ARCHAEOLOGICAL EXCAVATIONS ON THE HILL FORTS OF SOUTH-EAST ESTONIA: KAUKSI, MÕRGI, ALT-LAARI, PALOVEERE AND UANDIMÄGI

HEIKI VALK, PIKNE KAMA, MAARJA OLLI and ANTI LILLAK
Tartu Ülikool, Ajaloo ja arheoloogia instituut, Arheoloogia osakond (University of Tartu, Institute of History and Archaeology, Department of Archaeology), Jakobi 2, 51014, Tartu, Estonia; heiki.valk@ut.ee

In 2013 the project, aiming at getting information about the chronology of the hill forts of south-east Estonia, continued. Work took place on the hill forts of Kauksi, Mõrgi, Alt-Laari, Paloveere, and Uandimägi (Fig. 1). Excavations were carried out by 10 cm technical layers, the soil was sieved using 4 mm and 5 mm eye meshes. Fieldworks were supervised by Heiki Valk, and were conducted in Kauksi by Maarja Olli and Pikne Kama, and in Alt-Laari by Anti Lillak.

KAUKSI LEERIMÄGI *HILL FORT*

Kauksi *Leerimägi* hill fort is located in Põlva parish (Mooste rural municipality, Põlva County), *ca.* 8.5 km north-east of Põlva. The monument is situated in a dry pine forest on the bank of the Lutsu River, which is a tributary of the Ahja River. The hill plateau (*ca.* 1800 m^2) is surrounded by a circular, mostly *ca.* 0.5–0.6 m high rampart, but in the east where natural preconditions for defence are poor, the height of the rampart is *ca.* 3 m on the inner and 6–7 m on the outer side discovered. In front of the rampart also traces of an open settlement have been discovered (Tõnisson & Valk 2008a, 316–317). In the Soviet time, the construction of high-voltage lines over the hill damaged the fort, especially the southern end of the high rampart (Fig. 2). The plateau has an uneven surface which may result from the construction works, but it may also have remained unlevelled already in prehistoric times.

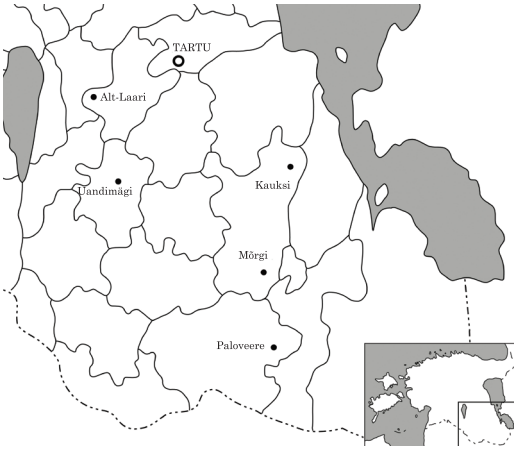

Fig. 1. *Excavations on the hill forts of south-east Estonia in 2013.*
Jn 1. *Kaevamised Kagu-Eesti linnamägedel 2013. aastal.*
Drawing / Joonis: Maria Smirnova

Folklore about the hill fort mostly tells about war activities, but stories also mention hidden treasures, a burial

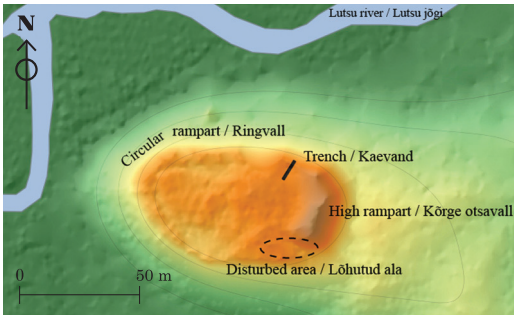

Fig. 2. Plan of Kauksi Leerimägi hill fort.
Jn 2. Kauksi Leerimäe plaan.
Drawing / Joonis: Allar Haav, Pikne Kama, Maarja Olli

Fig. 3. Stone areas in the trench on Kauksi Leerimägi hill fort.
Jn 3. Kivid Kauksi Leerimäe linnamäe kaevandis.
Photo / Foto: Maarja Olli

place on the hill or in the nearby forest, and some supernatural experiences on the hill. For example: *During the Great Northern War, armies were told to have been camping on Leerimägi Hill (Eng. 'Camp Hill'). People believe that under the Leerimägi Hill there are cellars with hidden gold, which can be got hold of only on Midsummer Night. In Midsummer Night the popping of looms has been heard from Leerimägi.* (Madisberg 1927, 1; translated by Pikne Kama).

In 1951 (Moora 1955, 72–73) and 1982 test pits were made on the hill (Tõnisson & Valk 2008a, 317). No occupation layer was discovered, but some sherds of hand-made vessels were gained, and burned stones and layers with charcoal were recorded. During the field inventory of 2005, fragments of hand-made pottery were picked from the loose sand of the big rampant. This gave a base for the interpretation that earlier occupation layers of the settlement site were used for the high rampart (*ibidem*).

In the summer of 2013, small-scale excavations took place on the north-eastern edge of the hill fort plateau where original ground was not disturbed by the installation of high-voltage lines. The trench (1 × 9 m) cut the low part of the circular rampart and the edge of the plateau (Fig. 2).

Quite under the thin turf, two areas of burned stones came to light (Fig. 3). The first, the wider one, located on the yard plateau (Fig. 4: A), consisted of burned stones (diameter 10–25/30 cm) with some charcoal pieces between them. A radiocarbon date from the depth of 10–20 cm gave the result 1299–1443 cal AD (Table 1: 1).[1] This does not probably date the hill fort, but some secondary activity. It is also possible that the sample was polluted by modern age charcoal. Another radiocar-

[1] All dates in the text are calibrated (95.4% probability) into calendar years, using OxCal 4.2 program and IntCal13 calibration curve (Bronk Ramsey 2009). Samples were processed at the radiocarbon laboratory of the Tallinn University of Technology.

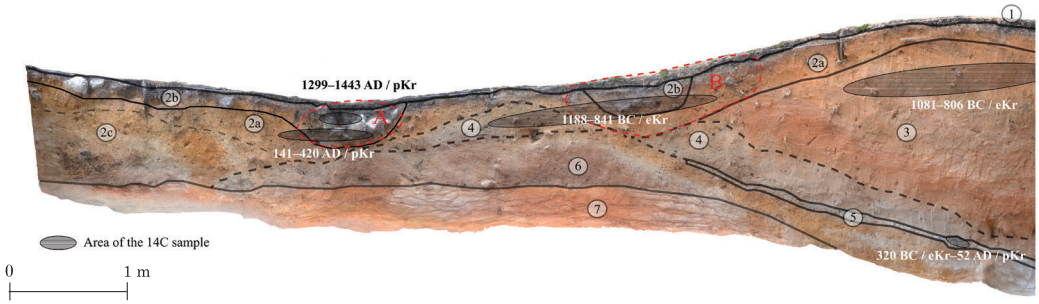

Fig. 4. *The north-western profile of the trench at Kauksi. 1 – turf, 2a – yellow sand, 2b – stone areas, 2c – mixed yellow sand, 3 – circular rampart, 4 – greyish sand, 5 – light grey sand with ashes and charcoal particles on top of the first rampart, 6 – body of the first rampart, 7 – natural soil, A, B – disturbances.*

Jn 4. *Kaevandi loodeprofiil Kauksi Leerimäel. 1 – kamar, 2a – kollane liiv, 2b – kivialad, 2b – kollane segatud liiv, 3 – ringvall, 4 – hallikas liiv, 5 – helehall söetükikestega liivakiht esimese valli kehandi peal, 6 – esimese valli kehand, 7 – looduslik pinnas, A, B – sissekaeved.*

Drawing / Joonis: Pikne Kama, Ragnar Saage, Maarja Olli

bon date from a depression filled with stones (Figs 3; 4: A) in the same area, taken from the depth of 30–50 cm, probably undisturbed context, gave the result of 144–420 cal AD (Table 1: 2).

From the trench, 40 hand-made pottery sherds[2] were found (Fig. 5: 1–5), mostly from between and under the stones. As the sherds were rather robust, of reddish or light brownish colour and contained coarse fragments of stone rubble, they remind pottery from the Roman Iron Age or the Migration Period[3] which fits well with the radiocarbon date.

The second and narrower area of burned stones situated next to the rampart (Fig. 4: B) consisted of a bit smaller burned stones in sand. The radiocarbon date from charcoal particles from around and between them in the depth of 30–50 cm, from layers 2a, 2b, B and 4 (Fig. 4.), was 1188–841 cal BC (Table 1: 3). Quite the same date (1021–806 cal BC) (Table 1: 4) was gained from the undisturbed body of the rampart. The dates probably do not date the construction of the rampart, but the small pieces of charcoal were in the sand which was used for it.

