

2005. aasta arheoloogiliste välitööde tulemused

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**ARHEOLOOGILISED
VÄLITÖÖD
EESTIS**

**ARCHAEOLOGICAL
FIELDWORK
IN ESTONIA**

2005

Koostanud ja toimetanud
Ülle Tamla

Muinsuskaitseamet
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Rekonstruktsioon 2005. a. avastatud Ubina hõbeaardes
sisalduva fragmendi põhjal. Joonistanud Kersti Siitan.
Cover: Earring or temple ornament from Late Viking Age.
Reconstruction based on the fragment from the silver board
of Ubina discovered in 2005. Drawing by Kersti Siitan.

Tagakaas: Tartust Tähtvere tänavalt 2005. a. leitud 15. saj.
haruldase savikannu kild.
Back cover: Fragment of stoneware goblet from the 15th century.
Stray find from Tartu, Tähtvere Street in 2005.

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TARTU ÜLIKOOLI
RAAMATUKOGU
SUNDASEMPLAR

ARCHAEOLOGICAL EXCAVATIONS IN IHASTE, TARTU

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The general plan of development of Tartu includes the extending of the district of Ihaste to the territory between Hipodroomi Road and the Emajõe meadow, where Vallikraavi Real Estate Ltd. has acquired several building lots. At the beginning of 2005 this bureau filed an application at the National Heritage Board (NHB) for concord to start construction on one part of their property. The preliminary research initiated by NHB was carried out by some students of Tartu University, under the guidance of the associated professor Aivar Kriiska. From the investigated territory of six building plots lots of flint flakes and blades, probably of Mesolithic origin, came to light. On the basis of the report on the results of the preliminary research the NHB took the area under protection and negotiations were started with the builder to establish the terms for the course of the work. Underbidding procedure for carrying out archaeological investigations in the

communication tracks was made public, and the non-profit organization AEG from Tartu and AGU EMS Ltd. from Tallinn were selected to carry out the work. Tanel Moora and Rünno Vissak were engaged to direct the excavations.

MARKING OF THE EXCAVATION

The initiator of the archaeological fieldwork marked on the terrain the complicated ground plan of the designated communication tracks which had to be investigated in 2005 (Fig. 1). Since students under the guidance of Aivar Kriiska had collected flint finds in May from the whole fallow field divided

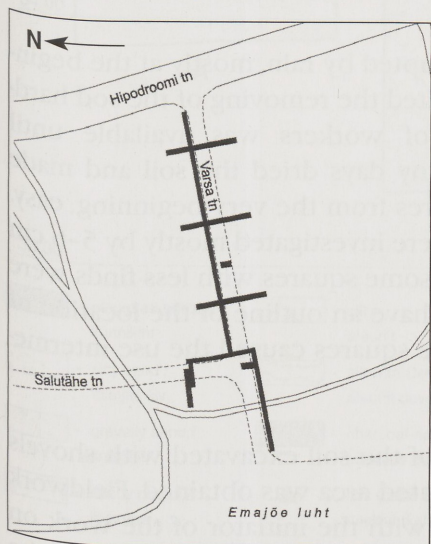


Fig. 1. Location map of the excavations.
Joon. 1. Kaevandite asukoha skeem.

into building lots (report at the NHB), the protected area was decided to be divided into 2 x 2 m squares. Starting with the asphalt cover of Hipodroomi Street the squares were marked with Arabic numerals and in N-S direction with capitals A-Y. In the description of the excavations, squares with an area of 4 sq. m were often divided into 1 sq. m squares. In those cases the smaller squares were marked clockwise beginning from the NW corner, with Roman numerals I-IV. Unfortunately the grid had to be slanted slightly towards SO from the meridian direction - it was handy to take the communication track designed to run along Varsa Street for the O-W axis, since there the longest excavation plot was located in the squares N4-N53. The westernmost excavation plot covered the squares R53-R73. The authors hope that dividing into squares the whole area rich in flint finds facilitates the combining of future excavations with the previous information.

THE COURSE OF WORK

A. Kriiska stated in his report that the area richest in finds was located at some distance from Hipodroomi Street, at the western edge of a fallow field. Therefore the work was started in the eastern squares so that the workers would obtain experience before they reached the find-rich area. First, the 5-6 cm thick sod layer, where grass roots had grown through, was removed and carefully examined. The first few flakes, although relatively sparse, came to light already in the sod layer, and so did the first core.

Only a few days of the excavations were interrupted by rain, mostly at the beginning of the excavations, but then it even facilitated the removing of the sod hardened in summer. Since sufficient number of workers was available until September first good progress was made. Sunny days dried the soil and made screening, which was applied in find-rich squares from the very beginning, easy. The sod layer as well as the deposits under it were investigated mostly by 5-6 cm thick layers. To have an outline of soil horizons some squares with less finds were excavated slightly deeper. This also enabled to have an outline of the location of finds in depth. The abundance of finds in some squares caused the use intermediate layers.

Digging by 5-6 cm layers and screening most of the soil excavated with shovels quite a detailed outline of the site in the excavated area was obtained. Fieldwork was terminated according to the arrangement with the initiator of the work on September 19th. Further, some pits underneath the patches of dark sand and the soil around the marking sticks were excavated.

SOIL COVER OF THE EXCAVATED AREA

According to the WRB (World Reference Base for Soil Resources) the soil of the investigated area can be classified to the subdivision of Dystric Arenosol. The soil in Ihaste has evolved from generally slightly differentiated sandy gravel, and in the western part of the area, on the low terrace with the relief damaged by sandpits and its meadow-side foot from silty sand (Fig. 2). On the bank of the terrace there has been a row of entrenchments of various dates. Nowadays they are collapsed or filled up by bulldozers. Upon the soil piled up from the entrenchments new soil cover has emerged with many fireplaces on it. Tyres have been also burned there. Below the earth mound piled from the entrenchments earlier humus horizon is sporadically preserved. Relying upon these patches we may assert that the whole area covered by the excavations, down to the meadow of Emajõgi River,

