal. Kaevandist leiti kontsaraud (jn 6: 1), härjaraud (jn 6: 2), murdunud odaotsa tükk (jn 6: 3), kaks vene-laste nooleotsa (jn 7: 1–2), ammunooleots (jn 7: 3), ripats (jn 8: 1), kaks helmest (jn 8: 2–3), mõned rauast õmblusnõelad ja kolm 1540.–1560. aastate münti. Leide saadi ka osalt lõhutud munakivisillutise kivide vahelt. Pinnases leidis aknaklaaside, sh värviliste vitraažide (jn 9: 1–2) ja akende tinaraamide katkeid ning rohkelt naelu, sh kabjanaelu.

Tellijä soovil säilitati enamik sillutist algses asendis, et seda eksponeerida ning kive võeti üles vaid kaevandi edelanurgas 1 m<sup>2</sup> suuruse alal. Sillutis oli tehtud valdavalt piklikest, 10–20 cm paksuse kollase liiva kihile püstiasendis laotud maakividest. Kultuurkihti selle all ei olnud – liivapadjandi all leidis vaid algset pruuni looduslikku mulda. Sama ilmnes ka kevadel läbi sillutise kaevatud väikeses prooviaugus. Kuna kevadel ei leitud sillutist ühestki õueala keskossa tehtud šurfist, võib arvata, et linnuseõue oli sillutatud eeskätt ümbritsevate hoonete ääres.

Teine kaevand (4 × 5 m) tehti linnuseõue loodeossa (jn 4; 10). Haljastuspinnasele järgnes 30–35 cm pak-

sune pruunikas liivane kultuurkiht, mis sisaldas väga rohkelt looma- ning vähemal määral kala- ja linnuluid – kokku ligi 65 kg (pärast kuivatamist). Erinevate koduloomade luid leidis kõige enam, kohati lausa kompaktsed lasudena, kaevandi idaotsas, mille profiilis paljandus horisontaalne, ligi 70 cm pikkune ja 12–14 cm paksune oletatav lapik lävekivi (jn 10, vasa-kul). Võib arvata, et hoone, millega luud seonduvad, külgnes vahetult kaevandiga ning et tegemist on uksest või ka akendest välja visatud toidu- või köögi-jäätmetega. Kuna pinnas sisaldas rohkelt kalasoo-museid, võidi piirkonnas mitte ainult süüa, vaid ka toitu valmistada. Kahest alumise korrise loomaluust tehtud radiosüsinikudateeringute ajaliseks alampiiriks on aastad 1436 ja 1447. Kultuurkihist saadi seitse münti, millest vanim on ajavahemikust 1385–1395. Tõenäoliselt ei olnud elutegevus kaevandi piirkonnas linnuse algusaegadel kuigi intensiivne ning söögima-jandusega seonduv kultuurkiht moodustus alates 15. sajandi teisest veerandist.

Luudega kihist leiti seitse ammunooleotsa (jn 7: 4–10), sealhulgas Eestis haruldane suur kahe kidaga nooleotsik (jn 7: 10), kaks vurriluid (jn 6: 4, 5), kaksik-peaga neet (jn 6: 6), pandlaid (jn 6: 7, 8), jäänael (jn 6: 9), luust palvehelmes (jn 8: 4), kaurikarp, naast (jn 8: 5), rõivahaak (jn 8: 6), kaunistustega luust ümbrise katke (jn 8: 7), kärna või torni pea (jn 8: 8) ja õnge-konks (jn 8: 9). Arvukate naelte seas oli kabjanaelu ja ehispeaga nael (jn 6: 10). Pinnas sisaldas ka savinõu-kilde, veidi 15.–16. sajandi kiveraamikast ning klaas-peekrite katkeid (jn 9: 3–5). Alumisest korrisest pärinevad mõned nähtavasti muinasaja lõpu savinõude killud, kuid neid on liiga vähe, et kõnelda muinas-linnuse või -asula kultuurkihist. Kaevandis puudusid 16. sajandi kultuurkihi ladestused, kuid ilmselt leidis neid enne pargi rajamisega seotud suuri mullatõid – sellele viitavad kohe haljastusmulla alt leitud 1561. a killing ja sügavamalt saadud Ivan IV denga.

