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## OLD KARELIAN SETTLEMENT IN NORTHWEST PRILADOZHJE

### Abstract

Six fortified settlements are known from the territory of the chronicle Korela. They are located in geographically and topographically convenient places. Nearly inaccessible by steep natural slopes, settlements were additionally protected by ramparts and stone wall constructions. Dwellings and other household buildings also formed a second protective line in the settlement defenses. Such sites were occupied for a long time. There were also refuge places that were used only in times of danger and have, therefore, no traces of human activity other than defensive constructions. Toponyms as *linnavuori* and *linnamäki* are quite common in northwest Pryladozhje, but not all such localities are archaeological monuments. Unfortified settlements – *selishches* – also exist in the area. The abundant material gathered during the excavations characterizes various economic activities of the Old Karelians.

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Of the six fortified settlements known from the territory covered by the chronicle Korela, one was situated near Kurkijoki, by the Hämeenlahti bay of Lake Ladoga; another one, Suur-Mikli, near a small lake in the Lahdenpohja area. Two Old Karelian settlements, Tiversk (Finn. Tiuri) and Korela, were found on the islands of the Vuoksa (Finn. Vuoksi) river. At that time Korela (now Priozersk, Finn. Käkisalmi) was an administrative and cultural centre in the Karelian Isthmus. The ancient *gorodišches* (fortified settlements) of Paaso in Sortavala and Lopotti in Kurkijoki were erected by rivers, 1–2 km before their discharge into Lake Ladoga. There were apparently no settlements on the Ladoga shore (none has been found so far), probably because such location would have been too exposed. The sites chosen for settlement were conveniently situated from the geographical and topographical viewpoints, and were in use for a long time. The island where Tiversk appeared later on was populated even during the 10th and 11th centuries. About the same time, some cremation graves were erected on the hills of Kurkijoki and Paaso.

There was a tense atmosphere due to continu-

ous Swedish attacks against Karelia and, in the 13th century, to crusading activities by Baltic Order Knights. This situation was complicated by local conflict between Novgorod and Mongol-Tatars. Forces and coordination were not always sufficient to repulse the enemy. All this determined both the choice of naturally protected sites for settlements and their fortification with stone walls and ramparts. To increase the defenses wooden buildings were placed forming a secondary protective line.

The 12th–13th century *gorodišče* of Paaso was located between Sortavala and Helylä, c. 1 km from the confluence of the Tohmajoki and Helylänjoki rivers, on a steep rocky promontory that stands 83 m above the Ladoga level. A road led up to the *gorodišče* along the more gentle southern slope. The area of the *gorodišče* was c. 1000 m<sup>2</sup>, 730 of which were excavated during 1978–80 (Fig.1). The more vulnerable southern slope was fortified with two small ramparts connected by wooden gates. One was over 38 m long, 3 m thick and 1–1.6 m high. The other was somewhat smaller (23.5 x 2.5 m) and was located almost at right angles to the first. They were made up of unbound broken stones poured from

