

THE SIGNIFICANCE OF DEPOSITS OF NATURAL AMBER IN ESTONIA IN THE CONTEXT OF EARLY METAL AGE SOCIETY

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Abstract

The article describes a newly found deposit of natural amber in Estonia. The deposit was discovered in the village of Vintri on the Sõrve peninsula, on the island of Saaremaa. It is the first time when the site has been fixed and documented; the find site has been fixed and documented. All earlier literature on the natural sciences and archaeology claims that natural amber is not found in Estonia, or is only found occasionally as marginal stray finds. The article describes the newly discovered deposit of natural amber, and also refers to other possible find sites that are known, mainly based on oral information. The Vintri deposit is dated according to two different methods, and the article explains both results. The article gives an overview of archaeological amber finds in Saaremaa at the time, and discusses their possible origin and use.

Key words: Estonia, Saaremaa, Asva, Bronze Age, natural amber, archaeological amber.

Introduction

Literature on the natural sciences generally describes Estonia as lacking natural amber, or it has only been found occasionally in rare cases (Eilart 1966, p.326; Viiding 1984, p.151; Raukas 2000, p.166).¹ However, Estonian archaeological material contains numerous items already from the Stone Age that clearly indicates that people here have decorated themselves with amber, or used it in other ways. So far, archaeologists have been certain that amber was imported from southern lands, from the coasts of East Prussia, Lithuania and Latvia, either as objects or raw material (Äyräpää 1945, p.19; Indreko, 1945, p.36; Jaanits 1947, p.112; Kriiska, Tvauri 2002, p.66). I too have based my research into amber objects on this hypothesis (Ots 2000; 2003; 2006; 2009), and analysed their distribution routes and impact. I pursued this hypothesis until May 2009, when I had a chance to inspect a find in southwest Saaremaa and collect a few pieces of amber there. These new finds gave me reason to look at a number of issues connected with amber in Estonia. Where did people in Saaremaa get their amber in Prehistoric times? Was it possible that they collected amber on their own coast? What was amber like in Saaremaa: were the pieces large enough to make jewellery? It is equally important to find out at what period of time collecting amber on the coast of Saaremaa was possible.

¹ The map of the distribution areas of Baltic Sea natural amber compiled by the Lithuanian geologist Vladas Katinas includes the island of Saaremaa and a narrow coastal strip in the distribution area (Katinas 1971, Fig. 12). However, he does not specify the amounts that may be found in the coastal area.

Previously known stray finds of natural amber in Estonia

The data about amber found in Estonia is very fragmentary. It is not clear on what data the opinions² presented in different papers are based. In most cases, it can be assumed that they are based on oral reports, which do not include information about the site and time of discovery, or the quantity found. Kihelkonna in Saaremaa, Häädemeeste in southwest Estonia, and the islet of Eeriku on the littoral coast of East Hiiumaa, have been mentioned several times as find sites (Fig. 1.1, 3, 9). Besides the places mentioned on the map compiled by Herbert Viiding (1984, Fig. 20), a dot marks a find of natural amber nodules on the southern coast of Saaremaa on the Vätta peninsula. It is also possible that it marks the island of Allirahu, where several amber finds have also been reported in later times.³ The

² 'Amber has been known to the Estonians since very early times, although it has reached our coasts only on rare occasions (the coasts of Kihelkonna, Häädemeeste and others)' (Eilart 1966); 'Only a few stray finds are known from the Estonian coastal area (from Kihelkonna, Häädemeeste, Eeriku islets and others)' (Viiding 1984). Raukas (2000) mentioned natural amber finds from the coast (Kihelkonna, Häädemeeste, Eeriku islets and others) (Fig. 36).

³ An explanation by Urve Saaret, a specialist with the Saaremaa Environmental Service, on the Internet in 2000 about a large find of amber in Allirahu (online) is available from: http://www.seit.ee/projects/kokkuvote-foorum_1_-_kusimused_vastused.rtf (accessed 25 May 2010). A reference to an amber find in an interview with the amateur ornithologist Hillar Lipp made on 16 December 2003, published in the study 'Look, a Seal!' by Helery Homutov, a student at the Kuressaare Gymnasium in 2004 (online) is available from: <http://www.oesel.ee/maidu/Siim%20Susi/>

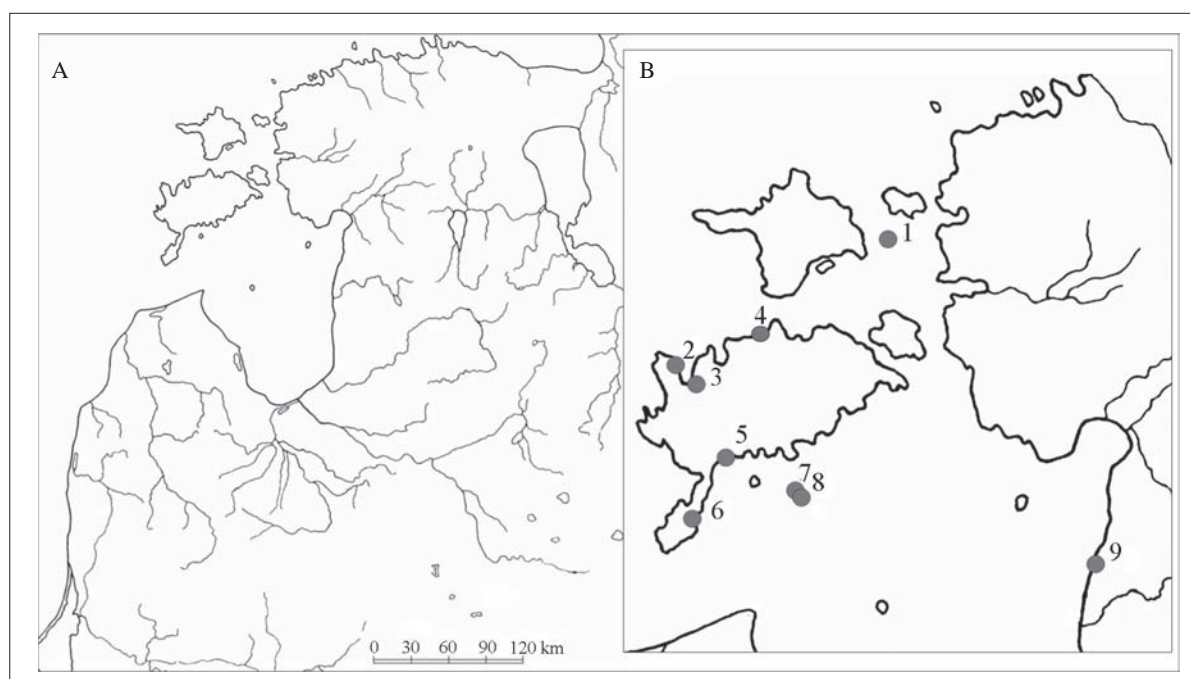


Fig. 1. Stray finds of natural amber in Estonia: A the east Baltic region; B Saaremaa and the western part of Estonia: 1 the islet of Eeriku; 2 Vaigu beach; 3 Kihelkonna; 4 Asuka; 5 Nasva; 6 Vintri; 7 Allirahu; 8 the islet of Tombamaa; 9 Häädemeeste (after M. Ots).

