

ARHEOLOOGILISED
VÄLITÖÖD
EESTIS

ARCHAEOLOGICAL
FIELDWORK
IN ESTONIA

2006

Koostanud ja toimetanud
Ülle Tamla

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Esikaas: 2006. a Palutaja külast avastatud aardes sisalduv
hõbedatud hoburaudsõlg.

Cover: Silver-plated penannular brooch from Palutaja hoard,
discovered in 2006.

Tagakaas: Krõllid Palutaja aardest.

Back cover: Silver beads from Palutaja hoard.

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INVESTIGATION OF LIME PRODUCTION SITES IN THE HISTORIC KURSI PARISH

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Interest regarding ancient and historical production activities, technology and technological processes gained more significant momentum within the science of archaeology only during the 1960s–1970s. In Estonia, this subject (more specifically, archaeological textiles, iron production and processing) has so far been systematically dealt with in the Institute of History of Tallinn University. Yet, the production and usage of tar and lime in Estonia have exceeded the production of iron.

In 2006 a research project “Tar and Lime Production in Estonia during the Prehistoric, Medieval and Modern Times” was carried out by Andres Tvauri. The project was financed by the Estonian Science Foundation (Grant No. 6690). This particular topic was also selected because of heritage conservation purposes. A number of ancient remnants, associated with early production of tar, lime and brick, have not yet been discovered nor taken under state protection in Estonia. Lime and tar production were also investigated in the framework of a research project, which had a wider goal to develop industrial archaeology as a general research field in Estonia. Until today, Estonian historians have mainly been dealing with political and cultural history, leaving the history of economics and production (except for agricultural production) almost unexplored. Jüri Peets (Institute of History) is the only Estonian archaeologist who has taken a deeper interest in industrial archaeology, focusing on iron smelting and processing and archaeological textiles. The production technology of archaeological artefacts has lately also been studied by Ülle Tamla and Heidi Luik (both from the Institute of History) and Urve Kallavus (Tallinn University of Technology). Mihkel Leetmaa has thoroughly researched lime and tar kilns from the ethnological viewpoint (2000). Yet, there is almost no data in Estonia on the earlier history of tar and lime production (prior to the 19th century). Current research in the field of production history is clearly insufficient.

The goals associated with the research of tar and lime production are: first, to get an overview of the spread and preservation of the remains connected with the production of tar and lime in the territory of Estonia. Second, to work out a methodology for searching, excavating and documenting tar pits and kilns. Third, to establish the beginning of lime and tar making and changes in the production

volumes in the territory of Estonia. Additionally, we intend to explore the amounts of raw materials, fuel and labour force used in traditional tar and lime making. For this purpose, an experimental archaeological test for the production of tar and lime will be organised.

FIELDWORK IN 2006

Archaeological fieldwork concentrated primarily on investigating the history of lime production. Lime as a construction material was introduced in Estonia during the 13th century by the Danish-German conquerors. During medieval and modern times, stone and brick, binded by lime mortar, were the main building materials for Estonian towns, numerous fortresses and churches. Limestone, which is the raw material for lime, is available in North, West and Central Estonia, and therefore lime for construction purposes was produced locally. Considering the volume of building work, this had to be an extremely large-scale industry, leaving traces on the landscape, which are recognisable even today (limestone quarries, lime kilns and lime slaking sites).

In South Estonia the only sources of building-grade limestone are outcrops that appear on a small territory in the northern part of the Kursi parish. Here, at the River Pedja and its tributary, the Kaave River, the prevailing majority of construction lime for South Estonia was produced up to the beginning of the 20th century. The earliest written sources of lime making in this location date from the 16th century. In the 17th-18th centuries the city of Tartu with its estates was the main organiser of production and consumer of lime produced in the Kursi parish. Abundant remains of lime kilns have preserved there until today. Therefore the research of lime making concentrates first and foremost on the production centre in the Kursi parish.