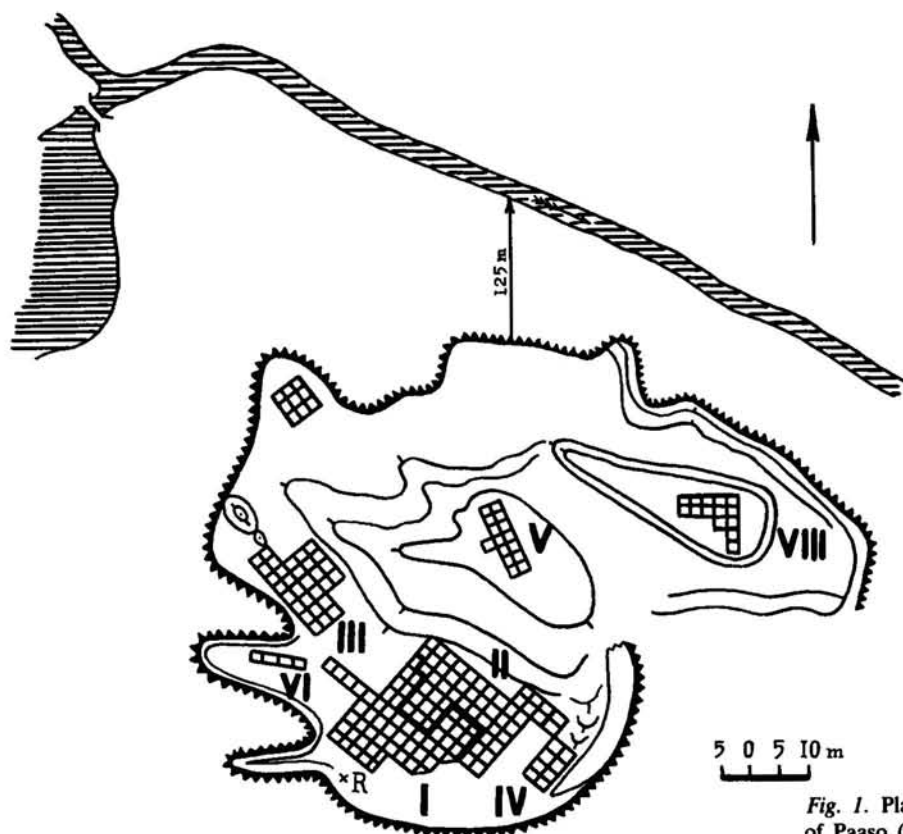


Fig. 1. Plan of the gorodišče of Paaso (I-VIII - excavations plots; R - datum mark).

above together with the cultural layers from earlier occupations (Fig.2). It is possible that there was still some sort of wooden structure increasing the height and protective effect of the ramparts. A small depression leading to upper area was partitioned with a small wall. Since it was possible to get into the the gorodišče through this depression, the inhabitants had built a closed protective line of stone walls and ramparts using the natural protruding rock. A very narrow site remained for buildings. Houses had to serve both as living quarters and settlement protection. The available space was optimally used: north-south oriented dwellings arranged in staggered rows functioned as a defensive barrier. There were seven buildings of 40-48 m<sup>2</sup> (Fig.3). Stoves and hearths were centrally situated, though sometimes closer to the northern or southern walls.

The tight building distribution had also its negative side. Fire took place at an early stage, but the settlement was rebuilt, probably due to its convenient location. Suitable agricultural land

lay close-by and the rivers linked the gorodišče with the Ladoga and other regions further inland. There was also the view over the water expanse below, which apart from being beautiful it made a surprise attack impossible.

A forge was located outside the dwellings, on the higher terrace with a water source. Judging from crucible fragments it was also used for the smelting of non-ferrous metals: The foundation of this construction was situated in a triangular rock depression at the bottom of which there was an ash layer covered with a considerable amount of burnt stones and coal. Fragments of slag (c. 400) and burnt clay (c. 100) were found at the upper and lower portions of the forge. At the bottom of the depression some ferric products were recorded. A narrow (36 cm wide) channel in the bedrock left the east side of the construction and then turned south following the natural slope.

The remains of a potter's kiln were also reported. It consisted of a two-chambered structure with circular base (Ø c. 2 m) and oval in



*Fig. 2. Paaso: Rampart cleaning.*



*Fig. 3. Paaso: Building foundations.*

cross-section (height c. 1 m). Its lower chamber, apparently a wood furnace, was made of small stones covered with clay and contained a 40-cm coal layer. The upper chamber was a ring-like structure made of large stones and small slabs. This construction is similar to a potter's kiln dated to 1240 AD from Belgorod Kievskii (Rybakov 1948 fig.92). The finds from the hypothetical kiln do not agree with the nature of the construction: an axe with remains of its wooden handle, two nails, an iron ring, a knife with decorated copper handle; but not one fragment of burnt clay. Two white clay vessels from Paaso were possibly made in this kiln, since they were made by unskilled hands. The edge of one is short and recurved to the side, and its base is slightly concave. The edge of the other pot is deformed and the vessel itself is very disproportionate.