group of islets of Allirahu and Tombamaa are located on the south coast of Saaremaa, about eight kilometres south of the Vätta cape (Fig. 1.7-8). Allirahu is gravelly, covered with erratic boulders on the west coast, with poor vegetation, and rises about three metres above sea level. In warm winters, Allirahu is the main whelping colony for seals in the Bay of Livonia, and in the summer the islets form the largest hauling ground of grey seals in Estonia. Several seal researchers and environmental protection specialists have found amber on this island, even pieces with a diameter of two to four centimetres. The fifth volume of the 'Estonian Encyclopaedia' mentions Vaigu beach on the Tagamõisa peninsula on Saaremaa as a natural deposit of amber (Fig. 1.2). Local people have also reported a find on the coast near the village of Asuka on northern Saaremaa (Fig. 1.4) and also on the coast near the village Nasva on southern Saaremaa (Fig. 1.5).⁴

The find of natural amber at Vintri

A site of natural amber was recorded on the Odra farm in the village of Vintri on the Sõrve spit on Saaremaa

hulged/Allirahufinaldoc.doc (accessed 20 August 2009). Pieces of found amber are preserved in the Geological collections at the Estonian Museum of Natural History G205:1, information from seal expert Ivar Jüssi, 1992.

⁴ The author is grateful to Eva Truuverk for information about two small pieces of amber that she found in 1980 quite close to each other on a beach.

(Figs. 1.6; 2). The site was pointed out to me by a local inhabitant, Silver Odra (born 1931), who has collected a remarkable amount of amber from his garden over the past 20 years, and has now brought it to the Saaremaa Museum to show researchers. Visiting the place, it appeared that amber had appeared on cultivated land in the course of digging, when soil was lifted with a scoop from trenches to the garden area. Silver Odra had observed that originally the amber came from a fertile tang-rich layer at a depth of 70 to 90 centimetres, which lay immediately on a layer of sand. The site itself lies about 500 metres from the present-day coastline, and its absolute altitude is 5.2 to 5.65 metres. Silver Odra had collected a total of about 200 nodules of amber there, the largest of them with a diameter of about five centimetres. Their estimated weight was about 200 grams (Plate I.1). The size of the area where it was collected was about 60 by 100 metres.

During a survey of the cultivated field and paths on the site, we managed to find ten very small pieces.

Several trial pits with a diameter of 50 centimetres were dug near the places where amber had been collected on the ground. The maximum depth of the pits was 110 centimetres. The sight in all the trial pits was broadly the same, leading to the conclusion that at a depth of 70 to 90 centimetres there was a ten to 15-centimetre-thick intense organic-rich layer (Fig 3). To find amber in the trial pits would have required exceptional luck.

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Fig. 2. A natural amber site was recorded on the Odra farm in the village of Vintri on the Sõrve spit on Saaremaa (photograph by M. Ots).



Fig. 3. Vintri trial pit No 1: there was a ten to 15-centimetre-thick intensive organic-rich layer at a depth of 70 to 90 centimetres (photograph by M. Ots).

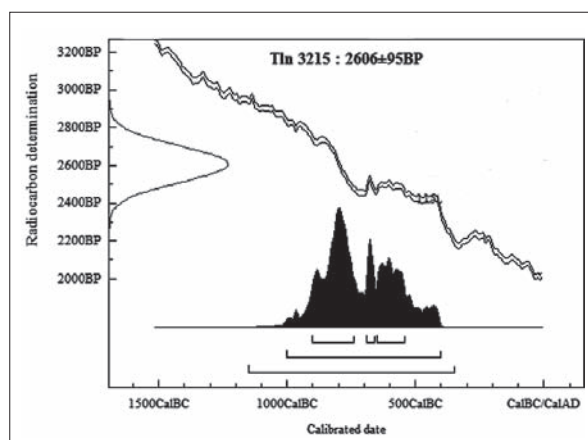


Fig. 4. Date and calibration interval from Vintri amber find spot (atmospheric data from Reimer *et al.* 2004; OxCal v3. 10 Bronk Ramsey [2005]; cub r:5 sd:123 probable chronology.

Discussion about the dating and the importance of the Vintri find site

The Vintri find of natural amber is exceptional in Estonia in terms of its quantity and its precise documentation. This raises a number of questions that an archaeologist cannot possibly answer, but which require further study by natural scientists. The present paper does not attempt to analyse all possible origins of the Vintri find: was it an insignificant amount of natural amber that was transported (from the west) along the shore within sea grasses or sand? When and how did amber reach the shores of Saaremaa? How far could the secondary deposit be where the Vintri amber originates from? Or maybe the sediments were re-deposited on several occasions?

In order to keep within issues that are of interest to archaeology, I concentrate on when it was possible to collect amber on the coast of Saaremaa, and what the quantities could have been.

To date this event, I used two different methods, shore displacement chronology and radiocarbon dating. I assumed that the mentioned organic-rich layer at a depth of 70 to 90 centimetres was the same that Silver Odra described, supposedly containing amber.

First, together with Professor Aivar Kriiska, we dated the site on the basis of shore displacement chronology, with the help of a computer program compiled by Jussila and Kriiska called Ranta-ajoitus Eesti. Versio 1.0b (15.1.2003) (for source data, see Jussila, Kriiska 2004). We carried out calculations with different data. The first calculation was based on the assumption that

storms had washed the amber to the coast. For the height of the coast, we suggested the height measured at the find spot of the smallest piece of amber, 5.1 metres above sea level, and subtracted from it 70 centimetres, to the presumed layer where the amber had been collected, that is, 4.6 metres above sea level. We assumed that the water line at the time was 60 centimetres lower. The formation of the layer remained in this case between 816 BC and 102 AD (probable age 327 BC),⁵ that is, Late Bronze Age and Pre-Roman Iron Age. In the next calculation, we changed the source data slightly, considering the height of the coast the highest measured spot, 5.6 metres above sea level, and again subtracted 70 centimetres from that to the layer where the amber was supposedly collected, 4.9 metres above sea level, and assumed the water line to be 60 centimetres lower. In this case, the dating was 1000 to 82 BC (probable age 510 BC). The third calculation was also based on the biggest measured height, 5.6 metres above sea level, but unlike the other two calculations, we assumed that the amber was directly on the ground, and assumed only a 60-centimetre lower water line. In this case, the dating was 1264 to 510 BC (probable age 939 BC).