On the plateau of the hill fort, between and under the stone areas, the clay body of the earliest rampart (Fig. 4: 6) was discovered. On top of it, a *ca.* 3–5 cm thick layer of white sand (Fig. 4: 5) was distinguished in the profile. This layer, designating the ground level once before heaping up the big rampart was buried until the depth of *ca.* 2 m from the ground. The radiocarbon date from tiny charcoal particles in it was 350 cal BC – 52 cal AD (Table 1: 5). As there was intact natural soil under the clay body of the first rampart, the fortification seems to represent the first phase of the hill fort.

It seems that at some time the Pre-Roman Iron Age the rampart was made bigger (Fig. 4: 4) and that probably during this construction work the top of the first rampart was cut off. The top layer on the plateau with stones and pottery fragments (Fig. 4: 2a) can be dated to the Roman Iron Age. The presently visible stage of the circular rampart (Fig. 4: 3) could belong to the same time because the upper 30 cm of its sand body contained pottery probably dating from that period and the layer of stones (Fig. 4: 2a) with Roman Iron Age date seemed to cover the inner slope of the rampart.

[2] The finds: TÜ 2255.

[3] Estimation by Heiki Valk.

Table 1. Radiocarbon dates from hill forts of south-east Estonia from 2013.
Tabel 1. Kagu-Eesti linnamägede 2013. a radiosüsinikudateeringud.
Complied by / Koostanud: Heiki Valk

No. / Nr	*Site / Muistis*	*Radiocarbon years / Radiosüsinikuaastad (BP)*	*Sample no. / Proovi number*	*Cal 95.4% / Kal 95,4%*	*Calibration ranges / Kalibreerimisvahemikud*	*Remarks / Märkused*	*Material dated / Dateeritud materjal*
1	***Kauksi***	547±50	Tln-3534	1299–1443 AD	1299–1370 AD (45.7%), 1380–1442 AD (49.7%)	plateau, under the turf, between stones / platoo kamara all, kivide vahel	charcoal fragments / söetükid
2	***Kauksi***	1725±50	Tln-3562	141–420 AD	144–152 AD (0.5%), 169–194 AD (2.1%), 210–420 AD (92.8%)	plateau, under the stones / platoo, kivide all	charcoal fragments / söetükid
3	***Kauksi***	2830±55	Tln-3561	1188–841 BC	1188–1181 BC (0,6%), 1156–1146 BC (0.8%), 1128–841 BC (94.9%)	body of the rampart / vallikehand	charcoal fragments / söetükid
4	***Kauksi***	2755±55	Tln-3535	1021–806 BC	1021–806 BC (95.4%)	body of the rampart / vallikehand	charcoal fragments / söetükid
5	***Kauksi***	2081±55	Tln-3536	350 BC–52 AD	350–308 BC (4.3%), 210 BC – 52 AD (91.1%)	ashes on top of the earliest rampart / põleng esimese valli peal	charcoal fragments / söetükid
6	***Mõrgi***	2161±65	Tln-3543	375–50 BC	375–50 BC (95.4%)	rampart, top layer, -10–20 cm / vall -10–20 cm	charcoal fragments / söetükid
7	***Mõrgi***	1785±65	Tln-3544	86–389 AD	86–389 AD (95.4%)	rampart, black sooty layer / vall, nõgine must kiht	brand, outer tree rings / tukk, välimised aastarõngad
8	***Mõrgi***	1724±65	Tln-3545	130–506 AD	130–428 AD (94.8%), 496–506 AD (0.6%)	rampart, bottom of the black sooty layer / vall, nõgise musta kihi põhi	charcoal fragments / söetükid
9	***Mõrgi***	846±50	Tln-3541	1044–1270 AD	1044–1102 AD (15.3%), 1118–1270 AD (80.1%)	rampart, bottom of ditch on the outer side / valli välisküljel oleva kraavi põhi	charcoal fragments / söetükid
10	***Mõrgi***	471±60	Tln-3542	1312–1630 AD	1312–1359 AD (9.1%), 1386–1523 (77.8%), 1572–1630 (8,5%)	outer foot of the rampart, eroded soil / valli välisjalam, varisenud pinnas	charcoal fragments / söetükid
11	***Mõrgi***	963±55	Tln-3537	986–1206 AD	986–1206 AD (95.4%)	yard trench, -10–20 cm, dark layer / õuekaevand, -10–20 cm, tume kiht	charcoal fragments / söetükid
12	***Mõrgi***	335±55	Tln-3538	1450–1650 AD	1450–1650 AD (95.4%)	yard trench, -10–20 cm, brand under the stones / õuekaevand, -10–20 cm, tukk kivivare all	brand, outer tree rings / tukk, välimised aastarõngad

No. / Nr	*Site / Muistis*	*Radiocarbon years / Radiosüsinikuaastad (BP)*	*Sample no. / Proovi number*	*Cal 95.4% / Kal 95,4%*	*Calibration ranges / Kalibreerimisvahemikud*	*Remarks / Märkused*	*Material dated / Dateeritud materjal*
13	***Mõrgi***	445±50	Tln-3539	1401–1631 AD	1401–1524 AD (81.6%), 1558–1631 AD (13.8%)	yard trench, remains of post / õuekaevand, postijäänused	charred wood, outer tree rings / söestunud puit, välimised aastarõngad
14	***Mõrgi***	1863±55	Tln-3540	24–322 AD	24–258 AD (92.7%), 296–322 AD (2.7%)	yard trench layer upon intact sand / õuekaevand, loodusliku liiva pealt	charcoal fragments / söetükid
15	***Alt-Laari***	1512±45	Tln-3533	428–635 AD	428–635 AD (95.4%)	construction stage 2, lower part of layer no. 6 (-120 cm) / II ehitusetapp, kiht 6 alaosa (-120 cm)	charred log / söestunud palk
16	***Alt-Laari***	1312±45	Tln-3531	640–854 AD	640–777 AD (94.2%), 792–802 AD (0.6%), 845–854 AD (0.5%)	dark brown layer (no. 6; construction stage 3) / tumepruun kiht (nr 6, III ehitusetapp)	charcoal fragments / söetükid
17	***Alt-Laari***	1034±50	Tln-3532	890–1152 AD	890–1052 AD (82.8%), 1091–1152 AD (12.6%)	charcoal fragments reddish-yellowish-brown mixed soil (no. 10) / punakaskollakaspruun segatud kiht (nr 10).	charred pieces of log / söestunud palgiosad
18	***Paloveere***	1179±50	Tln-3530	695–977 AD	695–700 AD (0.5%), 710–745 AD (6.5%), 764–977 AD (88.3%)	occupation layer, *ca.* -30 cm / kultuurkiht, u -30 cm	outer tree rings of a burnt log / põlenud palgi välimised aastarõngad
19	***Paloveere***	1112±45	Tln-3529	777–1018 AD	777–792 AD (3.2%), 802–844 AD (6.9%), 857–1018 AD (85.3%)	disturbed sand, -20–30 cm / segatud liiv, -20–30 cm	charcoal fragments / söetükid
20	***Uandimägi***	1003±50	Tln-3549	900–1160 AD	900–921 (2.8%), 952–1160 (92.6%)	trench 1, dark soil, -20–30 cm / kaevand 1, tume muld, -30–40 cm	charcoal fragments / söetükid
21	***Uandimägi***	917±55	Tln-3550	1018–1222 AD	1018–1022 AD (95.4%)	trench 1, dark soil, -20–30 cm / kaevand 1, tume muld, -20–30 cm	charcoal fragments / söetükid
22	***Uandimägi***	849±55	Tln-3546	1040–1270 AD	1040–1108 AD (19.2%), 1116–1270 AD (76.2%)	trench 2, brand 4 / kaevand 2, tukk 4	brand, outer tree rings / tukk, välimised aastarõngad
23	***Uandimägi***	919±55	Tln-3548	1018–1221 AD	1018–1221 AD (95.4%)	trench 2, brand 9 / kaevand 2, tukk 9	brand, outer tree rings / tukk, välimised aastarõngad