Lime burning in the Kursi parish has caught the attention of historians before. A thorough article on lime burning at the River Pedja was published by Hans Kruus (1933). This work can be considered a pioneering attempt in the field of industrial archaeology in Estonia. Kruus explored lime production from local limestone in Jõune, Tõrve and the neighbouring villages until the beginning of the 20th century. He also took an interest in the technological, economical and social aspects of lime burning based on the 17th-19th century sources, including archival documents from the Tartu town archive. He used a lot of ethnographic data and oral sources in his work. No fieldwork was carried out by Kruus, although he had seen many lime kilns and quarries mentioned in his article for himself.

Additional aims of the present research project are to find out and document the ancient remains associated with lime production preserved in the vicinity of the Pedja River; to determine when lime production was introduced in the region of the Pedja River; whether and how the technology of lime-making altered within the observed region during the course of time; to find out the production volume of the Kursi lime-making centre as a whole.

2006 was the first year of the project. We studied the written sources and located the 17th to 19th century lime kilns recorded on historical maps. Data was gathered about 31 lime kilns or kiln groups (Fig. 1). 13 known kilns and limestone quarries (Fig. 2) were visited and documented in the area of the Kursi parish in the spring of 2006. The aim of the work was to learn to recognise the sites of demolished kilns on the landscape.

Lime kilns in the Kursi parish were built mostly as close as possible to the rivers Pedja or Kaave, since limestone quarries were located at the banks of these rivers. Lime kilns were located on high ground to prevent seasonal floods from reaching them. Fieldwork results indicate that lime kiln remains usually consist of a 1.5–3 m high rampart in a semicircle form with a diameter of 6–8 m, consisting of sand and gravel (Fig. 3). Often a few meters deep small limestone pits are located around the kiln. The inner walls of the kiln often show a stone lining with a burnt surface,