By trying different calculation schemes, we obtained the result that the possible time of deposit of the layer remained between 1264 BC and 102 AD, that is, Late Bronze Age and Early Roman Iron Age.

The second method I used for dating was the radiocarbon method. I dated a timber sample taken from a trial pit to a 70 to 80-centimetre-deep layer. The ¹⁴C analysis dated the sample with 68.2% probability to the years 900 to 540 BC, and a 99.7% probability extended the dating to 1150 to 350 BC⁶ (Fig. 4).

The results of both methods are broadly concurrent, and a sufficient basis to speculate that it was possible to collect amber in quite considerable quantities, even nodules large enough for making artefacts, on the shore of the Sõrve spit at some time during the Late Bronze Age and the beginning of the Pre-Roman Iron Age.

⁵ We used the computer program compiled by Timo Jussila and Aivar Kriiska 'Ranta-ajoitus Eesti'. Versio 1.0b (15.1.2003) (for source data, see Jussila, Kriiska 2004). In the present paper, all datings are presented in solar calendar years.

⁶ 2606±95 ¹⁴C years (Tln-3215). In the present paper, my system of time calculation is based on the results of radiocarbon calibration. For calibration, I used the computer program OxCal v3. 10 Bronk Ramsey (2005); cub r:5 sd:123 prob[chron].

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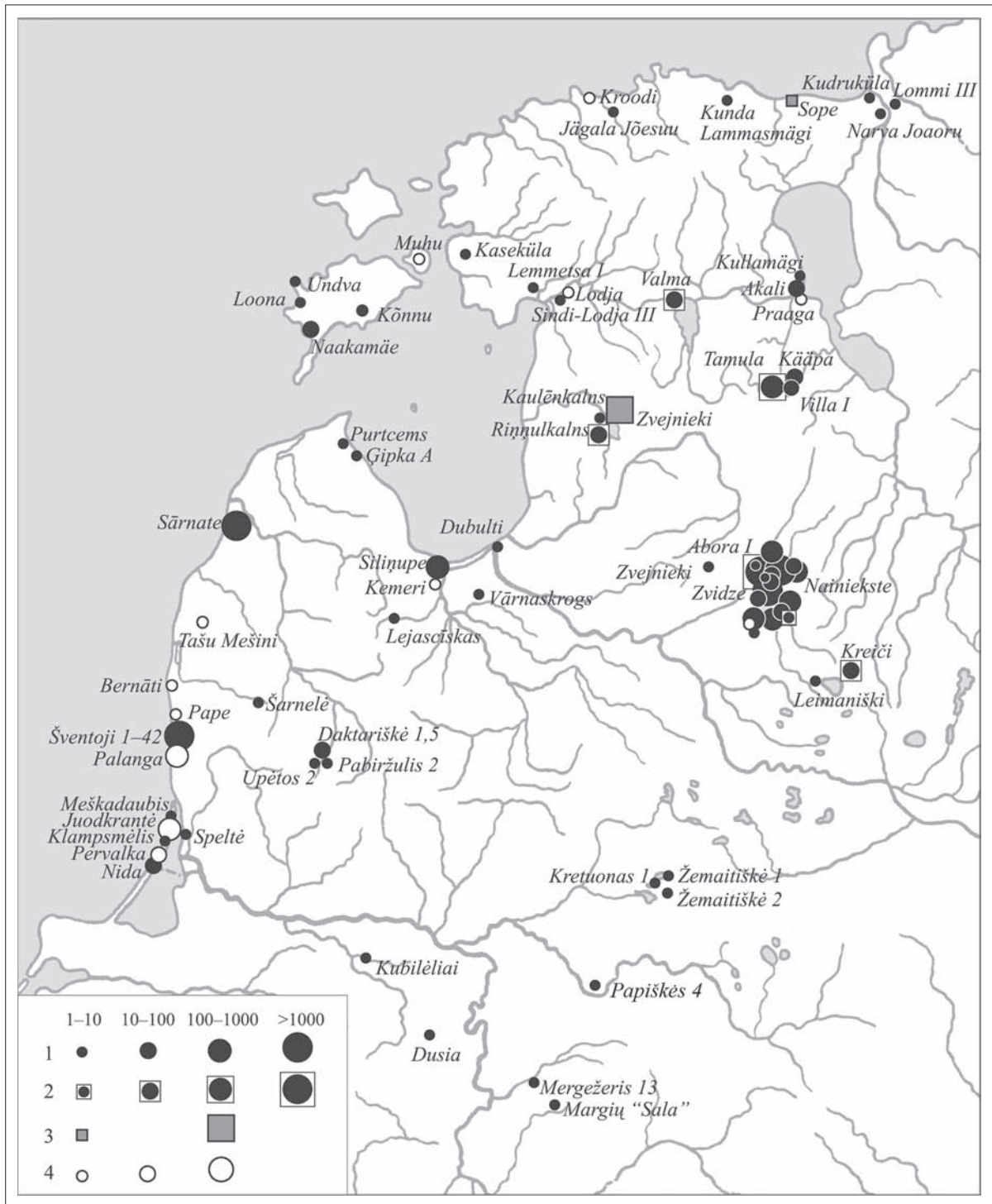


Fig. 5. Stone Age amber finds in the east Baltic region: 1 settlement sites; 2 settlement site with burial places; 3 burial sites; 4 stray finds (by M. Ots).

A review of archaeological amber finds from Estonia

Amber was used in Estonia since the end of the Early Neolithic Period, about 4500 BC. We can also assert that the amounts of amber, as well as the artefact types, are comparable with material from ordinary Latvian and Lithuanian settlements, that is, not amber-working centres (Ots 2003; 2006).