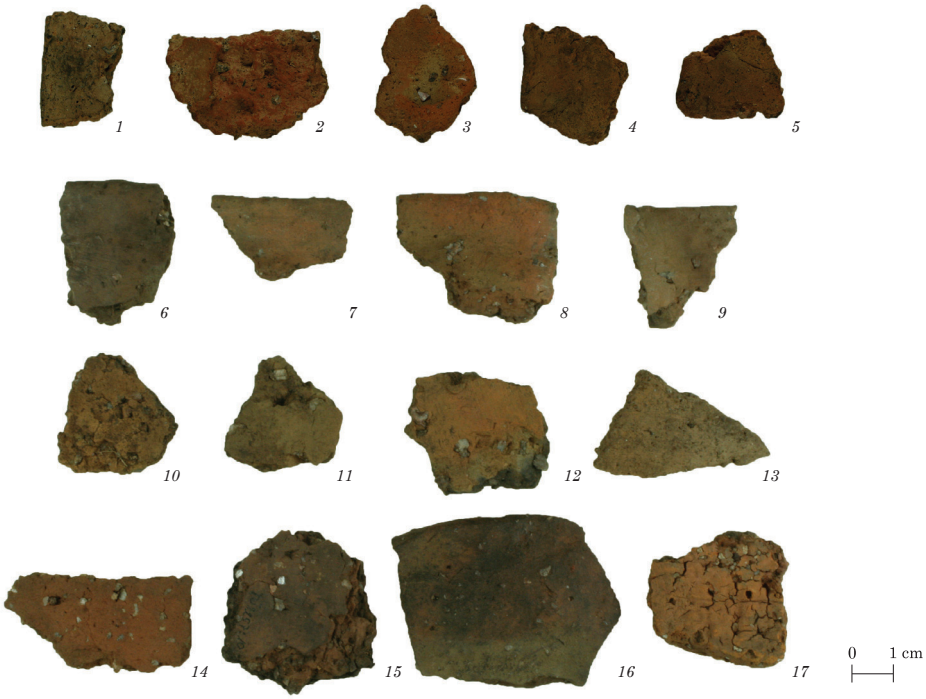

Fig. 5. Pottery from Kauksi (1–5) and Mõrgi (6–17) hill forts.
Jn 5. Savinõukilde Kauksi (1–5) ja Mõrgi (6–17) linnamäelt.
(TÜ 2255: 29, 6, 7, 26, 27; TÜ 2257: 437, 421, 149, 640, 245, 212, 99, 460, 315, 10B, 559, 139.)
Photo / Foto: Heiki Valk

At the same time, there are no other examples of such big fortifications from the Roman Iron Age in southern Estonia. Based on visual assessment, the eastern rampart of the stronghold could date from the Final Iron Age, but the excavations offered no support to this hypothesis. It also remained unclear whether the investigated sand rampart (Fig. 4: 3) and the over 3 m high eastern rampart (Fig. 2) really represent one construction stage or has the high rampart been heaped up on top of the investigated lower, circular rampart.

MÕRGI HILL FORT

The hill fort of Mõrgi (Fig. 6) is located in Põlva parish (Lasva rural municipality, Võru County), *ca.* 8 km north-east of Võru. In popular language the hill is known as *Kuningamägi* ('King's Hill'). According to legends, the Swedish king had once lunch or hid his treasure there.

The monument lies *ca.* 150 m east of the small Karioja Creek, running into the Võhandu River. A ditch that once may have functioned as a local waterway runs from the northern foot of the hill into the Karioja Creek. In the distance of 1.2–4 km south-east of the hill fort, there lie five groups of long and round barrows from the second half of the Ist millennium AD, with the total of originally not less than 64 barrows (Aun

Fig. 6. Mõrgi hill fort, location of trenches.
Jn 6. Mõrgi Kuningamägi, kaevandite asukohad.
Image / Joonis: Allar Haav

1992, 91–92) – one of the largest assemblages of such barrows in Estonia. The distance to the closest, smaller groups of barrows is 1200 and 2000 m.[4]

The stronghold was built on an oblong moraine ridge, *ca.* 180 m long at its foot. The measures of the plateau are *ca.* 100 × 20–25 m. The main rampart in the eastern end of the plateau is up to 1.5 m high and the remains of a low, *ca.* 0.5–0.7 m high rampart can be observed also in its western end. Brands found from test pits made into that rampart gave the result 1460±40 BP, (Tõnisson & Valk 2008b, 324), cal 478–482, 539–655 AD. In the western part of the hill a rectangular elevation with a flat surface measuring *ca.* 5–5 × *ca.* 10 m can be observed. As the elevation consists, judging by coring, of occupation layers, some rectangular building of central meaning may have existed there.

Also this hill fort served as a site for popular meetings and festivities; in the Soviet time it was the place of collective farm Midsummer parties. In the mid-1970s the southern end of the main rampart was destroyed with bulldozer. The original, cart-wide way to the hill fort plateau was broadened to make space for lorries. According to oral data[5], during these works charred brands had fallen from the rampart and an emailed round brooch, similar to the famous brooch from Vagula (Jaanits *et al.* 1982, 281, table IX), dated to the Late Roman Iron Age or the Migration Period, was found. During the same work the eastern end of the plateau behind the rampart was flattened with bulldozer, to make space for a dancing ground and benches. To the inner side of the rampart a stage for singers and performers was constructed. Also an Arabic silver coin was told to have been found from the hill fort.[6]

As a result of these bulldozer works, the damaged rampart became open for erosion that had not fully ceased by 2013. The main aim of the excavations was to open and study the profile of the rampart, and to stop its gradual erosion. During the excavations the southern profile of the main rampart was opened in the length of 16 m. As

[4] In the area of the closest, presently single-standing barrow there were also some other barrows, destroyed by a post-Soviet time gravel-quarry. Data from Heino Keskküla (Lasva village).
[5] Data from Heino Keskküla who has seen the brooch, found and obtained by a collective farm tractor driver.
[6] Data from Kalev Leht, local inhabitant.

Fig. 7. Mõrgi hill fort, profile of the south-eastern rampart, view from the south-west.
Jn 7. Mõrgi Kuningamägi, kaguvalli profiil, vaade edelast.
Photo / Foto: Heiki Valk

working on the strongly slanted surface was complicated, the profile was opened step-wise (Fig. 7). The layer of dark soil on top of the rampart contained sparse charcoal particles, a radiocarbon date of which (Table 1: 6) gave the result 375–50 cal BC, but no pottery fragments were found there. The top layer was followed by a *ca.* 20 cm thick an intensively black sooty layer with some remains of decayed brands but with no finds of pottery.[7] This layer with its full length of *ca.* 3.1 m continued also on the outer slope of the rampart. A radiocarbon analysis from the outer tree rings of a brand from a thick log from the layer gave the result 86–389 cal AD and another sample from the bottom of the sooty layer was dated to 130–506 cal AD (Table 1: 7, 8;). These dates both contradict the first, earlier date from the top layer. On the outer slope of the hill the two dark layers described above were separated from each other by a layer of clean gravel zwhich had been brought upon the fire remains to broaden the rampart. The gravel below the black sooty layer was intact, of natural origin, and no more signs indicating to human activities were found from the body of the rampart.

The long profile cut also a small ditch on the outer side of the big rampart, originally *ca.* 80 cm deep and up to 1.5 m wide on the top, and a smaller rampart on its outer side. A radiocarbon sample from charcoal pieces in the ditch (30–40 cm from the ground) (Table 1: 9;) gave the result 1044–1270 cal AD. Another sample from dark eroded top soil that covered the ditch, just from below the turf (Table 1: 10;), yielded the date 1312–1630 cal AD. As the profile was cut in the area partly damaged by bulldozer works, the measures of the fortifications in the cross section do not correspond to those in undamaged areas. There the outer rampart, *ca.* 1.5 m wide at its foot, rose 0.7 m higher from the bottom of the ditch.

Another trench (7 × 2 m) was also made in the eastern part of the hill fort plateau, perpendicularly to its southern edge, in the area not disturbed by bulldozer works (Fig. 8). The upper 4 metres were located in the flat part of the yard, the lower 3 metres were slanted. The upper part of the dark, greyish brown occupation layer which contained fragments of hand-made pottery was disturbed by ploughing. In the depth of 20–30 cm the occupation layer faded, being in most of the trench gradually replaced by sand. In the upper, flat part of the trench, however, the occupation layer stretched deeper in a *ca.* 1.5 m wide area that crossed the trench. Here the dark soil stretched until the depth of *ca.* 55 cm from the ground. The occupation layer contained fragments of mainly hand-made pottery that look characteristic for the Viking Age (Fig. 5: 6–12, 14–17), identical in the top layers and in the depression, but also a wheel-thrown sherd (Fig. 5: 13) was found. This sherd indicates that indicates that the site may still have been habited in the 11th century – wheel-thrown vessels were not used in Estonia in

[7] The finds: TÜ 2257.

the 10th century yet. A radiocarbon sample from charcoal pieces in the depth of 10–20 cm from above the deepened area gave the result 986–1206 cal AD (Table 1: 11) which also does not contradict the Late Viking Age date.