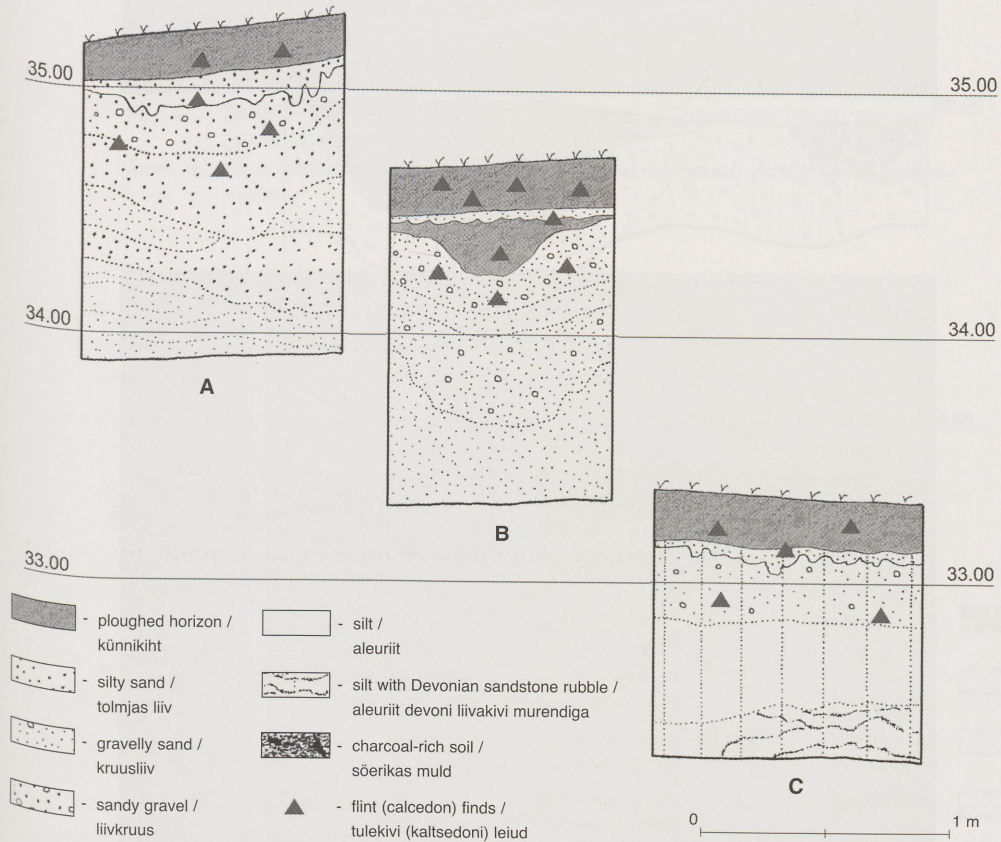


Fig. 2. Samples (A–C) of different granulometric compositions of soil cover horizons in Ihaste.
Joon. 2. Näiteid (A–C) Ihaste erineva lõimisega mullahorisontidest.

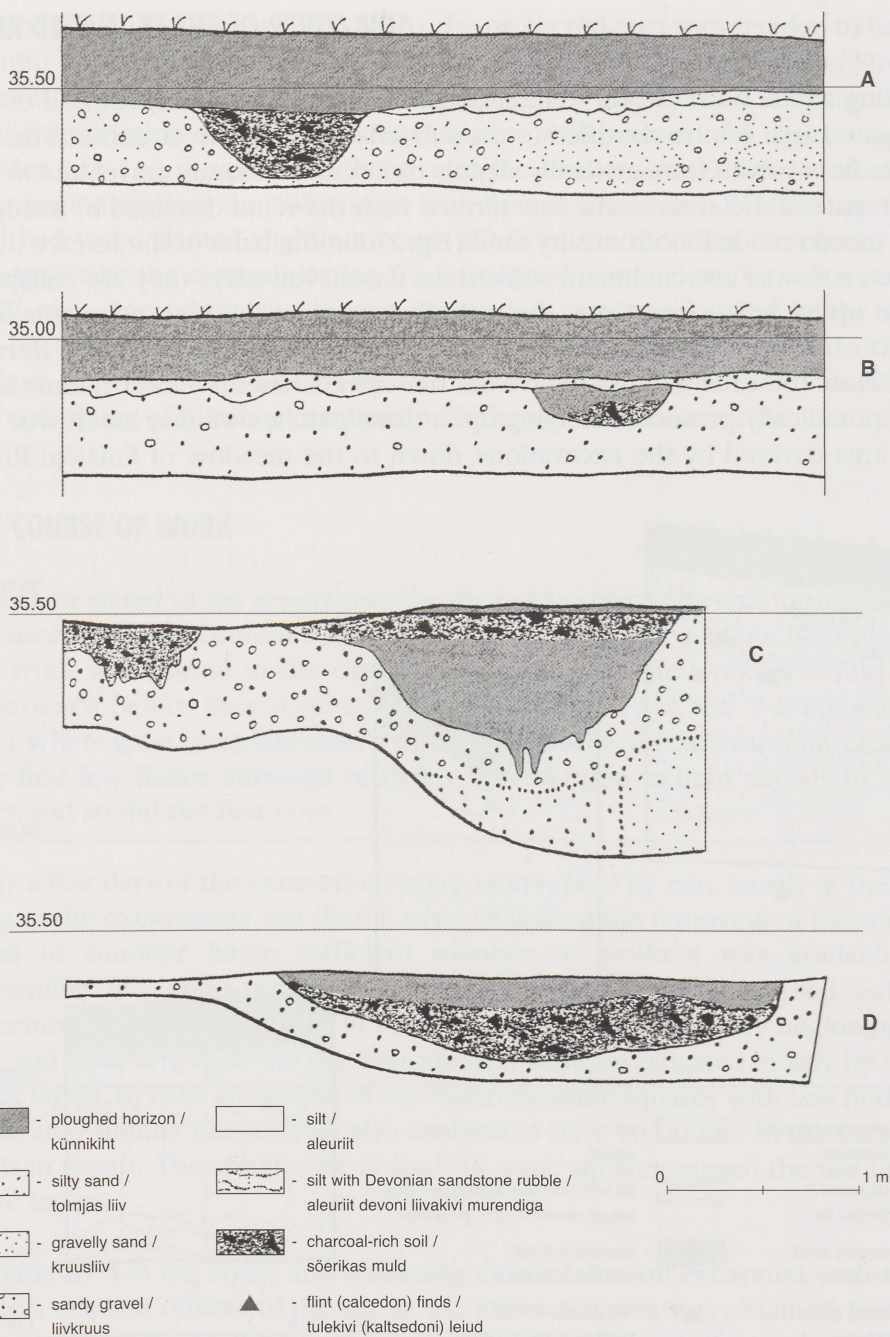


Fig. 3. Cross-sections of charcoal-rich hollows.
Joon. 3. Läbilõikeid liivaste sõerikastest lohkudest.