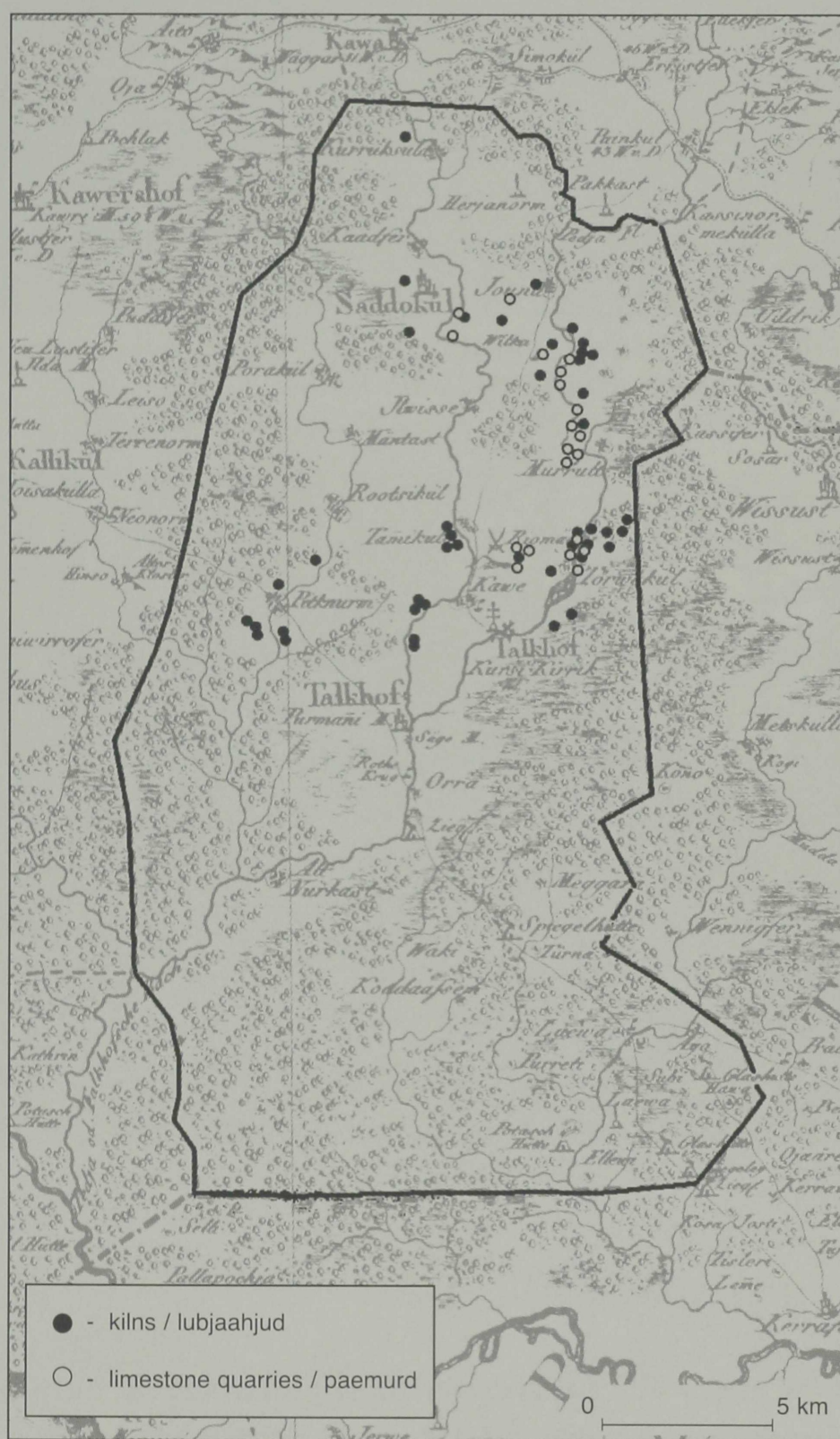


Fig. 1. Known lime kilns and quarries in the district of Kursi parish marked by A. Tvauri and T. Saimre on the atlas of Livland from the year 1796 composed by L. A. Mellin.

Jn 1. L. A. Mellini Liivimaa atlase kaardile (1796) A. Tvauri ja T. Saimre välitööde põhjal märgitud Kursi kibelkonna lubjaahjud ja paemurrud.



Fig. 2. Limestone quarry in the Tõrve village in the eastern bank of Pedja River.

Jn 2. Paemurd Tõrve külas Pedja jõe idakaldal.



Fig. 3. Lime kiln on the lands of Indreku farmstead in Jõune village in the western bank of Pedja River.

Jn 3. Jõune küla Indreku talu maal Pedja jõe läänekaldal paiknev lubjaahi.

sometimes even molten patches can be seen. Inside and around the kiln scrap lime and leftover quicklime (CaO) powder is found, that has turned back into limestone but has preserved its quicklime-like texture and can easily be distinguished from natural limestone present in the soil.

In the framework of the project systematic landscape inspections were carried out to find undiscovered production remains. We focused mostly on the wooded areas around Jõune and Tõrve villages near the Pedja River and around Saduküla and Tammiku villages near the Kaave River. An additional landscape inspection was carried out around Pikknurme village. The locations of newly discovered remains were recorded using a GPS-receiver.

As a result of the fieldwork in 2006 two well-preserved lime kilns with surrounding limestone quarries were found that have not been mentioned

in earlier literature or on the historical maps. One of the kilns is located in the Tammiku village, 250 metres south of the Saare farmstead. East of the farmstead, numerous old limestone pits are located in extensive bushy and forested areas.

Another lime kiln with a surrounding lime quarry was found in the forest of the former Saduküla manor, on the eastern bank of the Kaave River, on the grounds of the present Veski estate (Fig. 4). It is a well preserved site, with a lime kiln 8 m

in diameter (Fig. 5) and a lime quarry surrounding the kiln. Inside the quarry piles of broken limestone slabs have been preserved. Three test pits were dug at this site and important information was gathered about the construction of the kiln – it is a so-called earthen kiln, which differs from the formerly known kilns of the Kursi parish. From the test pits dug in the bottom of the lime kiln (Fig. 6) a 10 cm thick level layer of burnt lime was found lying on

intact natural moraine, in a depth of 25–55 cm from the present ground surface. There were no remains of granite lining inside the kiln, a feature that is usually present in the 19th century kilns of the Kursi parish. Probably the lining was made of limestone, which turned into quicklime when the kiln was working and later crumbled and disappeared completely. However, a lot of fragments of burnt clay or bricks were found on the bottom of the kiln and its surroundings. Clay was probably used to isolate the inner limestone walls of the kiln or to seal the kiln opening after burning was completed to slow down the cooling process. Bricks may have been used to build a



Fig. 4. Location of investigated lime kiln as marked on the map of Saduküla manor from the year 1848.