Stone Age sites with amber finds are scattered all over Estonia, invariably near a body of water. On the distribution map of amber artefacts, where the number of objects from a site is also marked with symbols, we can see that the inland settlement sites of Estonia (Tamura, Villa, Kääpa, Valma and Akali) are richer in amber than coastal settlements (Fig. 5). This distribution suggests that in the Stone Age, the main communication routes ran along inland rivers, and less frequently along the coastline. The fact that amber-working refuse is not found in Estonia, and the fact that the quantity of unprocessed amber and the size of lumps does not allow us to regard them as raw material collected for manufacturing, also support this opinion. Consequently, we may assert that in the Stone Age, amber was brought to Estonia from a Latvian or Lithuanian amber-working centre in the form of treated artefacts (Ots 2006, p.103ff).

Amber is nearly completely absent in sites of Late Neolithic Corded Ware culture in Estonia, as in Finland. To the south, specific types of amber artefacts are related to this culture: rings and key-shaped pendants, which do not occur among the finds from our settlement sites of that period (Ots 2003, p.104).

In comparison with the Stone Age, the use of amber in the east Baltic area seems to have gone into considerable decline in the Bronze Age (Bliujienė 2007, 2009; Ots 2009). On the other hand, this impression may be partly due to the scarcity of investigated Bronze Age sites. The number of sites and finds from the Early Bronze Age is still very small. Professor Valter Lang considers one of the reasons for this to be the small and highly dispersed population (2007, p.36).

In her thorough study on amber, the Lithuanian archaeologist Audronė Bliujienė suggests that one reason why amber processing declined was the continuous transgression and regression of the Baltic Sea shore during the transformation process of the Littorina into the Post-Littorina Sea (2007). The currents could barely wash up the glauconitic amber-bearing sediments of blue earth in the Sambian peninsula, whilst silts may have covered amber in the lagoon lakes and waterlogged meadows in the east Baltic littoral. A large Bal-

tic Sea regression occurred at the end of the Neolithic and the beginning of the Early Bronze Age, and only around 2000 BC did the sea level become the same as today (Bliujienė 2007, p.534).

It has also been suggested that the decline in using amber as a decorative material in the east Baltic area was caused by its export to Western and southern Europe, as well as the intensification of trade with areas that valued amber highly and offered metals and other expensive goods for exchange. Some researchers (Bliujienė 2007, p.535) do not agree, because in that case, the collecting of drift amber, preparing nodules for transportation, as well as hoards, would have left noticeable traces in settlements and their surroundings in coastal Latvia and Lithuania. These elements have not been found in the east Baltic region.

Amber reappears among Estonian archaeological finds in the Late Bronze Age, beginning in 1100 BC, mainly on Saaremaa, and the use of amber seems to have changed considerably. In extensively excavated sites, mainly unworked nodules and only some very primitively worked amber artefacts have been found.

A total of 161 pieces of amber have been found in eight Estonian Bronze Age sites (Fig. 6). Six of the sites with amber finds are located on Saaremaa, and two are located in northern Estonia, on the banks of large rivers. In most cases, these are poorly preserved amber lumps. I have identified only 16 artefacts. Working traces can be assumed on 38 specimens. Most of the ornaments were found in burial sites: from the stone cist graves of Loona, Jõelähtme, Kurevere and Karuste, in all, nine specimens. In the fortified settlements of Ridala, Kaali and Iru, however, mainly unworked lumps of amber have come to light. The Bronze Age site richest in amber in Estonia is the fortified settlement of Asva, where a total of 120 amber objects have been found. These include 78 lumps of amber, 34 fragments with presumable working traces, and only eight artefacts (Plate I.2).

The fortified settlement of Asva

The fortified settlement of Asva, near the south coast of Saaremaa, has been thoroughly investigated.⁷ At least three different occupation layers are dated to the Late Bronze Age: a non-fortified settlement, a fortified

⁷ Archaeological investigations were carried out by Richard Indreko in 1931, 1934 and 1938–1939, by Artur Vassar in 1948, by Marta Schmiedehelm in 1949, and by Vello Lõugas in 1965–1966. The total area investigated was 571 square metres, of a 3,500-square-metre settlement site. The most prominent studies about Asva are: Indreko 1939; Vassar 1955; Lõugas 1970; Jaanits *et al.* 1982, p.136ff, 172; Lang 2007; Sperling 2006.

settlement stage I, and a fortified settlement stage II. At the moment, it is impossible to estimate the date that the non-fortified settlement was established (Lang 2007, pp.60, 63). Earlier researchers have suggested that it was first established around 900 BC (Lõugas 1970, p.325, Jaanits *et al.* 1982, p.145, Lang 2007, p.63). In his recently published doctoral thesis, Uwe Sperling disputes this dating, claiming that both the first and the second stage of the settlement date from the eighth and seventh centuries BC (Sperling 2011, p.306). Several house bases can be associated with each Bronze Age settlement layer, and to some extent artefacts can also be dated stratigraphically. The Asva amber finds are mostly connected with the later period of the settlement (Sperling 2006, p.118). The concentration of amber finds is most prominent around building E, a total of 11 untreated amber pieces and five objects or fragments with traces of treatment may be connected with this building (Sperling 2006, Fig. 37).

The artefacts found at Asva include three round disc-shaped beads (Plate I.3.1-3). Their diameter is one to 3.5 centimetres. Similar shapes were already known in the Neolithic, but the disc-shaped beads of the Bronze Age are of a coarser finish and with an irregular small hole in the middle. Unlike the biconical holes in the beads from the Stone Age, the later ones are drilled in one direction, resulting in straight holes. In Estonia, such beads have also been found in the stone cist graves of Loona and Jõelähtme. In Latvia, disc-shaped beads have been found in the grave of Strīķi and the fortified settlement of Ķivutkalns (Graudonis 1967, Pl. XIX.2, 3, 5; Graudonis 1987, Pl. X.10-20). Some large irregular plate-shaped pendants with a diameter of three to 5.7 centimetres and a hole in the middle or at one side have also been found at Asva (Plate I.3.6). In two cases, we can presume that the artefacts are unfinished. One of these is an object of a nearly circular shape, with a polished surface, with a small hollow engraved in the middle (Plate I.3.5). The other half-finished product with an uncertain purpose has clearly worked straight edges and a slightly conical side (Plate I.3.4). Probably somebody tried to shape an artefact similar to those found in the grave at Strīķi, Latvia, dated to the second half of the first millennium (Graudonis 1967, pp.87-88, Pl. XIX.16-17). All these items demonstrate quite a primitive standard of treating amber objects, especially when compared with items crafted at the end of the Neolithic (Loze 2008, 2011). At the same time, new techniques can be noted in treating the items. In the case of biconical holes, we have reason to believe that they were made with the aid of bone drilling noz-

zles, for drilling straight holes a bronze tool may have been used.⁸

The fortified settlement of Ridala

The other site from the same period with amber is the fortified settlement of Ridala, which is located about five kilometres north of Asva. It is a fortified settlement with an area of about 4,000 square metres; 435 square metres of the settlement site has been archaeologically investigated.⁹ The finds date from the eighth to the seventh centuries BC (Jaanits *et al.* 1982, p.146). Twenty pieces of amber have been found there. The amber fragments are quite small, only seven of them are larger than two centimetres (Plate II.1). One poorly preserved fragment of an amber artefact from Ridala has a trace of a hole, and another piece of amber bears presumed working traces.