The osteological material from Paaso is badly preserved, and only 121 fragments of burnt bone have been identified: cattle 90; sheep/goat 7; birds 7; beaver 6; pig 4; dog 3; fox 1; marten 1; perch 1; and small ungulates. The domestic breeds are characterized by their pronounced small size (Vereshchagin 1981:208).

Unusual artefacts from the 10th and 11th centuries as well as cremated bones were reported from five locations in the southwestern and western parts of the settlement. In the northern portion there was a well-preserved cremation within an oval 50-cm high sod-covered mound. A rectangular stone structure was observed under the sod in the black, charcoal-rich soil and red burnt clay. Burnt bones were found throughout the area at a depth of 25 cm. Their greatest concentration occurred on the northern and south-eastern parts of the mound as two 30x20 cm bone concentrations. Three "ice-gang pins" were found at a depth of 15 cm among the southern stones the structure. Slag, a folded copper plate, a small potsherd were found on the northern side. Two human teeth were collected outside the stone structure. A layer of grey clay and the bedrock lay stratigraphically below the mound. A silver plate and a bore with square cross-section were found at the same place.

The great majority of finds are artefacts typical of the Old Karelian culture of the 12th and 13th centuries: fibulae, chain holders, silver beads, copper spirals, knives with decorated handles and a few weapons. Weapons are relatively rare despite the fact that Paaso is a fortified site. The finds indicate that the inhabitants were occupied with agriculture, hunting, fishing, iron smelting and copper wire drawing. There

were many iron spokes with a flax tow attached to a distaff (a total of 1275 objects including surface finds).

The local inhabitants maintained a lively trade with their neighbours, as indicated by finds of jewelry items as well as a copper balance pan and weight. The flattened spherical weight is covered with bronze sheeting and has multiplying factors marked by five circles. It weighs 94.5 g, which is very close to half of the contemporaneous silver grivna of Novgorod's monetary system.

The sudden destruction of the *gorodišče* is indicated by a great amount of silver and copper jewelry of various types with clear traces of fire. We cannot ascertain now what had happened in the 13th century, but it is only known that the settlement was not looted and that the owner of this valuables never returned to the ruins (Kochkurkina 1986:25-31).

Life on the hill recommenced in the 18th century in connection with the Russian-Swedish war, when it was occupied by the garrison defending Sortavala. It is possible that at that time the *gorodišče* layers were badly disturbed.

Some attempts of interpreting the term *paaso* have been made in the linguistic literature. L. Posti considers it to be a loan from the Russian *pogost*. According to V. Nissilä *paaso* either reflects a close connection with certain characteristics of the site (*paasi, päs*), or it originates from the personal name Paaso (Posti 1950:128-135; Nissilä 1960:378) or from *paaskeri*, a corruption of the Swedish *Båtskärsnäs*.

The building of fortresses against the encroaching Swedish expansion and/or the reinforcement of feudal power began around late 13th and early 14th centuries in Korela with the participation of Novgorod authorities. Tiversk (Finn. Tiuri), a military-defensive complex with a clear handicraft bias, played a major role in the realization of these goals. The *gorodišče* with its ramparts and stone walls enclosing an area of nearly one hectare, is situated on the Karelian Isthmus, 14 km from Mel'nikov (Finn. Räisälä) and 3.5 km from Vasiljevo in the Priozersk district of the Leningrad oblast. It was located nearly the Tiuri rapids, on an island washed by two arms of the Vuoksa river.

The monument's name coincides with that of a small town mentioned in the chronicles, Tiurinlinna-Tiverskii. In the list of Russian *zaleskikh* towns, Tiversk is situated between Lake Ladoga and the Gulf of Finland, from Oreshek to Korela (NPL 1950:477). It could not be far from the Novgorod-Swedish frontier of 1323,



Fig. 4. Tiversk: Building foundations.

otherwise there would have been any sense in building this defensive complex and, moreover, it would have been too far from Novgorod. The chronicles relates that when the Swedes attacked Tiverskii in 1411, the Novgorodians had learnt about it 3 days later and had gone to intercept them at Vyborg (Finn. Viipuri). The Swedes were punished and the Old Russian soldiers returned to Novgorod with loot.