Fig. 4. Large charcoal patch is provisionally left unexcavated above the level of the layer.

Joon. 4. Suur söelaik on jäetud korrise tasemest kõrgemal esialgu läbi kaevamata.



Fig. 5. The same charcoal patch, half-excavated.

Joon. 5. Sama söelaik poole võrra läbikaevatuna.



Fig. 6. The arrow indicates thin horizon of gleic soil formation on silt, preserved at the western end of the excavation.

Joon. 6. Kaevandi lääneotsas on säilinud noolega tähistatud õhuke kiht algsest gleistunud mullast aleuriidil.

i.e. to the limit of overmoisture, has been a field for a long time. With tractors the field has been ploughed only to the bank of the terrace on the sloping flat ground falling westwards from the Hipodroomi Road. Immediately to the west of the first line of entrenchments the matrix of soil changes to undistinguished silty sand or fine sand (Fig. 2). The pH level of the soil was determined with indicator liquid. In the humus horizon it mostly ranged between 4.4 and 4.8. In sand gravel deeper than 35 cm it ranged between 4.8 and 5.6 and in the silt sand of the western part of the excavation it was between 5.2 and 5.6. The westernmost 25 m of the excavations were located in the area where waste dump had emerged in sand pits at the foot of the terrace. Waste had been pushed up to the ditch mound at the edge of the meadow with an earthmover. Only in the westernmost cross-section of the excavation a thin swampy patch of earlier humus horizon (Fig. 6) could be observed. The area with damaged relief and disturbed soil cover was rich in finds, which, of course, were not located *in situ*. The frequency of flint finds was equal in the soil piled out of the entrenchment and the undisturbed horizons beneath it.

Industrious excavators and fair weather enabled the archaeologists to screen most of the soil before the agreed deadline. The obtained outline of the location



Fig. 7. In the western part of the excavation the soil matrix were silt sediments of ice-dammed lake with thin layers of Devonian red sandstone rubble.
 Joon. 7. Kaevatud ala lääneosas on mulla lähtekivimiks jääpaisjärve settinud aleuriit, milles esineb punase devoni liivakivi murendi kibikesi.

of flint blades, bladelets and flakes in different horizons of the soil helped to understand and describe the prolonged soil genesis in Ihaste.

As mentioned before, the excavated area had once been a ploughed paddock. Therefore we called the humus horizon undisturbed by entrenchments ploughed horizon. Owing to deep ploughing carried out with tractors after the last war the transition from this layer to matrix in soil profiles (Fig. 7) is mostly abrupt. When the ploughed horizon was removed, the so-called transitional layer with ploughing traces (Figs. 8, 9) was exposed. Ploughshares had only partly mixed the dusty B-horizon of the soil with the humus horizon. This layer also contained some fragments of glazed pottery and glass as well as brick fragments, which occurred scattered all over the ploughed horizon. In profiles the transitional layer is poorly expressed (Fig. 3). What is essential is that this transitional layer, which was in general 10 cm thick, as well as matrix, *i.e.* sandy gravel to the depth of 20 cm, contained flint finds! Deciding by the blades and bladelets found from the same depth, a large part of these flakes also must have been made by human hand. The location of flint finds deep in the lowest soil horizons of the present day vividly illustrates the soil genesis and the changes of relief during the past millennia.



Fig. 8. After the removal of ploughed horizon deeper dark furrows came to light in the excavation.

Joon. 8. Kännikibi eemaldamise järel ilmneseid kaevandis sügavamale ulatuvad tumedad kännivaod.

The humus horizon of the soil cannot, by no means, be regarded as a cultural layer of the Stone Age settlement. It has formed as a result of ploughing during many centuries. Prolonged ploughing has smoothed earlier relief. The relief of a delta plain, which has been covered with forests, mainly changes bumpy owing to the trees falling and roots tearing out of the ground. With matrix similar to that in Ihaste aeolian transport diverts, particularly after forest fires, the silty particles of soil. In the matrix silty aeolian hummocks can be observed, etc. Fire forces deep into the ground along tree stumps also at slash-and-burn cultivation. Later the holes of moles and small rodents ran into these cavities. During many centuries earthworms have slid flakes and blades of flint of human make into their holes. Therefore some bladelets, particularly in the deepest layers, were found in upright position. In several places hollows and even deep pits had been dug in the soil by humans before the introduction of arable cultivation. The archaeologists also attempted to mark layers with different textures on the plans. In Figs. 2, 3 and 6 some of them are presented to the reader. For example, in the excavation of the Mesolithic settlement site in Siimusaare on the drumlin field of Kolga-Jaani dark find-rich soil layer could be sporadically observed beneath the ploughed horizon. This was the remains of the cultural layer of a Stone Age settlement, preserved to



Fig. 9. Furrows were examined separately from the surrounding soil, to get an outline of the position of finds in both, the soil disturbed by ploughing and undisturbed soil.

Joon. 9. Kännivaod kaevati läbi ümbritsevast pinnasest eraldi, et saada ülevaadet leidude paiknemisest künnist segatud ja segamata pinnases.

the present day owing to the soil erosion, which had taken place on the slope of the drumlin. The thick deposit of the latter preserved the remains of the cultural layer and protected them from the modern deep-reaching ploughshares. The excavation reports and finds are preserved in Viljandi Museum. In Ihaste no traces of such Stone Age settlement layer were discovered.

The coaly humus patches which came to light when ploughed horizon was removed were not excavated at first. After the removal of the next layers they formed humps in the excavations (Fig. 4). To draw the cross-sections these patches were excavated later half by half (Fig. 5). Pits of various depths came to light, filled with coaly soil. The number of flint flakes found from these pits was usually smaller than the average of the surrounding area.