On the sloping part of the plateau a compact assemblage of burnt granite stones (diam. 10–15 cm) was found. The heap (*ca.* 1.2 × 0.3–0.4 m) consisted of up to three layers of stones under which remains of a charred log were found. *Ca.* 1.5 m upwards at the upper border of the slope a post hole with the diameter of 35 cm was discovered. The partly charred, partly decayed post stretched into the ground until the depth of *ca.* 90 cm. Already when digging, it seemed that the fallen stones upon the brand and the post hole might originate from one construction – some defence wall on the edge of the hill fort plateau. The radiocarbon analyses confirmed the suggestion about their contemporaneous origin, but provided an unexpectedly late result. The calibrated dates from the brand and the post, both from the outermost tree rings, were, respectively, 1450–1650 cal AD and 1401–1631 cal AD (Table 1: 12, 13). Considering the date and the historical situation, the fortification might be from the time of the Livonian War (1558–1583) or Swedish-Polish War (1600–1625/29). Into this period fits also well the radiocarbon date from top of the ditch on the outer slope of the big rampart (Table 1: 10). As no artefacts or pottery finds from that period were unearthed, the Early Modern Time fortification seems to have been very short-lived.

Fig. 8. *Mõrgi hill fort, trench on the hill fort plateau, level 30 cm below ground, view from the north.*
Jn 8. *Mõrgi Kuningamägi, kaevand linnuseõue serval, 30 cm maapinnast, vaade põhjast.*
Photo / Foto: Heiki Valk

The traces of the earliest earthworks in the trench give evidence of broadening and levelling the edge of the sloping hill plateau by filling it with sand. The thickness of the fill was *ca.* 1 m in its lower part. Between the fill and intact natural ground there was a thin greyish layer containing charcoal particles. As a radiocarbon date (Table 1: 14) from it gave the result of 24–322 cal AD, partly overlapping with date from the big rampart, a fire might be connected with the first construction works of the first stronghold. Since no definitely Roman Iron Age pottery (e.g. with textile impressions typical for south-eastern Estonia in that period) was found, the first stage of the hill fort was very short-timed only. It remains unclear, however, whether filling the edge of the hill fort plateau with sand took place in the Roman Iron Age or in the Viking Age.

ALT-LAARI HILL FORT

Alt-Laari hill fort (plateau *ca.* 1200 m²) is situated in Tartu County, Nõo parish (Konguta rural municipality), Vahessaare village, on the western bank of the valley of the Kavilda River, on a separate hillock.

The monument was first studied in 1927 by Harri Moora when two excavation plots were opened in its north-eastern and western part (Fig. 9), *ca.* 45 m² in total (Moora 1927). The finds – hand-made pottery, animal bones, a whetstone, an iron hook and an iron arrowhead – enabled Moora to date the hill fort to the second half of the I millennium AD (Moora 1939, 118–119). In 1973 Mare Aun discovered a settlement site right east of the hill fort (Aun 1992, 23). The occupation layer was heavily disturbed in 2008 when making a new road and a parking lot. The rescue excavations (directed by Anti Lillak) showed that the settlement existed from the Late Roman Iron Age to the Middle Ages (Lillak & Valk 2009). Another prehistoric site in the vicinity is the hill fort of Erumäe (*Erumäe kants*) on the western bank of the valley *Maiorg* (tributary valley of the Kavilda valley), only *ca.* 0.4 km south from Alt-Laari hill fort. The results of the 2008 excavation (directed by Heiki Valk) show that the hill fort of Erumäe was used in two stages 1) probably in the 5th – 7th and 2) in the 12th century (see Valk *et al.* 2009, 84–89). Radiocarbon dates ranging from the 11th to the 13th centuries were gained also in 1982 by Evald Tõnisson (2008, 298–299).

As Alt-Laari hill fort is still actively used by the local people as a place for village festivities, the folklore related to the hill is popular among the community. Stories tell about the secret tunnel connecting it with the hill fort of Erumäe on the other side of the valley. When jumping on the hill, one could, as the story goes, hear dinning from inside the hill, as if it were hollow.[8]

Alt-Laari hill fort does not have any visible ramparts, but its slopes have been artificially steepened. During the excavations of 2013 a trench (8 × 1 m) cross-cut the north-eastern edge of the plateau, not far from the excavation plot of 1927 (Fig. 9). Due to the thickness of the fill layer on the upper part of the slope, the lower, sloping half of the trench was not dug until the intact natural soil. In the parts of the trench which were excavated until the bottom, it appeared in the depth of 120–280 cm from the present-day ground level.

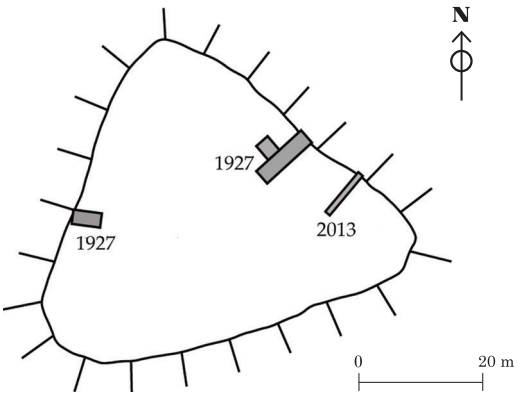

Fig. 9.The general plan of the hill fort of Alt-Laari with the excavation plots of 1927 and 2013.
Jn 9. Alt-Laari linnamäe üldplaan 1927. ja 2013. aasta kaevanditega.
Drawing / Joonis: Maarja Olli

It appeared that the fort had several construction stages (Fig. 10). During the first fortification activities a low, *ca.* 1.3 m wide terrace (*ca.* 0.5 m lower than the rest of the hill plateau) was dug on the edge of the hill. The soil removed from there was possibly heaped up as a low rampart-like elevation (maybe only 0.5 m high (Figs 10: 2a–2b, 3) and wooden fortifications were erected on it. The exact time of the first fortifications remains unclear, but after

[8] Oral tradition heard by Anti Lillak during the excavations.

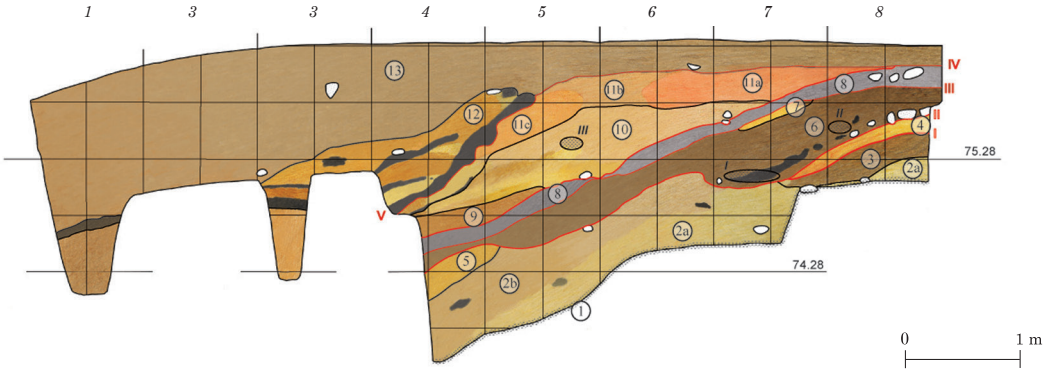

Fig. 10. South-eastern profile of the trench at Alt-Laari hill fort. 1 – intact natural sand, 2a–2b – dark yellow sand, 3 – light brown sand, 4 – light yellow mixed sand, 5 – yellow mixed sand, 6 – dark brown soil, 7 – thin layer of sand, 8 – dark grey soil, 9 – light brown soil, 10 – reddish-yellowish-brown mixed soil, 11a – orange-brown clayish mixed soil, 11b – light brown mixed soil, 11c – yellow mixed soil, 12 – thin dark grey sand layers rich in humus and mixed soil layers between them, 13 – mixed brown soil. I–III (black) – places where charcoal samples were taken (see Table 1, no. 15–17 respectively). I–V (red) – construction phases of the hill fort.