The first records of Tiversk occur in the Nikon chronicle of 1404. Smolensk prince Jurii Svyatoslavich had left for Moscow to ask the Grand Duke Vasilii Dmitrievich, son of Dmitrii Donskoi, for help in the defense against Lithuanian prince Vitovt. Meanwhile, traitors delivered Smolensk to Vitovt in his absence. The reprisal was savage. The Grand Duchess and Jurii Svyatoslavich's retinue were taken prisoner and brought out to Lithuania, the rest were executed. Having learnt about this, Jurii Svyatoslavich left for Novgorod, where he was well received and received 13 towns (*v kormlenie*), Tiverskii amongst them.

Archaeological data indicate that Tiverskii was occupied much earlier than the first chronicle mentions of 1404 and 1411. During

1971–74, the excavations of c. 1620 m<sup>2</sup> revealed household complexes, defensive constructions and burials of killed fortress defenders. A total of 14 house foundations were opened. They consisted of small, closely fitted stones covered with clay. Each had a stone oven usually at the north-west corner, near the entrance. The living surface of these houses ranged between 20 and 54 m<sup>2</sup> (Fig. 4). All buildings formed a double chain following the island's configuration. They were distributed in staggered rows forming a protective barrier as in the *gorodišče* of Paaso.

The southern portion of the *gorodišče* was defended by a powerful stone-based earth-covered rampart. The site had the advantage that an attack could only come from the south. Almost all the weapons found came from this part of the *gorodišče*. At the northern end there was a possibility of retreat under the protection of reliable Korela fortifications. The length of the remaining defensive fortifications are nearly 300 m long, with a width from 1 to 11 m and an inner height of 0.3–0.7 m. There was probably also an additional wooden construction over the rampart, even if its top was rather high above the river level (c. 7.5 m). A great deal of boulders



Fig. 5. Tiversk: Burials.

near the inner rampart edge may be the remains of some structure.

An altar resembling a small hearth with seven iron rivets, potsherds, a shin bone (species not determined), bark, spices and burnt bones were placed as a guard at the base of the rampart.

The economic life was concentrated in the safer northern part of Tiversk. The wall of boulders has preserved its original height at several places. Three rectangular chambers made of large boulders were attached to the inner side of the west wall. They obviously had a defensive purpose but this was not their only function. Judging from the finds (much slag, clay fragments, copper ingots, caked sand, domestic objects) we can suppose that these chambers had a production function (forges?). Why were various types of fortifications used? Perhaps they belong to different occupation periods: apparently the rampart had been built earlier and the chambers were attached later, but this cannot be traced on the basis of the available artefact finds. Parts of the defensive system have been damaged by high water level.

As a whole, over 5000 slag fragments with high iron content were gathered in the Tiversk

production quarters and surrounding dwellings. It is likely that they were secondarily used. Iron was not only melted in the forges outside the settlement, but apparently also in home stoves. Fragments of crucibles were observed here. The remains of two forges are unfortunately too badly preserved for reconstruction.

A total of 28 burials indicates Christianity as well as the survival of pagan ritual (Fig. 5). The dead had been buried with their heads towards the northeast (1), northwest (3), southwest (6) and west (11). The orientation of the remaining graves could not be determined. Wood preserved badly at Tiversk and, consequently, traces of wooden grave structures were observed in only one grave, though they probably occurred in others as well.

The large amount of finds (4023) indicates that Tiversk inhabitants were not only warriors, that they were also occupied with crafts, agriculture, animal husbandry (pig, cattle, horse), hunting, fishing, and took an active part in a wide trade network (Kochkurkina 1986:95–107).

One of the most interesting finds is a lead seal with Dmitrii Solunskii sitting sword in hand on one side and the inscription "Alexander Mat-

veevich" on the other. Obviously the presence of a nominal seal implies the existence of important now lost documents to be stamped.