The fortified settlement of Kaali

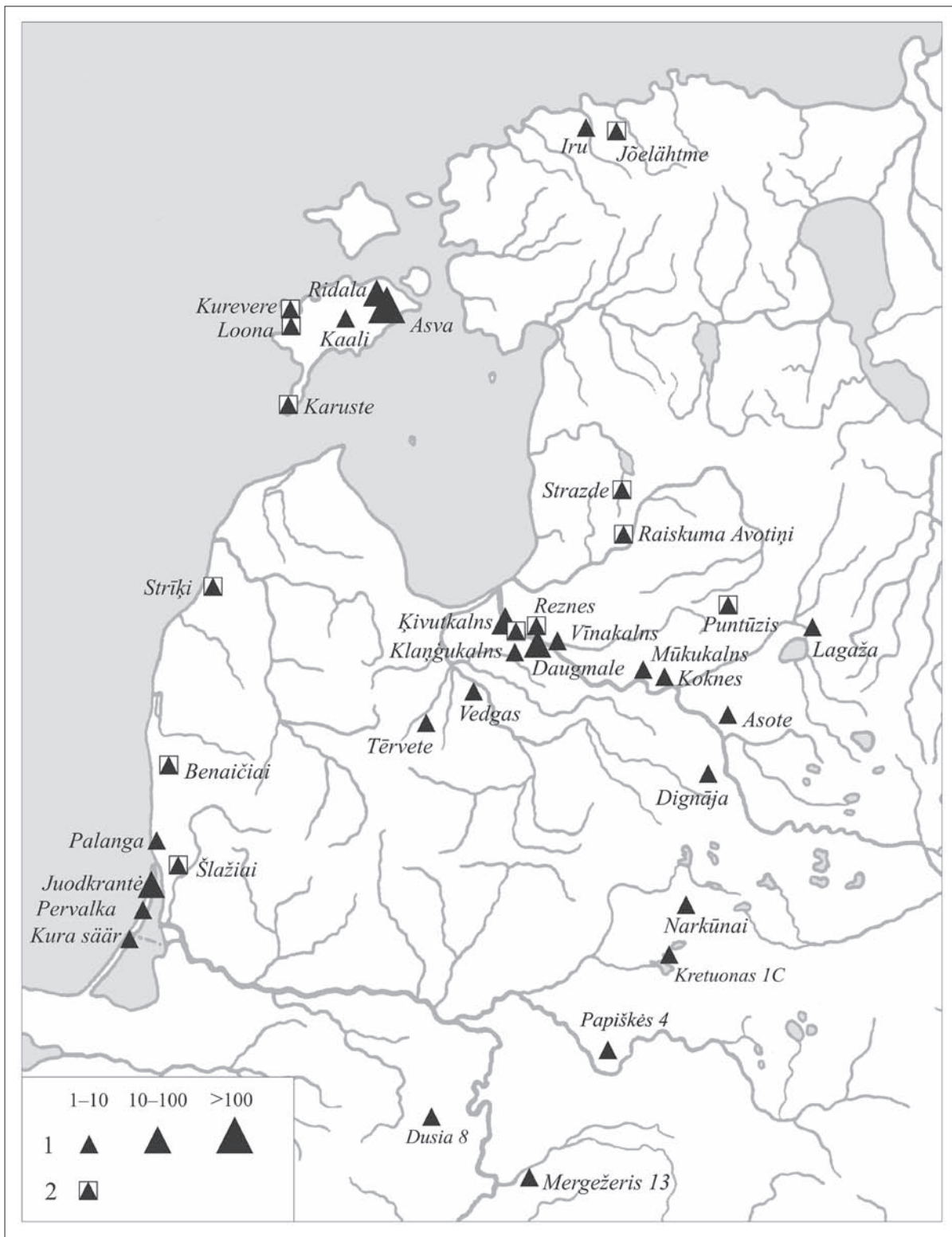
Eight pieces of amber have been found at another archaeological site on Saaremaa, the fortified settlement of Kaali, which is located on the bank of a meteorite crater.¹⁰ The time of the formation of the crater is still in dispute; it has been presumed that the meteorite fell about 4,000 years ago (Lang 2007, p.75, and references to other sources). The cultural layer of the fortified settlement contained finds from the Late Bronze Age and the beginning of the Early Iron Age (eighth to sixth centuries BC), as well as from the Roman Iron Age (third to fourth centuries AD) (Lõugas 1978, p.329). Eight pieces of amber were found, three of them with a size of over 2.5 centimetres (Plate I.1.). Only two of them bear indistinct working traces.

It must be stressed that untreated amber occurs in fortified settlements in Latvia and Lithuania too (Mūkukalns, Asote, Kļauņukalns, Ķivutkalns, Daugmale, Tērvete, Dignāja, Vīnakalns, Narkūnai) (Fig. 6). The quantity of amber in Asva is larger by a quarter than in Ķivutkalns on the River Daugava. Moreover, the hill-fort of Ķivutkalns has been archaeologically investigated on a much wider scale: a 2,276-square-

⁸ Three pieces, or fragments of pieces, have been found in Asva (AI 3994:1498, AI 4366:556, 746). Unfortunately, all of them have gone missing, and it was not possible to determine their compatibility for drilling the holes.

⁹ Excavations took place in 1961 under the direction of Aita Kustin, and in 1962–1964 under the direction of A. Vassar.

¹⁰ The area covered by the cultural layer was only 600 to 800 square metres, 135 square metres of which was excavated in 1976–1977 by V. Lõugas.



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Fig. 6. Bronze Age amber finds in the east Baltic region: 1 settlement sites; 2 burial-places (by M. Ots).

metre plot of the site was excavated, and 87 amber finds were recovered (Graudonis 1989).