Jn 10. Tranšee kaguprofiil Alt-Laari linnamäel. 1 – puutumata looduslik liiv, 2a–b – tumekollane liiv, 3 – helepruun liiv, 4 – helekollane segatud liiv, 5 – kollane segatud liiv, 6 – tumepruun pinnas, 7 – õhuke liiva vahekiht, 8 – tumehall pinnas, 9 – helepruun pinnas, 10 – punakas-kollakaspruun segatud pinnas, 11a – oranžpruun savine segatud pinnas, 11b – helepruun segatud pinnas, 11c – kollane segatud pinnas, 12 – õhukesed huumuselised tumehallid liivakihid ja nendevahelised segatud pinnasekihid, 13 – segatud pruun pinnas. I–III (must) – söeproovide võtmise kohad (vt tabel 1, vastavalt nr 15–17). I–V (punane) – linnuse ehitusetapid.

Drawing / Joonis: Anti Lillak

their destruction (the lower terrace was filled by the eroded soil) new wooden constructions were built on the edge of the hill. Two cobble stone clusters which contained no charcoal pieces (Fig. 11) were partly unearthed at that level. The charred log remains of the second fortification stage had fallen probably up to 1 m from their original position and were quite well preserved (Fig. 11). A radiocarbon sample from a log was dated to 428–635 cal AD (Table 1: 15), e.g. to the Migration Period. It seems that the hill fort was still used further without major gaps because the dark brown occupation layer (20–40 cm thick, Fig. 10: 6), which covered the cobble stone clusters contained large pieces of charcoal which were radiocarbon dated to 640–854 cal AD (Table 1: 16). This can be distinguished as the third (Pre-Viking Age) stage of the hill fort. In the area of the excavation trench the dark brown layer was mostly eroded on the hill slope.

The dark brown layer (no. 6) was itself covered by intensive (up to 20 cm thick) dark grey soil (Fig. 10: 8) that contained much iron slag. Three stones in the south-eastern profile of the trench could originate from a Viking Age fire-place. The dark grey soil may represent the fourth stage of the hill fort. Layer no. 8 was covered by a thick (up to 90 cm) deposition of light reddish-yellowish-brown mixed soil (Fig. 10: 9–11) which contained fragments of clay vessels, fragments of charcoal, as well as rather many fish bones and scales. The soil heaped to enlarge the fortifications was probably partly taken from the occupation layers. The radiocarbon sample from a piece of charred log gave the result 890–1152 cal AD (Table 1: 17), thus indirectly dating the fourth stage

Fig. 11. Charred log and the stone clusters from the 2nd construction stage of Alt-Laari hill fort.
Jn 11. Söestunud palk ja kiviladem ed Alt-Laari linnuse teisest ehitusetapist.
Photo / Foto: Anti Lillak

of the hill fort. It can be speculated that the large scale construction works (fifth construction stage) took place even after the 11th or 12th century, but neither radiocarbon dates nor artefact finds of this time have been found.

As told by the local people, the surface of the hill was levelled by bulldozer works during the Soviet time to improve the place for local festivities. If the loose soil was shoved on the edge of the plateau, it could explain the large amount of mixed soil (Fig. 10: 13) which was up to 120–130 cm thick and covered a rather thin (*ca.* 10 cm) dark grey layer (Fig. 10: 12) rich in humus, which may represent the surface of the hill before the bulldozer works. The disturbed soil (Fig. 10: 13) contained pottery, pieces of iron slag and animal bones.

The occupation layers of Alt-Laari hill fort were rather rich in finds,[9] mainly sherds of hand-made pottery. Some of the earliest fragments with striated surfaces, date from the Late Roman Iron Age or the Migration Period (Fig. 12: 4), but the majority of finds belong to the Pre-Viking and Viking Age. The coarse-ware vessels often had small holes in the rim, a feature typical to the pottery of southern Estonia in the Viking Age. In addition, sherds of several fine ware vessels were found, sometimes decorated with lines, small depressions or raised ridge on the neck (Fig. 12: 1–3). Only rather few fragments of wheel-thrown pottery were found, indicating that the hill fort was most likely abandoned in the 11th century.

Other finds were ornaments – a simple round silver pendant with remains of a bronze loop (Fig. 12: 6), a fragment of a spiral of bronze wire (possibly from a pendant or a pin) (Fig. 12: 7), and a small fragment of a silver sheet (maybe a blank for making jewellery). A fragment of an antler artefact with a drilled hole was decorated with small engraved pits (Fig. 12: 5). Iron artefacts were represented by two probable arrow heads, two awl fragments, and a fishing hook. The most noticeable iron item was a 9.9 cm high anvil (Fig. 12: 8) from the dark grey layer (Fig. 10: 8). Its lower end was originally attached to the wooden billet. So far, it is the oldest anvil found in the territory of Estonia, probably dating from the Viking Age. The closest parallel originates from the vicinity of Soontagana hill fort and is dated to the 12th – 13th century (Peets 2003, 167–169). Viking Age or Early Medieval anvils have also been found, e.g., in Mästermyr, Gotland (Sweden) (Arwidsson & Berg 1983, 15, pl. 9). The treasure trove from

[9] The finds of 2013: TÜ 2265.

Fig. 12. Finds from Alt-Laari hill fort. 1–3 – decorated fine ware, 4 – fragment of a striated pottery, 5 – fragment of an antler artefact, 6 – silver pendant, 7 – fragment of a bronze spiral ornament, 8 – iron anvil.
Jn 12. Leiud Alt-Laari linnuselt. 1–3 – kaunistatud peenkeraamika, 4 – riibitud keraamika katke, 5 – sarveseme katke, 6 – hõberipats, 7 – pronksist spiraalehte katke, 8 – rauast alasi.
(TÜ 2265: 362, 279, 228, 710, 604, 73, 90, 330.)
Photo / Foto: Anti Lillak

Rauši, Latvia, contained an anvil from the 11th century (LA 1974, pl. 72: 3).[10] Still all these finds differ a bit in shape from the Alt-Laari anvil. The anvil, fragments of forge and numerous pieces of iron slag in the dark grey layer refer to a Viking Age smithy. In addition to iron smelting and blacksmithing, crafts on the hill fort included probably also processing non-ferrous metals.

The osteological material contains bones of domestic animals (e.g. horse, cattle, pig, sheep/goat), as well as of wild animals.[11] The beaver bones may indicate that the hill fort belonged to a wide-scale network of fur trade. In addition, fish bones and scales were found, especially from layers no. 9–11 upon the dark grey layer (Fig. 10: 8).

Unlike the hill fort of Erumäe, the Alt-Laari hill fort was probably used continuously without major gaps from the Late Roman Iron Age or the Migration Period to the 11th century. The adjoining settlement site is typical for many hill forts of Estonia from the second half of the I millennium AD. The hill fort may have served as an important centre of handicraft (especially metal working) and fur trading in the Viking Age. Its importance is also stressed by the fact that the fort was repeatedly rebuilt after temporary declines.

PALOVEERE HILL FORT

The hill fort of Paloveere, known as *Liinamägi* ('Fort hill'), lies in the eastern part of the Haanja Uplands, Rõuge parish (Vastseliina rural municipality, Võru County), close to the border of present-day Vastseliina and Haanja communities. The plateau of the hill with steep slopes and relative height of *ca.* 20 metres is oblong and rather small, up

[10] One of the oldest anvils in the Baltic region is found from Staraya Ladoga, North-West Russia, where it is dated to the 8th century (Staraya Ladoga 2003, 70–71). Unlike the anvil of Alt-Laari, the Staraya Ladoga item has a so-called beak for cold processing of ornaments.
[11] Data of animal bones are provided by zooarchaeologist Eve Rannamäe (TÜ).

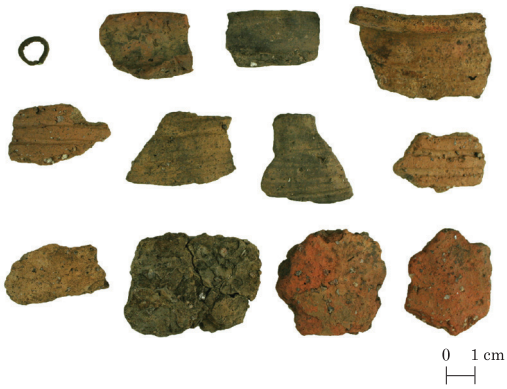

Fig. 13. Finds from Paloveere hill fort. 1– bronze ring, 2–12 – pottery fragments.
Jn 13. Leide Paloveere linnamäelt. 1 – pronksrõngake, 2–12 – savinõukillud.
(TÜ 2247: 58, 40, 48, 31, 55, 54, 44, 49, 42, 35, 53, 38.)
Photo / Foto: Heiki Valk

to 35 m in length and up to 15 m wide, *ca.* 500 m² in total. Thus, the hill fort of Paloveere belongs to the smallest in Estonia. In the highest part of its south-western slope, *ca.* 1.5 m below the level of the plateau, a *ca.* 20 m long and *ca.* 2 m wide part of the terrace, originally broader and longer, has been preserved.