Only in some pits the sufficient quantity of charcoal required for ^{14}C dating was found. The datings – 1) 4047 ± 70 (Tln-2868); 2) 748 ± 57 (Tln-2866); 3) 908 ± 60 (Tln-2865) and 4) 786 ± 46 (Tln-2864) – are considerably later than the Mesolithic artefacts recovered from the excavations. The coaly pits and ^{14}C datings will be further discussed below, together with the description of finds. Besides the coaly

pits where samples for dating were recovered, several black patches were discernible on the reddish matrix after the removal of ploughed horizon, which had appeared as a result of oil pouring out of tractor's engine.

FINDS

Bones, even teeth do not survive for a long period in the soil of Ihaste. Even the bones of a horse buried in an entrenchment were completely decayed and crumbly.

Pottery finds. From the southern part of the third from east transverse excavation an oblong edge fragment of a pot came to light, crumbled into several pieces, decorated with pits and impressions of cord wrapped around a stick (dating from the period of late comb-marked pottery?) (Fig. 10: 1). About 10 m north of the same excavation a potsherd decorated with small oval pits was found, probably representing corded ware (Fig. 10: 2). Westward from the latter a small potsherd with clear dense comb impressions (Fig. 10: 3) was found from the excavation with disturbed layer at the foot of the terrace, and very small crumbled potsherds were recovered from the soil mound thrown out from the entrenchment higher

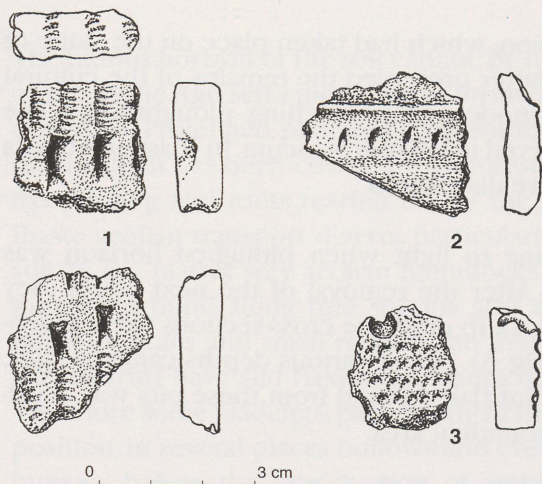


Fig. 10. Potsherds from Ihaste. 1 - late comb ware, 2 - corded ware, 3 - typical comb ware.

Joon. 10. Savinõukilde Ihastest. 1 - biline kammkeraamika, 2 - nõörkeraamika, 3 - tüüpiline kammkeraamika. (TM A.)

up on the bank of the terrace. These fragments came from a lower part of a thick-walled vessel made of clay mixed with stone rubble. Some larger fragments could be identified as striated, but the age of this pot cannot be established owing to the poor condition of the fragments. Besides these only a couple of small potsherds, evidently belonging to hand-moulded vessels, were recovered from Ihaste.

Whole artefacts of crystalline rock were not found. Sand and sandy gravel of Ihaste extremely seldom contain pebbles larger than a dove's egg. About a hun-

dred crystalline stone fragments broken by man and pebbles damaged by fire and knocks were found in the excavations. Of granite stone samples only a couple of pebbles should be mentioned, which had suffered high temperatures and therefore crumbled into stone rubble. If they came from a hearth they were not located *in situ*.

Among crystalline rocks gneiss and quartzite slates heated in fire prevailed. This way quartzite and harder pieces formed. These may be regarded as raw material for making tools. The same can be said about a couple of dozens of samples of uralite porphyrite, plagioclase porphyrite and diabase. Some fragments of wedges were also made of uralite porphyrite. At least one broken Mesolithic wedge with polished edge has been later shaped into a blank for a smaller wedge (Fig. 11: 1). The latter, as well as the blank for a wedge depicted in Fig. 11: 2 were made of plagioclase porphyrite. Whetting stones, polishing stones and knocking-stones common among the finds from Stone Age settlements were not discovered. About one diabase pebble it can be said that it was brought to the area of the excavation from riverbed sediments because its surface was eroded by running water (Fig. 11: 5).

Flint. By mineralogical classification the flints of Ihaste belong among calcedons. The overwhelming majority of flint blades, flakes and artefacts recovered from these excavations are made of this calcedon. But dark-tinted calcedon of southern origin should also be mentioned. This is represented by a core and a few flakes found from the central part of the investigated area.

Among the archaeologists studying the Stone Age two different attitudes towards the recovered flint finds have always been present. Some researchers only regard flint pieces and blades with clear working traces (and, of course, artefacts) as being worth of investigation. Others try first to divide all found flint fragments into natural and man-made, and then attempt a further classification from different aspects. Since this interpretation seemed too subjective to the first two authors of this paper, we sought the assistance of the third author, Kaarel Jaanits, who is most experienced in analysing Mesolithic flint material. To our great content he consented to help the authors. In the following paragraphs only a brief summary will be published of his most extensive analysis of flint finds.

Flint inventory. In total, about 8570 flint finds were gathered from the excavations (this number, and accordingly the figures, presented below, are not exact, because a very small part of the flint inventory of the site was not available to the author of the corresponding part of this report and, therefore, was not taken into account). The flint is of variable quality and mostly of local origin (Fig. 12: 1, 3–13,



0 3 cm

Fig. 11. Finds of crystalline rock from Ihaste. 1–4, 7 - fragments of Mesolithic wedges with polished edges (1, 2 - plagioclase porphyrite, 3, 7 - diabase, 4 - uralite porphyrite), 5 - diabase pebble eroded by running water, 6 - blank of a spear head(?) of diabase.

Joon. 11. Kristalliinsetest kivimitest leide Ihastest. 1–4, 7 - libvitud teramikuga mesoliitiliste talbade katkendid (1, 2 - plagioglassporfüriit, 3, 7 - diabaas, 4 - uraliitporfüriit), 5 - vooluveest kulutatud diabaasist veeris, 6 - diabaasist odaotsa(?) toorik. (TM A.)