Amber finds in Bronze Age graves

When studying the occurrence of amber finds in Estonian Bronze Age graves, we must admit that only worked amber artefacts have been found in the excavations. Even if grave finds include fragments or hardly identifiable pieces, these come from processed products. A total of nine amber finds have been recovered from four burial sites, but we must bear in mind that several dating complications occur with graves. An example of such graves is the Loona stone cist grave in the western part of Saaremaa. The stone cist grave is located in a Neolithic settlement site, and has been completely investigated.¹¹ In the centre, there was a cist made of limestone slabs placed edge to edge, and originally also covered with limestone slabs. The cist was encircled by two circles of granite stones. A total of at least 17 individuals were buried in the area between the circles. Later cremation burials could also be observed. A ¹⁴C analysis of a human bone sample dates the burial site to 1000 to 400 BC.¹² Among the amber artefacts recovered from Loona are a four-cornered star, and another star which is broken (Plate II.2.4, 5, 6). One of the two fragments of the broken star has two corners, the other has five. The sizes of the stars from Loona remain between three and four centimetres, and they are 0.8 to one centimetre thick. Vello Lõugas (1970, p.154) has called them amber stars with four (or more) corners, but other terms have also been used: cross-shaped, star-shaped, flower-shaped bead or pendant. Both ornaments described were found quite close to each other in the southeast part of the grave, by two skeletons. In view of the location of the ornaments in the grave, they can be dated to the later part of the Bronze Age, or even to the Pre-Roman Iron Age. A similar object was recovered from the grave at Kurevere, Saaremaa (see below), and from the grave

¹¹ In analysing the finds from this grave, we must bear in mind that it is a multi-layered site, where part of a Stone Age settlement layer was covered over by a stone cist grave from the Late Bronze Age; another part was disturbed by 13th-century burials, ploughing and later buildings. The site was discovered in 1956 by A. Kustin, and investigated in 1956–1959 by A. Kustin and Lembit Jaanits: Stone Age finds AI 4129; finds from the stone cist grave AI 4210; finds from the Late Iron Age cemetery AI 4236. Finds have been differentiated, but not always consistently, and sometimes erroneously.

¹² The ¹⁴C dates from Uppsala laboratory in Sweden: 2620±75 (Ua-4823) ¹⁴C years. Seal and wild boar bones recovered from the settlement site were dated about 2000 years earlier, to the period 3100 to 2350 BC (4270±75 (Ua-4824) and 4050±80 (Ua-4825) ¹⁴C years (Lõugas *et al* 1996, Tab II).

at Strīki, Latvia (Graudonis 1967, Pl. XIX.18). Similar bone ornaments have been found in Denmark, where they are dated to the fourth period of the Bronze Age (Baudou 1960, map 51, Plates XXIII.E, XXIV.D).

A four-cornered star (Plate II.2.9) resembling the find from Loona was also found in the stone cist grave of Kurevere. V. Lõugas, who carried out the excavations, has commented on its discrepancy with the find context. He regarded it as a Late Bronze Age artefact, but he did not believe the grave belonged to the Bronze Age (Lõugas 1976, p.54). Helen Vaab also dates the amber ornament to the Late Bronze Age, but she suggests that it was placed in the grave only in the Early Pre-Roman Iron Age (Vaab 2003, p.27). The amber star was found with the inhumation burial in the southern part of the ninth *tarand*, together with a fragment of an iron bracelet, fragments of a crozier-shaped pin, and a spiral-headed pin and an openwork decorative bronze plaque. The latter is an import from the East European forest belt (Vaab 2003, p.26).

Another amber artefact found at Loona is a double button with one conical and one flat end (Plate II.2.7), the conical tip of which is decorated with three grooves. The size of the double button is 3.1 by 1.5 centimetres. It was recovered from the area between the two stone circles. The button was located near a skull, close to the amber stars. Similar amber buttons have been recovered from the hill-fort at Ķivutkalns in Latvia, and buttons slightly differing in shape have also been found in the graves at Puntūzis, Reznēs and Raiskuma Avotiņi, and they belong to the fourth and fifth periods of the Bronze Age (Graudonis 1987, p.31). Similar bronze buttons are known from Denmark, mainly in period four of the Bronze Age, but also in other parts of Scandinavia. In Denmark, double buttons of amber have been found as well (Baudou 1960, p.87). In the Baltic countries, such double antler buttons have been found, such as from Asva, Kaali, Brikuļi, Dignāja, Tēvete, Ķivutkalns and Narkūnai (Jaanits *et al.* 1982, Fig. 99.7-10; Graudonis 1987, p.31, Tab. XXV.20, 21; Volkaitė-Kulikaušienė 1986, Fig. 39.1; Luik, Ots 2007).

The other two amber ornaments found in the Loona stone grave can be dated to the Bronze Age with less reliability. This was apparently also the opinion of Lembit Jaanits, who excavated the site and has marked them on the find plan of the Neolithic settlement site. One of the finds is a fragment of an oval bead. One side of it is broken, so it may have belonged to an ornament of a different shape (Plate II.2.2). The diameter of the bead is up to 2.4 centimetres, and it is 0.9 centimetres thick. The second ornament is an irregular oval disc-shaped bead (Plate II.2.3), with a diameter of 1.7

centimetres. It has an even hole drilled in one direction, typical of the Bronze Age, which is different to the biconical holes of other ornaments recovered from the Neolithic settlement site of Loona. On the basis of its shape, the bead can be dated to the Late Neolithic and to the Bronze Age. It resembles, for example, the bead found at the Neolithic settlement site of Tamula,¹³ but it also has analogies among the Bronze Age finds from Asva and Latvia (Plate I.3.1-2; Graudonis 1989, Tab. X.13, 15).

In the Karuste grave¹⁴ in the southern tip of the Sõrve spit on Saaremaa 'a round amber button with a thick stem' (Plate II.2.8; Vassar 1940/41, p.12) was found. In his later article, Vassar added that it had been a button or a knob, probably a double button (1956, p.168). He also points out the specific feature by which the knob from Karuste differs from double buttons: the transition to the knob is right-angled, not curved as is common for double buttons. It is possible that the object is a knob which belonged to an artefact of some other decayed material. The object was found in the soil of the grave just below the turf, but it appeared there apparently in the course of the destruction of the grave (Vassar 1940/41, p.12), and the original location of the artefact is not known. Vassar has dated the grave to the first and second centuries AD (1956, p.169). V. Lang has expressed the opinion that the grave of Karuste was already established in the Late Bronze Age, which is also indicated by the amber button (1996, p.297). Another fragment of an irregular oval amber artefact bearing working traces was found in the grave.