The monument was severely damaged in the 1970s when the originally convex hill top was flattened by bulldozer works, in order to make a dancing ground and a stage for collective farm parties. The soil from the hill top was moved to the edges of the plateau, so that the central part of the hill became, according to popular estimations, 0.7–1 m lower and the plateau, consequently, increased. As the result, also the inner part of the originally broader terrace was buried. Although the occupation layers were considered to have been destroyed, some pottery sherds were discovered from the edge of the plateau by Andres Vindi (TÜ) in 2012. In 2013 a trial trench (7 × 1 m) was made on the south-eastern edge of the plateau where big trees had hindered the bulldozer works. The soil contained fragments of both hand-made and wheel-thrown pottery.[12] The uppermost 20 cm were totally disturbed by earthworks and moved from its original location on the hill fort plateau by the bulldozer works.

From the uppermost metre of the trench the original layers had been removed but then, within the length of *ca.* 1.5 m, a part of *in situ* occupation layers had been preserved in the depth of 25–35 cm. The dark sandy soil, located on the slightly sloping edge of the hill fort plateau, contained some fragments of burnt granite stones and numerous fragments of pottery. The finds included both thin sherds of wheel-thrown vessels decorated with line ornamentation (Fig. 13: 2–8) which occurred down to the very bottom, as well as hand-made pottery (Fig. 13: 9–12). The only metal find from the layer and the whole trench was a tiny bronze ring (Fig. 13: 1). A radiocarbon date from the outermost tree rings of a burnt log in the dark soil directly upon intact sand gave the result 695–977 cal AD (Table 1: 18). As there is no data of wheel-thrown pottery from before 1000 AD from Estonia, the latest use of the stronghold falls into the 11th century. Another radiocarbon sample from pieces of charcoal in disturbed sand on the slope (Table 1: 19) gave the result 777–1018 cal AD.

UANDIMÄGI HILL FORT

The hill fort of Uandimägi (Oandimägi) is located in the Otepää Uplands, Otepää parish (Otepää rural municipality, Valga County), Vana-Otepää village, only 4 km north of Otepää hill fort – the main hill fort of south-eastern Estonia in the Late Iron Age (Mäesalu & Valk 2008, 306–307). The stronghold (plateau size *ca.* 3500 m²), naturally

[12] The finds: TÜ 2247.

protected from three sides by steep slopes with the relative height of *ca.* 25 metres, and by a bog on the northern side, lay on the highest, western end of a ridge, separated from most of it by big earthworks. On the northern and southern side of the hill also man-made terraces can be observed, the lower of them on the southern side protected by a *ca.* 20 m long and presently up to 1 m high rampart. A fallen well east of the hill is considered to be the well of the hill fort, according to local legends. An iron armour is told to have been found from the hill when ploughing.[13]

The site is located close to Uandi farmstead. The name of the hill and the farm resemble the name of the late prehistoric Ugandi (*Ugaunia*) district, mentioned repeatedly in the chronicle of Henry of Livonia. The hill fort was considered to be older than the castle of Otepää.[14] Local legends tell also nowadays that the stronghold was destroyed as a result of hostility with the stronghold of Otepää. The lord of Uandimägi had caught the wife or daughter of the lord of Otepää, ordered her to be killed and cooked and served the food to the lord of Otepää on his visit. After the meal the host informed the guest about the origins of the food. The lord of Otepää gathered his men and destroyed the stronghold on Uandimägi.[15] According to oral tradition, the people of Käpa farmstead, *ca.* 800 m south of the stronghold descend from the inhabitants of the hill fort.[16]

During the first trial excavations, conducted by Ain Mäesalu and Evald Tõnisson in 1983, from the trench of 3 × 3 m some fragments of wheel-thrown pottery (AI 4091) were collected (Mäesalu & Valk 2008, 307). Radiocarbon date from a brand (Tln-883) was 960±35 BP (cal 1018–1158 AD).

On the hill two trenches were made in 2013. The first (14 m^2) was located at the clearly defined northern edge of the plateau (Fig. 14). The upper 20 cm consisted of brown soil, eroded from the higher part of the hill as a result of ploughing. The soil contained fragments of wheel-thrown pottery, some of them decorated with line ornamentation (Fig. 15: 3–7), and a tiny bronze ring (Fig. 15: 2). The eroded soil was followed by a dark occupation layer with dispersed fragments of granite stones (diameter 8–14 cm) but with no pottery fragments. Evidently, the stones come from some stove or fire-place in the vicinity. The only finds from the dark layer were a small knife, typical for the Final Iron Age (Fig. 15: 1), and a fragment of a belt ring (Fig. 15: 8). A radiocarbon date from charcoal particles in the dark layer was 901–1160 cal AD and another date from the bottom of the dark layer was 1019–1222 cal AD (Table 1: 20, 21). It also appeared that during the earthworks the edge of the plateau had been

Fig. 14. Uandimägi hill fort, trench 1, level 30 cm below ground, view from the east.
Jn 14. Uandimäe linnamägi, kaevand 1, 30 cm maapinnast, vaade idast.
Photo / Foto: Heiki Valk

[13] RKM II 362, 157/8 (3) – Mall Hiiemäe < Erhard Koik, s. 1920, Otepää khk., Kastolatsi k. (1982).
[14] RKM Mgn II 3593, (11) – Tiiu Tammo < Selma Väärsi (1982).
[15] E.g. E 62329 – Matthias Johann Eisen < Otepää khk. (1922); ERA I 94, 99/101 – Maie Kruus < Juhan Kruus Reinu p., s. 1889, Otepää sovh., Vana-Otepää osak. (1967); RKM II 362, 162 (10) – Mall Hiiemäe < Erhard Koik, s. 1920, Otepää khk., Kastolatsi k. (1982); RKM Mgn II 3594, (21) – Tiiu Tammo < Hilja Kruus, 55 a, Otepää khk., Käpa talu (1982).
[16] Oral tradition recorded by Heiki Valk in 2013.

Fig. 15. Finds from Uandimägi hill fort. 1 – knife, 2 – bronze ring, 3–7 – pottery, 8 – fragment of an iron ring.
Jn 15. Leide Uandimäe linnamäelt. 1– nuga, 2 – pronksrõngake, 3–7 savinõukillud, 8 – raudrõnga katke.
(TÜ 2260: 29, 4, 16, 10, 34, 5, 27, 30.)
Photo / Foto: Heiki Valk

Fig. 16. Uandimägi hill fort, trench 2, view from the south-east.
Jn 16. Uandimäe linnamägi, kaevand 2, vaade kagust.
Photo / Foto: Heiki Valk

raised by filling with yellow clayish loam. Just because of these works the northern edge of the hill fort plateau was so clearly expressed.

The second trench (5 × 1 m) was made on the southern side of the hill, on the upper part of the slope, some metres below the terrace (Fig. 16). Also here the uppermost 20 cm consisted of eroded soil with some rare sherds of wheel-thrown pottery. Below that layer there appeared remains of 21 charred brands, most of them in intensively black layer of sooty soil. The thickest brand was from a log with the diameter of *ca.* 30 cm. All the brands were parallel to each other and had fallen from a wall perished in fire. Two radiocarbon samples from the outer tree rings of brands gave the results 1040–1270 cal AD and 1018–1221 cal AD (Table 1: 22, 23). From the dark soil around and under the brands also six stones with the diameter of 15–20 cm were discovered. Probably, they had served as 'ammunition' on top of the defence structures.

The trench revealed also traces of earthworks done before constructing the log wall. In its upper part a layer of disturbed red loam with the maximal thickness of *ca.* 50 cm, stratigraphically earlier than the layer of brands was unearthed. Evidently, the soil represents the fallen edge of the terrace which had been heaped before constructing the log wall. As the lowest fallen brands were found from a *ca.* 50 thick layer of yellow sand, there seems to have been some rampart-like structure behind the logs of the defence wall.

As two of the radiocarbon dates have the possible upper limit of *ca.* 1160 AD and two samples cannot be later than the early 1220s, the short-lived fort was built in the second half of the 12th century. A date earlier than the 12th century can be excluded also because no hand-made pot-

tery was found. Although the legend that the stronghold was destroyed as a result of conflict with Otepää hill fort cannot be archaeologically verified, excavation results in no way contradict the oral lore about perishing of the fort in an internal conflict during the Final Iron Age. On the contrary, such an interpretation seems highly likely. The location of two large strongholds in the distance of 4 km inevitably means, in case of independent centres, the overlapping of their 'natural' hinterlands, i.e. a conflict of interests – both in economic and power terms.