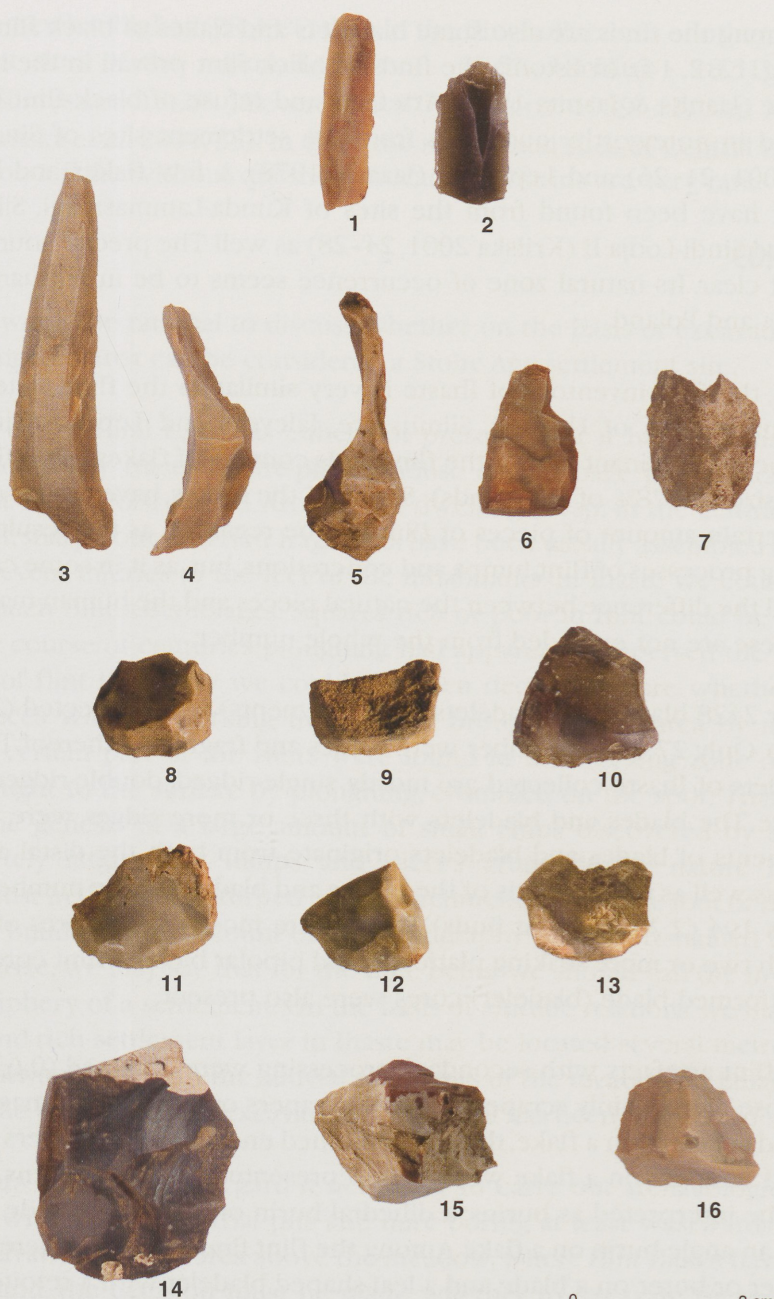


Fig. 12. Flint finds from Ihaste. 1-5 - blades, 6, 7 - burins, 8-13 - scrapers, 14-16 - cores.
2, 14 - black flint, the rest flint of Central Estonian origin.

Joon. 12. Tulekivist leide Ihastest. 1-5 - laastud, 6, 7 - uuritsad, 8-13 - kõõvitsad, 14-16 - nukleused.
2, 14 - mustast tulekivist; ülejäänud Kesk-Eestis leiduvast tulekivist. (TM A.)

16, 16). Among the finds are also some bladelets and flakes of black flint of high quality (Fig. 12: 2, 14). In Estonia the finds of black flint prevail in the inventory of Pulli site (Jaanits & Jaanits 1978). Artefacts and refuse of black flint have also been found in noteworthy quantities from the settlement sites of Sindi-Lodja I (Kriiska 2001, 21–26) and Lepakose (Jaanits 1978). A few flakes and blades of black flint have been found from the sites of Kunda-Lammasmägi, Siimusaare, Jälevere and Sindi-Lodja II (Kriiska 2001, 24–28) as well. The precise source of this flint is not clear. Its natural zone of occurrence seems to be in Lithuania, North Byelorussia and Poland.

In general, the flint inventory of Ihaste is very similar to the flint material from the settlement sites of Umbusi, Siimusaare, Jälevere and Lepakose in Central Estonia. The predominant part of the flint finds consists of flakes: 5894 flint flakes of varied size (68.78% of flint finds). Some of the flakes have traces of fire on them. A certain amount of pieces of flint can be regarded as the results of natural splitting processes of flint lumps and concretions, but, as it in some cases takes time to tell the difference between the natural pieces and the human made pieces of flint, these are not excluded from the whole number.

Altogether 2428 blades and bladelets (incl. fragments) were collected (28.33% of flint finds). Only 27 of the number were blades and fragments thereof. The blades and bladelets of Ihaste collected are mostly single-ridged, double-ridged or without a ridge. The blades and bladelets with three or more ridges were very rare. The fragments of blades and bladelets originate from both the distal and proximal ends as well as mid-sections of the blades and bladelets. The number of cores found was 194 (2.26% of flint finds). These were mostly flake cores of irregular shape with two or more striking platforms and bipolar biconic flint cores, though single-platformed blade (bladelet) cores were also present.

Fifty-four flint artefacts with secondary processing were obtained (0.63% of flint finds). Those were mainly scrapers: 24 side scrapers on a flake or a massive blade and 20 end scrapers on a flake, though combined end and side scrapers on a flake and round scrapers on a flake were both represented by 3 specimens. Two artefacts can be interpreted as burins: a dihedral burin on a massive blade without a ridge and an angle burin on a flake. Among the flint finds of Ihaste there were also one piercer or borer on a blade and a leaf-shaped bladelet with a retouch in both sides.