Jn 4. Saduküla mõisa plaanile (1848) märgitud lubjaahi.
(EAA 2623-1-2036/9-12.)



Fig. 5. Saduküla lime kiln. View from west.

Jn 5. Saduküla lubjaahi. Vaade lääne poolt.



Fig. 6. Test pit inside the Saduküla lime kiln.
Jn 6. Proovikaevand Saduküla lubjaahjus.

whole site will also be drawn. Production sites known from written sources that were not visited during 2006 will be studied in 2007 and additional landscape surveys will be performed in forested areas.

References

- Kruus, H. 1933.** Lubjapõletamine Pedja jõe rajoonis. – Ajalooline Ajakiri, 4, 177–195.
- Leetmaa, M. 2000.** Lubja- ja tõrvaahjud. – Suitsutare, 2, 147–210.

hearth or a front wall of the kiln. Unfortunately no charcoal was found for dating the kiln. No finds were discovered. The metal detector did not identify any objects older than the 20th century. According to the present data the kiln dates from the 13th to the 18th century.

Investigations at Saduküla lime kiln will be continued in 2007. The main objective is to obtain charcoal to date the kiln. A detailed plan of the

LUBJATOOTMISEGA SEOTUD MUISTISTE UURIMINE AJALOOLOSE KURSI KIHELKONNA ALAL

Andres TVAURI ja Tanel SAIMRE

Huvi muistse ja ajaloolise tootmistegevuse, tehnoloogia ning tehnoloogiliste protsesside vastu hakkas arheoloogias levima laiemalt 1960.–1970. aastatel. Eestis on seni tegeldud süstemaatiliselt vaid rauatöötlemise ajaloo uurimisega. Kuid Eesti alal on rauast veelgi suuremas mahus toodetud ja kasutatud tõrva (sealhulgas tõkatit) ning lupja. Seetõttu käivitaski Andres Tvauri 2006. aastal teadusprojekti “Tõrva- ja lubjatootmine Eestis muinas-, kesk- ja uusajal”, mida rahastab Eesti Teadusfond. See teema sai valitud osalt ka muinsuskaitse eesmärkidel – Eestis on leidmata ja kaitse alla võtmata arvukalt muinasjäänuseid, mis on seotud tõrva-, lubja- ja tellisetootmisega.

2006. aasta välitöödel keskenduti lubjatootmise uurimisele ajaloolise Kursi kihelkonna alal. Lubi võeti Eesti alal ehitusmaterjalina kasutusele 13. sajandil seoses Saksa-Taani vallutusega. Kesk- ja uusajal oli Eesti linnade, arvukate kindluste ja kirikute peamiseks ehitusmaterjaliks kivi ja tellis, mis seoti lubimördiga. Ehitusmahtusid arvestades pidi see olema väga suur tööstusharu, mis jättis maha maastikul tänaseni äratuntavaid jälgi (paemurrud, lubjaahjude asemed, lubja kustutamise kohad). Lõuna-Eestis paljandub ehituslubja valmistamiseks sobilik paekivi maapinnal vaid kitsal alal Pedja jõe ja selle lisajõe Kaave ümbruses. Veel 17.–19. sajandil turustati selles piirkonnas toodetud lupja kogu Lõuna-Eestis. Seepärast on just see piirkond endise Kursi kihelkonna alal käesoleva uurimistöö keskmes. Lubjapõletamisest Pedja jõe ääres on põhjalikuma artikli avaldanud Hans Kruus (1933). Tema töö rajaneb aga kirjalikel ja pärimuslikel allikatel.

Käimasoleva uurimistöö eesmärk on üles otsida ja dokumenteerida Kursi kihelkonna alal säilinud lubjavalmistusega seotud muinasjäänused ning selgitada välja, millal algas lubjavalmistus Pedja jõe piirkonnas ning kas ja kuidas muutus lubjatootmise tehnoloogia aja jooksul. Ühtlasi on kavas saada aimu Pedja jõe piirkonna lubjavalmistuskeskuse toodangumahtudest.