CONCLUSIONS

The results of the fieldwork have confirmed the suggested dates of Paloveere, Mõrgi, Alt-Laari, and Uandimägi hill forts, the first three being used in the Viking Age and the fourth in the 12th century. The origins of three of the strongholds turned out to be, however, older than expected. The fort of Alt-Laari has been founded in the Migration Period or in the Pre-Viking Age. The fort of Mõrgi existed briefly already in the Roman Iron Age when the big rampart was constructed. The earliest stage of the rampart of Kauksi hill fort might originate from the Late Pre-Roman Iron Age and in case of the large and high rampart, a Roman Iron Age date can be suggested. The defence wall that existed on Mõrgi hill fort for a short time during some Late Medieval Livonian-Russian War, the Livonian War (1558–1583) or the Swedish-Polish War (1600–1625), is the latest sign of the use of Estonian hill forts for active defence (excluding the wars of the 20th century).

Works on the hill forts of south-eastern Estonia have not ended yet. In the spring of 2014 a new hill fort was discovered by Pikne Kama and Maarja Olli at Madsa farmstead in Karula parish.

Acknowledgements: This research was supported by Estonian Science Foundation Research grant no. 8510, institutional research funding IUT20–7 of the Estonian Ministry of Education and Research, and by the European Union: by the ENPI Estonia-Latvia-Russia cross-border cooperation programme 2007–2013 project ELRI-191 'Archaeology, authority and community' and by the Centre of Excellence in Cultural Theory. The authors thank Eve Rannamäe and Ragnar Saage (University of Tartu, Department of Archaeology) for kind assistance and local people of Kanamõtsa, Kääpa, Vahessaare and Vana-Otepää villages for their hospitality.

REFERENCES

Arwidsson, G. & Berg, G. 1983. The Mästermyr Find. A Viking Age Tool Chest from Gotland. Stockholm.

Aun, M. 1992 = Аун М. 1992. Археологические памятники второй половины 1-го тысячелетия н.э. в Юго-Восточной Эстонии. Таллинн.

Bronk Ramsey, C. 2009. Bayesian analysis of radiocarbon dates. – Radiocarbon, 51: 1, 337–360.

Jaanits, L., Lõugas, V., Laul, S. & Tõnisson, E. 1982. Eesti esiajalugu. Tallinn.

LA 1974 = Latvijas PSR Arheoloģija, 1974. Rīga.

Lillak, A. & Valk, H. 2009. Rescue excavations on Alt-Laari settlement site, Tartumaa. – AVE, 2008, 65–71.

Madisberg, A. 1927. Ajalooline traditsioon Põlva kihelkonnast. EKLA f 200, m. 7:1, 1 (I-1). (*Manuscript in EKM.*)

Moora, H. 1927. Kaevamisaruanne Alt-Laari tl. linnamäel. (*Copy of the manuscript in TÜAK, original in AI.)*

Moora, H. 1939. Peedu Kerikmägi. – Muistse Eesti linnused. 1936.–1938. a. uurimiste tulemused. Tartu, 101–120.

Moora, H. 1955. Muistsete linnuste uurimise tulemustest Eesti NSV-s. – Muistsed asulad ja linnused. Arheoloogiline kogumik I. Ed. by H. Moora. Tallinn, 46–94.

Mäesalu, A. & Valk, H., 2008. Oandimägi. – E. Tõnisson. Eesti muinaslinnad. Ed. by A. Mäesalu & H. Valk. *Muinasaja teadus, 20.* Tartu-Tallinn, 306–307.

Peets, J. 2003. The Power of Iron. *Muinasaja teadus, 12.* Tallinn.

Staraya Ladoga 2003 = Старая Ладога, 2003. Древняя столица Руси. Каталог выставки. Санкт-Петербург.

Tõnisson, E. 2008. Erumäe kants. – E. Tõnisson. Eesti muinaslinnad. Ed. by A. Mäesalu & H. Valk. *Muinasaja teadus, 20.* Tartu-Tallinn, 298–299.

Tõnisson, E. & Valk, H. 2008a. Kauksi Leerimägi. – E. Tõnisson. Eesti muinaslinnad. Ed. by A. Mäesalu & H. Valk. *Muinasaja teadus, 20.* Tartu-Tallinn, 316–317.

Tõnisson, E. & Valk, H. 2008b. Mõrgi Kuningamägi. – E. Tõnisson. Eesti muinaslinnad. Ed. by A. Mäesalu & H. Valk. *Muinasaja teadus, 20.* Tartu-Tallinn, 322–324.

Valk, H., Juurik, R. & Rannamäe, E. 2009. Excavations on the hill forts of Southern Estonia: Vareste, Erumäe and Tilleoru. – AVE, 2008, 82–95.

ARHEOLOOGILISED KAEVAMISED KAGU-EESTI LINNAMÄGEDEL: PALOVEERE, ALT-LAARI, KAUKSI, MÕRGI JA UANDIMÄE

Heiki Valk, Pikne Kama, Maarja Olli ja Anti Lillak

2013. aastal jätkusid Kagu-Eesti linnamägede proovikaevamised, mille eesmärk on tuua selgust nende vanusesse ja kasutusaega (jn 1).

Lutsu jõe kaldal asuvale **Kauksi Leerimäele** (Põlva khk) tehtud tranšee (1 × 9 m) lõikas linnuse madalat ringvalli ja ulatus õuealale (jn 2). Kaevandist leitud käsitsikeraamika killud (jn 5: 1–5), mis enamasti seostusid õuealal oleva kiviladememega (jn 3), võiksid üldilme põhjal pärineda rooma rauaajast. Seda kinnitas ka kivilademe alaosast võetud söeproov: 141–420 cal pKr (tabel 1: 2). Keskajale viitav söeproov kivilademe ülaosast (tabel 1: 1) ilmselt ei dateeri linnust, vaid on sellest hilisem. Kaks söeproovi (üks neist valli hilisema järgu kehandist) andsid tulemuseks pronksiaja (1188–806 cal eKr) (tabel 1: 3, 4), mis samuti ei näita valli kuhjamisaega, vaid dateerivad varasemat sütt valli kuhjamiseks kasutatud liivas.

Vanimaks kaitseehitiseks oli looduslikule pinnasele kuhjatud savist vall (jn 4: 6), mida on hiljem suurendatud (jn 4: 4). Savivalli katvas õhukeses valges liivas oleva põlengukihi (jn 4: 5) dateering andis tulemuseks eelrooma rauaaja (350 eKr – 52 cal pKr) (tabel 1: 5). Rooma rauaajast pärineb liivast ringvalli (jn 4: 3) sisenõlvale ulatuv kivide ja keraamikaga (jn 5: 1–5) kiht (jn 4: 2), mis ulatub kahes kohas sügavamale (jn 4: A, B); seega võib samasse aega dateerida ka ringvallikuhjatise (jn 4: 3). Suur otsavall võiks oma mõõtmete põhjal olla pigem hilisrauaaegne, kuid tõendeid selle oletuse kasuks seni pole.

Mõrgi linnamäel (Põlva khk) puhastati buldooseriga lõhutud otsavalli profiil erosiooni peatamiseks ja valli stratigraafia uurimiseks 16 m pikkuselt (jn 6, 7). Ilmnes, et nõgine põlengukiht valli tasasel lael on rooma rauaajast (proovid 86–389 ja 130–506 cal pKr) (tabel 1: 7, 8) ja et pärast põlengut on valli kruusatäitega laiendatud. Söeproov kõige pealmisest kihist kamara all andis eeldatust varasema tulemuse – 375–50 cal eKr (tabel 1: 6), mis on vastuolus ülalnimetatutega. Madalast kraavist valli välisküljel saadi söeproovist vanusemäärang 1044–1270 cal pKr (tabel 1: 9), kraavi välisküljelt kamaraalusest mullast aga 1312–1630 cal pKr (tabel 1: 10).

Teine kaevand (7 × 2 m^2) tehti lõhkumata õuealale (jn 8). Tasase platoo servalt leiti käsitsikeraamikat, kuid ka üks 11. sajandile viitav kedranõukild (jn 9: 6–17). Tume kultuurkiht oli 15–20 cm paksune, kuid ulatus u 1,5 m laiuses kaevandiga ristuvas süvendis 40–50 cm sügavusele. Süsinikuproov õue kultuurkihist süvendi alalt (-10–20 cm) andis tulemuseks 986–1206 pKr (tabel 1: 11). Ilmnes, et enne tumeda kihi teket on mäeplatoo serva laiendatud, täites nõlva lauget ülaosa kuni 1 m paksuselt liivaga. Täiteliiva ja puhta loodusliku liiva vahelisest hallikast söepurusest, omaaegset maapinda tähistavast kihist saadud söeproov andis tulemuseks 24–322 cal pKr (tabel 1: 14), mis võiks seostuda suure valli ehitamise aegse inimtegevusega.