Discussion of the possible uses for amber on Saaremaa in the Bronze Age

In Late Bronze Age sites in Estonia and neighbouring areas, a conspicuous feature can be observed: a small amount of artefacts are found in graves, but in settlement sites untreated amber prevails. The occurrence of amber artefacts among grave goods is not surprising, but the large quantity of untreated amber in settlement sites is interesting. In earlier Stone Age usage of amber, such large quantities of raw material in settlement sites has not been observed.

The percentage of untreated amber chips and lumps in the Stone Age was 27.8%, and in the Bronze Age it was 65.8% of amber finds. A review of Bronze Age untreated amber is given in my former paper (Ots 2009); therefore, I will stress only some features here. When analysing the size of untreated amber nodules, it ap-

¹³ AI 3960: 230.

¹⁴ Archaeological excavations on sites in the village of Karuste took place in 1940 under the direction of A. Vassar. He named one of the graves Kahusaadu, or Kahuste.

peared that, in comparison with Stone Age finds, the percentage of large nodules among raw amber is higher in the Bronze Age. Nodules with a diameter of over two centimetres make up more than one third (34%) of all finds, while of the untreated amber pieces from the Stone Age, only 12% are of a size over two centimetres. Very small and broken pieces are numerous in both periods: 42% and 57% respectively. The large share of small chips is due to the poor state of preservation of the amber. We must also consider that quite a large part of amber finds were broken in the course of archaeological excavations. Hence, it appears that the total amount of untreated pieces is larger in the Bronze Age, and the percentage of larger lumps among them is higher too.

The large percentage of untreated amber may suggest that the conditions for bartering had changed, and raw amber had become a medium for payment. The possibility that amber could have been used as a medium for payment on the east coast of the Baltic Sea has already been suggested by Eduards Šturms (1936, p.75). He based his theory on the finds of raw amber in graves. A similar hypothesis about Bronze Age amber in Denmark had already occurred to both Sophus Müller (1886, 408ff; 1897, p.323) and Jørgen Jensen; the latter remained, however, doubtful (1965, p.64ff). In analysing the presence of raw amber in settlements and hill-forts, we observe that it is found mainly in fortified settlements where bronze casting also took place. Such fortified settlements were located on important communication routes on river banks or the coastline, and most likely controlled trade.

In a previous paper (2009) I assumed, on the basis of such measurements of amber nodules, that amber was acquired untreated and in rather large lumps. I also assumed that amber surely could not have been collected on local shores, relying mainly on the fact that in Estonia only rare stray finds of amber were known, and that these were not of sufficient quantity or size (Ots 2009, p.56ff). Now, in view of the new deposit of natural amber, I must revise my firm opinion, and claim that it is possible that namely in the Bronze Age, and particularly during the functioning period of the Asva, Ridala and Kaali fortified settlements, the inhabitants could have had a rare opportunity to collect amber on their own shore. In the early stage of the Limnea Sea, the Sõrve spit had not yet formed, and the Vintri site with the amber find was located on a small island that reached only slightly out of the water. On a neighbouring island 15 to 20 kilometres away, a hoard of bronze items and cast fragments has been discovered in Tehumardi (Sperling, forthcoming 2012). The Tehumardi hoard may be proof that these islands were known and used by the inhabitants of Saaremaa at the time. The

size of the amber nodules from the Vintri deposit (the largest had a diameter of about five centimetres) was sufficient to use them for making ornaments. Considering the data obtained recently by boring sediment containing amber in the Chłapowo profiles in Poland, about 86.5% of amber is a fraction less than one centimetre (Piwocki 2006, p.15), even on amber-rich shores one can collect smaller nodules rather than larger ones. The fact that all amber artefacts recovered from Asva are only slightly worked, and very unskilfully, also seems to indicate the use of local amber. If local amber was used, which could be collected on the shore only by luck, people did not get enough of it to develop suitable skills and tools for working the material. On the other hand, if we compare them with contemporaneous finds from Latvia, for example from the fortified settlement of Ķivutkalns, we can see that their working level and artefact types are similar enough to suggest mutual influence. Changes in amber-working skills did not take place in the Late Bronze Age; judging by Latvian finds dating already from the beginning of the Bronze Age (Ķivutkalns burials and Reznas barrows), this degeneration, or rather interruption of continuity, took place earlier, some time at the beginning of the Bronze Age (Graudonis 1961; Denisova, Graudonis, Gravere 1985).

The question still remains why the amount of amber in the Baltic region in the second half of the Bronze Age is considerably smaller in the southern part, in Lithuania, than in the northern part, in Latvian sites on the River Daugava, and Estonian ones on Saaremaa. A. Bliujienė (2007, p.205ff, with references) offers in her book a number of possible explanations presented over time in archaeological literature. Is it possible that the phenomenon was caused by natural conditions, that the changes in the Littorina and Limnea Sea affected the drifting and washing ashore of amber so that it differed so much from the earlier and later periods? Or were the main reasons social circumstances? So far, it is unclear who could collect, barter and be buried with amber, and how, and also relations, trading opportunities and demand.

Conclusion

The discovery of the natural amber deposit in Vintri makes us reconsider the general opinion that all archaeological amber items found in Estonia were imported. The Vintri find spot has been dated to the Late Bronze Age and the beginning of the Pre-Roman Iron Age by two different methods, the chronology of shore

displacement and radiocarbon samples. Data collected about natural amber proves that this was not the only deposit of natural amber on Saaremaa. The amount of Bronze Age archaeological amber found in Estonia is very small. Most of the amber dates from the Late Bronze Age, and is discovered mainly in fortified settlements on Saaremaa, and also some in burials from the same time. Even fewer amber items are known from archaeological sites in Lithuania. In Latvia, amber finds are concentrated around the River Daugava, being rather similar to the Saaremaa finds. One of the reasons for the scarcity of amber items in the south of the Baltic countries may be unfavourable natural conditions (mainly fluctuations in the sea level), but possibly also social reasons and trading. All these reasons may have existed simultaneously, and changes in the possibilities to collect natural amber, in the amounts and sites where amber was found, may have affected the use and the value of amber. The use of amber in the Bronze Age underwent considerable changes compared to earlier times: both the skills and the types of items changed. In addition, untreated amber seems to have acquired a special value at the time, and may have been used as currency in trading. It is possible that during the Bronze Age, people on Saaremaa, especially at the time of the fortified settlement in Asva, had a unique opportunity to collect amber on their local shores and use it for decorations and other items. The similarities between the different types of amber items between Estonia and Latvia also suggest close contacts between those areas.