2006. aastal tutvuti lubjapõletamise ajaloo alase teaduskirjandusega ning otsiti üles ning kanti kaardile lubjaahjud, mis on märgitud Eesti Ajalooarhiivi talletatud Kursi khk maaüksuste 17.–19. sajandi kaartidele. Andmeid saadi 31 erinevas kohas paikneva 17. – 20. saj alguse lubjaahju või ahjurühma kohta (jn 1). Külastati ja dokumenteeriti 13 lubjaahju ning mitmeid ajaloolisi paemurde (jn 2); selgitati välja lubjaahjude paiknemise põhimõtted ja välised tunnused ning saadi teada, mille järgi võib maastikul ära tunda hävinud lubjaahju aset. Lubjaahjud rajati enamasti Pedja ja Kaave jõe lähedale, kus paiknesid ka paemurrud. Lubjaahi rajati kõrgemale kohale, et tulva- ja põhjavesi ei ulatuks ahjuni.

Välitööde käigus selgus, et ahjudest on tänapäevaks säilinud 1,5–3 m kõrgune hobuserauakujuline kruusast vall e ahjukere läbimõõduga 6–8 m (jn 3). Ahju ümbruses leidub paljudel juhtudel kuni paari meetri sügavusi paevõtu auke. Ahjude siseküljel on sageli näha suurtest põlenud (kohati ka pinnalt sulanud) maakividest vooder. Ahju sees ja selle ümber on maha jäänud põletatud lupja (CaO) ehk põlemata lubjakivitükikesi sisaldanud praaklupja, mis aja jooksul on ahjus valminud põletatud lubjast muutunud taas lubjakiviks, kuid säilitanud spetsiifilise struktuuri. Selline tootmisjäak eristub pinnases kergesti looduslikust lubjakivipurust.

Lubjatootmisega seotud muistiseid otsiti maastiku süstemaatilise läbikäimisega. Peamiselt keskenduti Jõune ja Tõrve küla alal Pedja jõe ääres paiknevate metsade ning Saduküla ja Tammiku külas Kaave jõe äärsete alade uurimisele (jn 4). Lisaks tehti maastikuinspeksioone ka Pikknurme ümbruses.

Välitööde tulemusel leiti kaks hästi säilinud lubjaahju koos paemurdudega, mida ei ole mainitud varasemas kirjanduses ega leidu teavet nende kohta ka vanadel kaartidel. Neist üks paikneb Tammiku külas Saare talust lõuna pool; teine lubjaahi ja seda ümbritsev paemurd leiti endisest Saduküla mõisa metsast Kaave jõe läänekaldalt tänapäevase Veski kinnistu maalt (jn 5). Tegemist on väga hästi säilinud kompleksiga, kuhu kuulub lubjaahi ja seda ümbritsev paemurd. Viimase juures on säilinud isegi murtud paekivi kuhjasid. Saduküla lubjaahjule rajati kolm proovikaevandit ja uuriti seda metallidetektoriga. 8 m läbimõõduga ahju sisse tehtud kaevandites paljandus 25–55 cm sügavusel põletatud lubja purust koosnev 10 cm paksune tasane põrandakiht, mille all on looduslik moreen (jn 6). Ahju sisemuses ei avastatud jälgi maakividest seinast, mis Kursi kihelkonna 19. sajandi lubjaahjude juures reeglina esineb. Võib arvata, et uuritud ahju vooder oli paekivist ja on aja jook-sul täielikult lagunenenud. Nii ahju põrandalt kui ka ahju kõrvalt saadi rohkesti põlenud savi või toortelliste tükke. Savi võidi kasutada ahjuvoodri kaitsmiseks kuumuse eest või ahju suudme sul-gemiseks ahju jahtumise ajal. Toortellistest võidi laduda ka ahju esisein või koldevõlv. Kahjuks ei lei-tud sütt, mida oleks saanud kasutada muistise täpsemaks dateerimiseks. Ka uuringud metallidetek-toriga ei andnud tulemusi: midagi 20. sajandist varasemat maapinnalt ei leitud. Senistel andmetel näib, et uuritud ahi pärineb 13.–18. sajandist. Uuringuid Saduküla lubjaahjul on plaanis jätkata 2007. aastal.