The flint inventory of Ihaste reminds greatly the flint material of the Mesolithic settlement sites of Central Estonia, though the percentage of blades and bladelets

here is somewhat higher (28.33%) than in the flint collections of other Mesolithic settlement sites of the region: Lepakose - 15.5%, Umbusi - 18.51%, Moksi - 21.93%, Siimusaare 15.2%, Jälevere - 9.57% (Яаниц 1989. 42) and Kivisaare - 20.6% (Kriiska *et al.* 2004, 33). In all of the mentioned sites of Central Estonia, the scrapers on a flake without question prevail and burins are very rare.

CONCLUSIONS

Finally, it would be rational to discuss whether on the basis of excavation results the investigated area can be considered a Stone Age settlement site.

In Ihaste, the cultural layer has either not preserved, or it has not existed at all. Neither could any traces of fire-places, house and garbage pits, which define a settlement site, be discovered. Around the dwellings, resp. in the central part of a settlement, sharp bone and flint fragments have been usually assembled in garbage pits, to prevent injuries to the feet of the inhabitants. In Ihaste we could not find traces of such flint assemblages. Squares rich or poor in flint could be observed, but in the course of centuries ploughing had apparently dispersed the flakes. On the basis of flint inventory we could not even decide for sure whether the calcedon pieces without working traces were brought to the area by man or by nature. A certain part of the flints were found in the freezing zone of soil and these, brought to the surface by ploughing, crumbled on the spot. This seems to be also the genesis of a large amount of small chips discovered by screening. Unfortunately larger flint lumps and pieces crumbled by nature frequently occurred just in the area disturbed by entrenchments and at the foot of the terrace peeled by bulldozer. On account of this stratigraphy of these remained uncertain. To summarize, we may say that for the time being we should call the investigated area a periphery of a settlement. On the basis of altitude relations we may assume that the find-rich settlement layer in Ihaste may be located several metres further down, westwards, beneath the alluvial sediments of the meadow of Emajõgi River. But after the termination of excavations filling soil has been brought to valley flat.

The authors of the article regard it necessary to carry out archaeological reconnaissance with a georadar, trial pits and mire boring at least westwards from the Ihaste excavations. In the area above the meadow, where flint flakes have been or will be found, the decision must be made whether to excavate these areas and recover additional finds similar to those from the described excavations, or risk the ruin of finds, hitherto unknown to researchers, in the course of construction activities in the areas still not investigated. The latter possibility, however, is minimal in the surroundings of the communication tracks investigated in 2005.

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ARHEOLOOGILISED KAEVAMISED IHASTES, TARTUS

Tanel MOORA, Rünno VISSAK ja Kaarel JAANITS

Tartu arenguplaanis on kavandatud Ihaste linnajao laiendamine Hipodroomi tee ja Emajõe luha vahelisele alale, kuhu ostis rea ehituskrunte "Vallikraavi Kinnisvara AS". 2005. aasta alguses tellis nimetatud asutus Muinsuskaitseametilt ühele osale maaomandist ehitustegevuse alustamiseks kooskõlastuse. Muinsuskaitseameti tellitud kooskõlastuseelsete väliuuringutega, mida tegid Tartu Ülikooli üliõpilased Aivar Kriiska juhendamisel, selgus, et šurfidega läbi uuritud alal, mis hõlmas kuut ehituskrunti, leidub rohkesti tõenäoliselt mesoliitilise vanusega tulekivikilde, -laaste ja laastukesti. Toetudes uurimistööst tehtud aruandele võttis Muinsuskaitseamet ala kaitse alla ning alustas läbirääkimisi ehitustööde jätkamise tingimuste üle. Arheoloogiliste väljakaevamiste läbiviimiseks kommunikatsioonikraavide alal kuulutati välja konkurss, mille võitsid MTÜ AEG Tartust ja OÜ AGU EMS Tallinnast. Väljakaevamisi juhatasid Tanel Moora ja Rünno Vissak. Keeruka põhiplaaniga ala (joon. 1) tuli läbi uurida 2005. aastal.

KAEVAMISMETOODIKA

Võttes aluseks A. Kriiska aruande, mille järgi leiurikkam ala paikneb Hipodroomi tänavast eemal sõotis põllumaa lääneveerul, alustati kaevamisi objekti idapoolsest osast. Alates kaevamiste algusest sõeluti pinnast leiurikkamates ruutudes; nii mättakihti kui ka järgmised kihid uuriti läbi 5–6 cm korristena; mõnes leiurohkes ruudus puhastati välja ka vahekorridid. Selleks, et saada ülevaade mulla-kihtidest, kaevati paiguti leiuvaesemaid ruute järgmise korrise võrra sügavamale. Sama meetodika rakendamine aitas saada selgust ka leidude paiknemisest pesadena sügavuti. Kaevamiste lõppedes kaevati läbi veel mõned tumedate liivalaikude all paiknevad lohud ja ruudutähiste ümber jäänud pinnas.

MULLATEKKEPROTSESSIDE UURIMINE

Koos arheoloogiliste kaevamistega pöörati suurt tähelepanu ka mullatekkeprotsesside väljaselgitamisele. Ihastes on muld kujunenud üldiselt vähediferentseerunud liivkruusast (joon. 3) ja lääneosas, liivaukudest rikutud reljeefiga madalal astangul ning selle luhaeelsel jalamil, aleuriitliivast (joon. 2: c). Astangu perval on olnud ridamisi eriaegseid kaevikuid, mis on tänaseks kinni varisenud või kinni aetud. Kaevikutest välja kuhjatud materjalile on tekkinud uus muldkate, millel on palju tuleasemeid. Kaevistest väljavisatud mullavalli all on paiguti säilinud varasem huumushorisont. Nende laikude põhjal võib väita, et kogu kaevandite poolt hõlmatud ala on olnud pikemat aega põlustatud kuni Emajõe luhani.