Mäeplatoo servalt leiti söestunud, 30 cm läbimõõduga posti jäänus, sellest u 1,5 m kauguselt välisnõlva ülaservalt tukile langenud põlenud raudkivide vare (u 1 × 0,3–0,4 m). Süsinikudateeringud – tukist 1450–1650 cal pKr (tabel 1: 12) ja postist 1401–1631 cal pKr (tabel 1: 13) – viitavad söe pärinemisele samast kaitserajatisest. Kõige tõenäolisemalt võiks kaitsetara olla ehitatud Liivi sõja (1558–1583) ajal. Linnamäe selleaegsele taaskasutusele viitab ka söeproov suure valli välisjalamilt, arvatavasti viimase põlengu varingust (tabel 1: 10).

Alt-Laari linnamäel (Nõo khk) ulatus kultuurkiht mäeservaga ristuvas kaevandis (8 × 1 m) (jn 9) maapinnast 120–280 cm sügavuseni. Linnusel on olnud arvatavasti viis kasutusetappi. Esmalt on mäe platoo serva kaevatud madal astang, mille taha linnuseõue servale näib olevat kuhjatud madal vall (jn 10: 2, 3). Nende kindlustuste hävimisel mattus astang varingupinnase alla. II ehitusetapi ühe põlenud palgijäänuse ^{14}C-dateering oli 428–635 cal pKr (tabel 1: 15). Seda kihti kattis 20–40 cm paksune tumepruun pinnas (jn 10: 6), millest leitud söetükid pärinesid ajavahemikust 640–854 cal pKr (tabel 1: 16) ning mida võib siduda linnuse III ehitusetapiga. Tumepruuni pinnast kattis u 20 cm paksune intensiivne tumehall kiht (jn 10: 8, IV ehitusetapp), kust leiti rohkelt rauašlakki ja oletatav koldekoht. Nimetatud kihti võivad dateerida sellele kuhjatud pinnasest (jn 10: 9–11) leitud söestunud palgijupid, millest ühe ^{14}C-dateering oli 890–1152 cal pKr (tabel 1: 17). See nähtavasti õuelt võetud kultuurkihist tekkinud ladestus oli kuhjatud mäeservale, et kindlustada linnust pärast hävimist. Viimase, V ehitusetapi dateering jääb ebaselgeks. See võis pärineda ka hilisrauaajast.

Nõukogude ajal on linnuseõue buldooseriga tasandamisel lükatud pinnast mäeservale, kus see moodustab kuni 120–130 cm paksuse, muinasaegset keraamikat, šlakki ja loomaluid sisaldava täitekihi (jn 10: 13).

Üsna leiurohke kultuurkiht sisaldas peamiselt käsitsikeraamika katkeid, millest vanimad olid riibitud pindadega (jn 12: 4), rooma rauaaja lõpust või rahvasterännuajast. Enamik käsitsikeraamikast kuulub eel-

viikingi- ja viikingiaega. Mõnedel jämekeraamilistel majapidamisnõudel olid serva all augud. Peenkeraamilised lauanõud olid kaunistatud joonte, lohkude või mõigastega (jn 12: 1–3). Kedranõude tükke oli vähe. Ehetest leiti lihtne ümar hõbedast rinnaleht (jn 12: 6) ning pronksist spiraalehte (arvatavasti ripatsi või ehtenõela) katke (jn 12: 7). Üks sarvest voolitud auguga ese (jn 12: 5) oli kaunistatud lohukestega. Veel leiti kaks oletatavat nooleotsa, kaks naasklitera katket, õngekonks ja nähtavasti viikingiaegne sepaalasi (jn 12: 8) – seni vanim Eestis. Alasi, ääsitükid ja rohke rauašlakk viitavad viikingiaegsele rauasulatusele ja sepatööle.

Kultuurkiht sisaldas nii koduloomade (veis, hobune, siga, kits/lammas) kui ka metsloomade luid. Kopraluude põhjal võib oletada, et Alt-Laari linnus kuulus viikingiaegsesse laialdasse karusnaha kaubandusvõrgustikku. Linnuse ja sellega liituva asula tähtsust näitab seegi, et hoolimata korduvatest tagasilöökidest on linnus I aastatuhande teise poole jooksul uuesti taastatud.

Paloveere linnamäe (Rõuge khk) õueala on 1970. aastatel buldooseriga tugevasti lõhutud kolhoosi tantsuplatsi tasandamiseks. Mäe kaguotsa tehtud kaevandis (1 × 7 m) (jn 14) oli kultuurkihti säilinud 1,5 m pikkuses lõigus. Pinnase ülaosa oli buldooseriga segatud, segamata kultuurkiht sisaldas kuni põhjani nii käsitsi- kui ka kedrakeraamikat (jn 13). Süsinikuproov kultuurkihi põhjast andis tulemuseks 695–977 cal pKr (tabel 1: 18). Samalaadne dateering, 777–1018 cal pKr (tabel 1: 19), saadi ka algsel mäenõlval olnud segatud liivast. Säilinud kultuurkiht pärineb käsitsi- ja kedrakeraamika kooseksisteerimise ajast, s.t 11. sajandist.

Uandimäe (Oandimäe) linnamäele Otepääst 4 km põhja pool tehti kaks proovikaevandit – üks õueala põhjaserva, teine lõunanõlvale. Esimeses kaevandis (14 m^2) (jn 14) koosnes pinnase ülaosa 20 cm paksuselt hallikaspruunist, künni tulemusel erodeerunud ja allapoole kandunud mullast. Sügavamal oli säilinud 10–15 cm paksune künnist puutumata tumeda mulla kiht, mis sisaldas hajusalt paiknevaid 8–15 cm läbimõõduga, nähtavasti lähedusest pärit põlenud raudkive. Kihist leiti väike nuga (jn 15: 1), pronksrõngake (jn 15: 2) ja raudrõnga katke (jn 15: 8). Kaevandist saadi vaid kedranõukilde (jn 15: 3–7); *in situ* kultuurkihi söeproovid andsid tulemuseks 901–1160 ja 1019–1222 cal pKr (tabel 1: 20, 21). Ilmnes, et mäeplatoo serva tasandamiseks oli linnuse rajamisel nõlva ülaosa täidetud savikruusaga.

Teises, nõlvale tehtud kaevandis (1 × 5 m) koosnes pinnas kuni 15–20 cm sügavuselt samuti erosioonimullast, mis sisaldas üksikuid kedranõukilde. Sügavamal paljandus nõlvast alla veerenud 21 tukki põlenud palkseinast, neist jämedaim vähemalt 30 cm läbimõõduga palgist (jn 16). Kaevandi mäepoolsesse otsa oli varisenud punast täiteliiva, mida oli kasutatud mäenõlva täitmiseks ja järsendamiseks. Tukilasu ümbritses must nõgiliiv, kuid osa tukke leiti ka kaitseehitistest varisenud kollasest liivast. Kahe tuki välistest aastaringidest võetud süsinikuproovid andsid tulemuseks 1040–1270 ja 1018–1221 cal pKr (tabel 1: 22, 23).

Tänini elava pärimuse kohaselt hävis Uandimäe linnus Otepäält lähtunud rünnaku tagajärjel. Uandimäe valitseja olevat tapnud Otepää linnuseülema naise või tütre, kutsunud naaberlinnuse vanema külla ja kostitanud teda tapetu lihast tehtud pidusöögiga. Seepeale hävitanud Otepää mehed kättemaksuks linnuse Uandimäel. Legendi põhisisu – linnuse muinasaegne häving keskuste omavaheliste vastuolude tõttu – ei ole vastuolus arheoloogia andmetega. Kaevamistulemuste põhjal jääb linnuse rajamisaeg tõenäoliselt 12. sajandi teise poolde ja selle kasutusaeg oli väga lühiajaline. Keskuste vastasseisu võib pidada tõenäoliseks, sest lähestikku asuvate linnuste tagamaade kattumine võis olla piisav põhjus huvide konfliktiks.

Kauksi kaevamistel avastatud eelrooma rauaaegne vallikuhjatis on seni uuritud Lõuna-Eesti linnustelt vanim. Varasemate vasteteta on ka samuti rooma rauaaegsed liivast vallikuhjatised Kauksi ja Mõrgi linnusel. Mõrgi on Eesti esimene muinaslinnus, kust on leitud jälgi paiga taaskindlustamisest varauusaegsete sõdade ajal.