Kaevandi põhjast leiti kolm ühes reas paiknevat panusteta, peaga lääne poole suunatud luustikku – kaks naist ja 3,5–5,5 aastane laps (jn 10). Noorema, 17–25 aasta vanuse naise oli tapnud terariista löök kuklasse. Vanem, 30–40 aastane naine oli maetud kirstus. Tema haua peatsi piirkonnas oli varasem, 70–80 cm läbimõõduga postiauk. Ühe maetu jala-luude otsad paljandusid ka kaevandi lääneseinas ning segatud luude ülevaatamisel leiti ühe imiku luud ja üksikuid täiskasvanute luutükke. Et hauad olid kaevatud läbi loomaluudega kultuurkihi, pärinevad matused ilmselt varauusajast – kas Liivimaa sõja või

Põhjasõja ajast. Jääb selgusetuks, miks ja millal maeti surnuid linnuseõue, sest Tarvastu kihelkonnakirik asub linnulennul vaid kilomeetri kaugusel.

Kolmanda, eeslinnusele tehtud  $4 \times 3$  m mõõtme- tega kaevandi (jn 11) asukohta määrasid kevadistel detektoriuuringutel leitud šlakikook ja sepatööle viitavate tagiliblede suur kontsentratsioon. Kultuurkiht oli ligi 30 cm paksune ning sisaldas rohkelt rauašlakki (kokku ligi 154 kg) ja -jäätmepõli, naelu (588 naela, sh 548 kabjanaela) ning raudesemetepõli toorikuid. Šlaki ja tagiliblede leviku põhjal võis kaevandis eristada kolme piirkonda (jn 12): idaosa jäi oletatavasti sepi- koja sisemusse, lääneosas oli jäätme- ja lõuna- osas metallitõõga mitte seotud hoone. Leiti ka toor- raua kange ning savist äärisepõli ja õhutussõõrde- tükk. Kaheksa raudeseme või rauatooriku metallo- graafiline analüüs näitab, et toormaterjaliks kasutati Rootsist toodetud osmundirauda (jn 13). Tarvastu sepi- koja valmistati ka vasesulamist esemeid. Erinevalt pealinnuse õue kaevanditest ei olnud sepi- koja kaevandis peaaegu üldse loomali- kide ega savinõukilde. Vähesed kive- raamikakillud kuuluvad ajavahemikku u 1350–1550. Kultuurikihi all paiknes ligi meetrine kiht segatud saviliiva, mis võiks pärineda eeslinnuse ja pealinnuse vahelise vallikraavi kaevamisest.

Detektoriuuringutel saadi leida ka linnusekünga nõlvadelt, vallikraavist ja linnuse ümbrusest, samuti

linnusest põhja pool olevast asulakohast (jn 14, 15). Leiti 17 16. sajandi münti, (neist vaid 1 asulakohalt), nooleots (jn 14: 1), ehtenõel (jn 14: 2), hoburaudsõle nõel (jn 14: 3), ripats (jn 14: 4), õigeusu kaelaristi katke (jn 14: 5), pitsatsõrmus (jn 14: 6), 2 vitssõrmust, 2 auguga pliikettakest (värtnaketra) (jn 14: 7, 8), kolm lukku või lukukatket (jn 14: 10, jn 15: 3, 4), oletatav rauast hoburaudsõlg (jn 14: 11), ümarripats (jn 14: 12), kirves (jn 15: 1), väike alasi (jn 15: 2), üle 50 väikse ümara pliikuuli, mõned suuremad kuulid (jn 15: 5–6) ja kaks tulirelva toru katket (jn 15: 7). Varasema detek- toriuuringutega leidudest tühjaks korjatud asulakohalt leiti peamiselt vaid musketikuuli, aga ka auguga pli- kettake (jn 14: 9) ja musketitoru katke (jn 15: 8), samuti veidi savinõukilde.

Kokkuvõttes tõid kaevamised selgust Tarvastu lin- nuse rajamisaja küsimusse. Kivilinnusele pole eelne- nud muinaslinnust ning ordulinnuse rajamise võib dateerida 14. sajandi teise poole, millele viitavad ka kirjalike allikate teated. Eriliseks leiuks on eeslinnu- sel paiknenud sepi- koja ning loomali- kide kontsent- ratsiooniala pealinnuse õuel, mis seostub 15. sajandi köögi ja söögimajandusega. Klaasikildude leviku põhjal võib arvata, et nii sepi- koja kui köögihoonel on olnud klaasaknad, kuid kummalgi polnud kivist. Sepatööga tegeleti ka pealinnuse alal.