Kaevandite kõige läänepoolsemal alal on astangu jalami liivavõtulohkudesse tekkinud prügila. Prügi on lükatud buldooseriga luha servas kulgeva kraavivalli ette. Vaid kaevandi läänepoolseimas profiilis on näha pealelükatud materjali all säilinud õhuke soostunud vanema huumushorisondi laik (joon. 6). Rikutud loodusliku reljeefi ja segatud muldkattega ala oli leiurikas, kuid leiud ei paiknenud seal *in situ*. Tulekivileide oli ühevõrra nii kaevikust väljavisatud mullas kui ka selle all säilinud rikkumata mullahorisontides. Saadud pilt tulekivist laastude ja laastukeste ning kildude paiknemisest mulla erinevates horisontides võimaldas mõista ja kirjeldada toimunud pikaajast mullageneesi.

Mulla huumushorisonti ei saa uuritud alal mingil juhul käsitleda kiviaja asula kultuurkihina. See on tekkinud aastasadade vältel künniviljeluse tulemusena. Pikaajaline kündmine on vanemat pinnareljeefi tasandanud. Aastatuhandeid metsa all olnud deltatasandiku pinnareljeef muutub peaaesjalikult

puude ühes juurtega mahamurdumise läbi lohklik-künklikuks. Ihastele sarnase lähtekivimi puhul paigutab tuulekanne eriti metsatulekahjude järel ringi mullalõimise tolmat osa. Lähtekivimis on täheldatavad tolma lõimisega tuulevaalud. Tuli tungib sügavale pinnasesse piki kände ka aletamise korral. Tekkinud õõnsustesse koonduvad ajast-aega hiljem pisinäriiliste ja muttide käigud. Aastatuhandete vältel on vihmaussid inimese poolt tulekivist löödud kilde ja laaste oma käikudesse nihutanud. Seetõttu paiknesid mõned just kõige sügavamalt leitud laastukesed lähtekivimis püstjas asendis. Mitmel puhul oli inimkätega süvendatud pinnasesse lohke ja isegi sügavaid kaeviseid enne künniviljeluse kasutusele võtmist. Erineva lõimisega kihte püüti mitmel puhul ka plaanidele fikseerida. Joonistel 2, 3, 6 ja 7 on osa neist ka lugejale esitatud.

Näiteks Siimusaare mesoliitilise asula kaevamistel Kolga-Jaani voorestiku alal võis paiguti hallika künnikihi all täheldada mustjat leiurikast mullavööndit. See oli jäänuk kiviaegse asula kultuurkihist, mis oli meie päevini säilinud tänu voore nõlval toimunud pinnaseerosioonile. Peale kandunud tüse kiht "konserveeris" kultuurkihi jääneid ja samas kaitses tänapäevase sügava künni korral adraterade eest (Siimusaare kaevamiskirjeldused ja leiumaterjal on talle Viljandi Muuseumis). Ihastes aga taolisest kiviaja asulakihist mingeid sümptomeid ei leidunud.

Künnikihi eemaldamise järel kaevandeis ilmnenu huumuse ja söerikkad laigud jäeti esialgu kaevamata. Järgmiste koriste eemaldamise järel moodustasid need kaevandeis kõrgendikke (joon. 4). Profiiljoonise saamiseks kaevati need hiljem poole kaupa läbi (joon. 5). Ilmnesid mitmesuguse sügavusega sөөeseguse mullaga täidetud lohud (joon. 3). Tulekivikilde leiti nendest lohkudest ümbritseva alaga võrreldes enamasti vähem. Vaid mõnes lohus leidis radiosüsiniku alusel dateerimiseks vajalikus hulgas sütt. Ajamäärangud (4047 ± 70 (Tln-2868); 748 ± 57 (Tln-2866); 908 ± 60 (Tln-2865) ja 786 ± 46 (Tln-2864)) on Ihaste kaevanditest leitud keskmise kiviaja esemetest tublisti nooremad.

LEIUMATERJAL

Luud, isegi hambad, ei säili pikemat aega Ihaste pinnases. Ka kaevikusse maetud hobuse luud olid kõdunenud pudedaks.

Keraamikaleidudest väärivad eraldi märkimist mitmeks murenenud piklike lohkuatega ja pulga ümber mässitud nõoriga vajutatud ornamendiga ilustatud (hilise kammkeraamika kasutamise ajajärgust pärit?) nõu servafragment (joon. 10: 1) ja piklikovaalsete lohukestega ilustatud savinõukild, mis esindab nõorkeraamikat (joon. 10: 2). Astangu jalamilt leiti segatud kihiga kaevandist üks väike, kuid selgete tihedate kamtempli vajutistega ja lohuga savinõukild (joon. 10: 3) ja kõrgemalt, astangu pervel olnud kaevikust väljavisatud mullavallist saadi väikesteks tükkideks pudenenud keraamikat. Need killud pärinevad kivipurruga savisegust voolitud paksuseinalise nõu alaosast. Paaril suuremal tükil on näha küll riipimisjälgi, aga selle savinõu vanus jääb määramata kildude halva seisundi tõttu. Lisaks nimetatule leiti Ihastest veel paar ilmselt käsitsi valmistatud savinõude tükkidest.

Kristalliinseist kivimeist terveid esemeid ei leitud. Ihaste liivas ja liivkruusas leidub tuvimunast suuremaid veeriseid üliharva. Kaevandeist leiti aga sadakond kristalliinset inimkäte poolt lõhutud kivikildu ja põletamise ning löökide läbi vigastatud samast kivimeist veerist. Graniitseist kivimipaladest nimetatagu vaid paari veerist, mis olid suures kuumuse pudedaks muutunud. Kui need pärinesid mõnest koldest, ei paiknenud nad *in situ*.

Kivikildudest oli kõige rohkem tules kuumutatud gneisse ja kiltasid. Nii on eraldunud kvartsiitsed ja kõvemad plaatjad palad, mida käsitleti tööriistade valmistamiseks võetud toormaterjalina.

Sama võib väita ka paarikümne uraliit- ja plagioglassporfüriidist ning diabaasist kivimikillu kohta. Uraliitporfüriidist olid ka mõned talvatükid. Vähemalt ühest lihvitud teraosaga purunenud mesoliitilisest talvast oli valmistatud hiljem väiksema talva toorik (joon. 11: 1). Viimane, nagu ka joonisel 11: 2 kujutatud talva toorik, olid valmistatud plagioglassporfüriidist. Kiviaja asulate leiumaterjalis tavalisi ihumis- ja lihvimis- ning löögikive Ihastest ei leitud. Ühe diabaasist veerise põhjal võib väita, et see toodi kaevandi alale sängisetteist üles korjatuna, sest kivimipala pind oli vooluveest söövitunud (joon. 11: 5).