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Abbreviation

AI – Archaeological Collections of the Institute of History, Tallinn University

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GINTARO RADIMVIEČIŲ SVARBA ESTIJOS ANKSTYVŲJŲ METALŲ EPOCHOS KONTEKSTE

MIRJA OTS

Santrauka

Gamtos mokslų ir archeologinėje literatūroje yra nusistovėjusi bendra nuomonė, kad natūralaus gintaro dab. Estijos teritorijoje nėra randama, nors pavieniai radiniai yra žinomi iš archeologijos paminklų. Estijoje rasta archeologinė medžiaga liudija, kad jau akmens

amžiuje žmonės naudojo gintarą papuošalų gamybai ir kitokiems tikslams. Archeologai iki šiolei mano, kad gintaras į dab. Estijos teritoriją pateko daiktų arba žaliavos pavidalu iš į pietus esančių teritorijų: Rytų Prūsijos, Lietuvos ir Latvijos Baltijos jūros pakrančių. Ankstesniuose autorės darbuose apie gintaro dirbinius taip pat buvo laikomasi šios hipotezės. Šia hipoteze buvo grindžiama ir autorės analizė, kaip gintaras išplito į kitus regionus ir kokie buvo nuotoliniai kontaktai tarp žmonių. 2009 m. gegužės mėn. teko apžiūrėti gintaro radinius, aptiktus Saremos (Saaremaa) salos pietvakarinėje dalyje (1–6 pav.; I, II iliustr.). Šis naujas atradimas įgalino persvarstyti galimybes, kad tam tikrais periodais gintaro buvo randama Saremos salos pakrantėse, kokie kiekiai jo buvo randami, ar gintaro žaliavos buvo pakankamas kiekis, kad jį galima būtų apdirbti ir gaminti papuošalus.

Naujų gintaro radinių buvo rasta Odra ūkyje, Vinti kaime, netoli Sõrve pusiasalio (rago). Radimvietę autorei parodė vietinis ūkininkas Silveris Odra (gim. 1931 m.) man. Per 20 metų, t. y. nuo 1989 m., jis surinko nemažą kiekį gintaro gabaliukų ir atidavė šiuos radinius į Saremos muziejų įvertinti (3 pav.). Patikrinus šią radimvietę paaiškėjo, kad gintaro gabaliukai į ariamą lauką pateko iš drenažo. griovo, kai dalis iškastų žemių buvo paskleista. Lauke Silveris Odra pastebėjo, kad gintaro gabaliukai pateko iš sluoksnio, kuris yra 70–90 cm gylyje nuo dabartinio žemės paviršiaus; šiame sluoksnyje jis taip pat pastebėjo nemažai organikos. Po šiuo sluoksniu būta smėlio sluoksnio. Gintaro radimvietė yra maždaug už 500 m nuo dabartinio jūros kranto, žemės paviršius šioje vietoje yra 5,50 m aukštyje virš jūros lygio. Šiame lauke ūkininkas surinko apie 200 vnt. gintaro gabaliukų, kurių didžiausias buvo 5 cm ilgio. Bendras surinkto gintaro svoris siekia 150–200 g. Išmatavus radimvietę nustatyta, kad gintaras buvo pasklides maždaug 60 x 100 m dydžio plote.

Duomenys apie Estijoje surastus gintaro radinius nėra patikimi. Skirtinguose straipsniuose minint gintaro radimvietes nenurodomi informacijos šaltiniai. Daugeliu atvejų, tai žodinė informacija, iš kurios sunku nustatyti radimo vietą, laiką ir radinių kiekį. Tarp tokių radimviečių galima paminėti Kilkekonna vietovę Saremos saloje, Häädemeeste – pietvakarių Estijoje, Eeriku salelėje Hiiiumaa pakrantėje, Alliraku saloje netoli pietinės Saremos pakrantės, Vaigu pakrantėje, Tagomõisa pusiasalyje netoli Asuka kaimo šiaurinėje Saremoje.

Du skirtingi metodai buvo taikyti datuojant Vinti gintaro radinius: kranto formavimosi stratigrafinė analizė ir radiokarbono datavimas (4 pav.). Abiejų šių tyrimų rezultatai apskritai yra panašūs – natūralaus gintaro jūros pakrantėje dab. Estijos teritorijoje buvo galima aptikti vėlyvajame bronzos amžiuje iki pat romėniškojo lai-

kotarpio. Gintaro gabaliukai buvo pakankamo dydžio, kad iš jų galima būtų gaminti dirbinius.

Minėtu laikotarpiu datuojamo gintaro rasta aštuonio- se vietose, iš viso 161 radinys (5 pav.). Dauguma šių radimviečių yra Saremos saloje ir tik dvi – didelių upių pakrantėse Šiaurės Estijoje. Pastebėtas skirtumas tarp natūralaus ir apdirbto gintaro radimviečių paplitimo. Dauguma gintaro dirbinių yra žinomi iš kapų: Jōelāhtme bronzos amžiaus kapinyno su akmenų vainikais, Looma vietovėje kapuose su akmenų vainikais, Karuste (taip pat žinoma kaip Kahuste) ir Kurevere vietovėje. Įtvirtintose gyvenvietėse Kaali, Ridala ir Irvi vietovėse aptikta daugiausia neapdirbtų gintaro gabaliukų. Gintaro radinių turtinga bronzos amžiaus įtvirtinta gyvenvietė Asva, kurioje rasta 120 vnt. gintaro gabaliukų. Dauguma aukščiau paminėtų archeologijos paminklų datuojami vėlyvuju bronzos amžiumi. Autorės ankstesnis straipsnis apie gintarą paremtas nuomone, kad gintaro žaliava pasiekdavo (Estiją) dideliais gabalais, o ne buvo randamas pakrantėje vietoje. Autorės pagrindinis argumentas buvo tai, kad gintaro vietoje buvo aptinkama tik atsitiktinai, jo buvo nepakankamas kiekis ir dydis dirbiniams gaminti. Pastarųjų metų gintaro radinių atradimai Estijoje duoda pagrindo naujai įvertinti nusistovėjusias hipotezes. Asva įtvirtintos gyvenvietės gyvavimo laikotarpiu gintaras buvo vietoje, iš jo buvo gaminami papuošalai ir kiti dirbiniai. Nors panašumas tarp Estijoje ir Latvijoje randamų gintaro dirbinių rodo glaudžius ryšius tarp šių dviejų regionų.

Vertė Romas Jarockis

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