Käesolevas artiklis esitatud Ihaste tulekiviinventari käsitluse koostas Kaarel Jaanits, kel on mesoliitilise tulekivimaterjali analüüsimisel kõige suuremad kogemused. Ihastest saadi u. 8570 tulekivist leidu. Tegemist on enamasti kohaliku tulekiviga. Kuid esineb ka üksikuid kilde ning laaste kõrgekvaliteedilisest mustast tulekivist (joon. 12: 2,14). Selle tulekivi päritolu ei ole päris selge (looduslikult esineb teda näit. Poolas, Leedus ja Põhja-Valgevenes).

Suurema osa Ihaste tulekivileidudest moodustavad killud. Kokku on tegemist 5894 erinevas suuruses tulekivikilluga (68,78 % kõigist tulekivileidudest). Osa kilde on ilmselt tules olnud. Osa tulekivikilde näib olevat moodustunud tulekivitükkide ja -konkretsioonide loodusliku lõhenemise tulemusena, kuid kuna nende arvu ei õnnestunud täpselt kindlaks määrata, jäid nad tulekivileidude üldisest arvust välja arvamata.

Koos katkenditega on tulekivileidude hulgas 2428 tulekivilaastu ja -laastukest (28,33 % kõigist tulekivileidudest). Ainult 27 nendest kuuluvad laastude hulka. Ihaste tulekivilaastud ja -laastukesed on enamasti ühe- või kaheharjalised või hoopis ilma harjata. Kolme või rohkema harjaga laastud ning laastukesed on väga haruldased. Laastude ja laastukeste katkendid pärinevad nii laastu või laastukese mõlemast otsast kui ka keskkohast.

Nukleusi on Ihaste tulekiviinventaris 194 (2,26 % kõigist tulekivileidudest). Enamasti on tegemist kilde saamiseks mõeldud korrapärase kujuga kahe või enama löögiväljaga nukleustega, kuigi tuleb ette ka bipolaarseid ja laastukeste saamiseks mõeldud ühe löögiväljaga koonilisi nukleusi.

Teisese töötusega tulekiviesemeid on leiumaterjalis kokku 54 (0,63 % tulekivileidude koguarvust). Enamasti on tegemist kõõvitsatega: 24 tulekivikillust või massiivsest laastust külgekõõvitsat ning 20 tulekivikillust otskõõvitsat. Kolme eksemplariga on esindatud tulekivikillust ots- ja külgeteraga kõõvitsad ja ümarkõõvitsad. Uuritsateks saab pidada kahte eset. Esemete hulgas on ka üks laastust teravik või puur ning mõlemalt servalt retušitud lehekujuline tulekivilaast.

Ihaste tulekiviinventar meenutab väga Kesk-Eesti mesoliitiliste asulate tulekivimaterjali, kuigi laastude ja laastukeste osatähtsus on siin mõnevõrra suurem (28,33 %) kui teistes Kesk-Eesti mesoliitilistes asulates (näit. Lepakosel 15,5 %, Umbusis 18,51 %, Moksis 21,93 %, Siimusaarel 15,2 %, Jäleveres 9,57 % ning Kivisaarel – 20,6 %). Kõigi mainitud asulate tulekiviinventaris domineerivad tulekivikillust kõõvitsad ning uuritsad on väga vähe.

ARUTELU

Artiklis arutletakse teemal, kas 2005. aastal Ihastes uuritud ala on kaevamistulemuste põhjal õige nimetada kiviaja asulakohaks? Ihastes pole säilinud või olnudki kultuurkihti. Jälgi pole ka asulakohale nimeandvaist leasemetest, elamu- ja jäätmelohkudest. Kiviajal olid elamute ümbruses, *resp.* asulakoha keskmes teravad luu- ja tulekivikillud kogutud enamasti jäätmeaukudesse, et need asukate jalgu ei vigastaks. Ihastes aga jälgi taolistest tulekivikogumeist ei täheldatud. Oli küll tulekivirikkaid

ja -vaeseid ruutusid, kuid aegade jooksul oli ilmselt kündmine tulekivikillud siiski laiali kandnud. Tulekivist leiumaterjali põhjal ei olnud võimalik kindlalt otsustada, kas töötlemisjälgedeta kaltse-donipalad on uuritud alale inimese poolt toodud või on seda teinud loodus. Teatud osa leitud tulekivimaterjalist on pinnase külmumistsoonis ja adra poolt maapinnale kergitatutena kohapeal murenenud. Sellise tekkelooga näib olevat ka suur hulk väljasõelutud väikseid kilde. Suuremaid loo-duse poolt murendatud tulekivitükke ja -kilde esines kahjuks rohkesti just kaevikutest segipaisatud pinnasega alal ja astangu buldooseriga kooritud jalamil. Nende leidude stratigraafia jäi seetõttu ebaselgeks. Öeldut kokku võttes on esialgu õigem 2005. aasta kaevanditega hõlmatud ala nimetada asula perifeeriaks või tulekivi leiu- ja töötlemiskohaks. Akali asulakoha kõrgussuhteid aluseks võttes on põhjust oletada, et Ihastes võib leiurikas asulakiht paikneda hoopis kaevanditest mitu meetrit madalamal läänesihis, Emajõe luha lammisetete all.

Siinse artikli autorite arvates tuleks vähemalt Ihaste kaevanditest lääne suunas teha arheoloogilist luuret nii georadari, šurfide kaevamise kui ka soopuurimise abil. Luhast kõrgemal, paigus, kus on lei-tud või leitakse edaspidi tulekivikilde, seisab ees valik – kas kaevata need alad läbi kirjeldatud kae-vandist saadud sarnase leiumaterjali juurdekogumiseks või riskida seni läbiuurimata alal järgnevate ehitustööde käigus teadusele seni tundmata leiumaterjali hävitamise võimalusega. Viimasena kirjel-datud võimalus oli 2005. aastal uuritud kraavitrasside piirkonnas siiski kaduvväike.