The date for the destruction of Tiversk is known: on March 26th in 1411 the Novgorodians returned home after having crushed the Swedes. The date for the appearance of Tiversk is another matter. There was a small settlement at the site of the future Tiversk from in the 10th and early 11th century. The Tiversk proper did not function for very long according to archaeological material. The date for its construction can be only approximated. The Oresheck (Schüsselburg) peace treaty of 1323 forbid Swedes and Novgorodians to build fortresses near the Novgorod-Swedish border. The fortress was probably a response to the increased activity of the Swedes, who had built Viborg in 1293. Thus, in my opinion the Tiversk fortress came into being in the period 1293–1323.

It is also possible that the town was named after one of the "rodov Korelskih detei" Tivrutsev. As for the meaning of the word *tiuri*, according to many investigators, it is of Saam origin: *tiwre* > *tiuri*. There is another opinion that *Tiuri* and *Tiurinlinna* originate from the varangian leader *Dir'a/Diuri* (Nissilä 1975:218).

The Korela (Finn. *Käkisalmi*) fortress (*krepost'*) – the largest settlement – is located on an island in the middle of the Vuoksa river, 2 km from its discharge into Lake Ladoga. It probably was preceded by a settlement below the fortress, but it is difficult to determine where because the banks are now covered with modern buildings. According to the chronicle, the Swedes founded their fortress in 1295, but according to Swedish sources they had only renewed the fortifications previously built by Novgorodians. The United Old-Karelian territory, named "*Korelskaja zemlja*" in Russian chronicles of 1278 and 1293, had to have an administrative centre. According to the archaeological material the settlement transfer to the island occurred in 1300 or 1310. This date is confirmed by dendrochronology.

The stone battle tower, *kostjor*, was erected by Novgorod *posadnik* *Jakov* in the 14th century. In a trapeze-like base with a rounded frontal side. The area of the basal level is 28 m<sup>2</sup>. The foundations consist of boulders without binding. The walls are made of ashlar bound with lime solution and filled with a rubble packing (Kirpichnikov 1979:52–73). Since Korela was

the administrative centre of the district and a town of both Russians and Karelians, mainly Novgorodians, its layout, dwelling types, and an abundance of objects of Russian handicraft reflect the dominant role of the Russian population. Nevertheless, Korelas (Old Karelians) lived there too. Their traces were revealed in late 15th century cadatres: "*Da na posade z dvory svoezemtsev korelskih*", "*na Spaskom ostrovu dvor Grigoria Ivanova syna Rokulskogo*", etc. (POKVP 1852:5–6).

Some military settlements were built deep in Karelian territory in the 15th–16th centuries, since the Swedes did not give up their plans of conquering Russian lands. Thus the *gorodišče* of Kurkijoki was built on a high hill (31.77 m above the river level) known as *Lopotti*. The name is a loan from the Slavic *sloboda*. On the north it was washed by the *Raholanjoki* river, which flows into Lake Ladoga. The settlement area was not large, c. 500 m<sup>2</sup> (444 m<sup>2</sup> opened for excavation). In addition to an outer line of fortifications in the form of walls of stone without binding protecting the hill on three sides, there was also an inner one formed by dwelling houses. These were wooden buildings on stone foundations (4 were excavated) ranging 13–25 m<sup>2</sup>, each with a stone stove at the northeast corner (Figs 6–8). Since an attack was most likely from the river to the north, the fortifications were reinforced on this side. The barrier of dwelling houses, which joined the major stone wall with their four sides, was placed across the hill. No traces of violent destruction have been detected.

Since there were no datable artefacts among the 132 excavated finds, the utilization period of this site can be only approximated.

In times of danger the population of northwest *Priladozhje* took to nearly inaccessible natural steep hills, which had been partially fortified with stones at their weakest points. There were several ancient refuge hillforts (*gorodišče-ubezišče*) of this type: *Linnamäki* in *Suur-Mikli* and *Linnavuori* on *Mäkisalo* Island. Their excavation took place during 1983–84 (Spirinodov 1987:49–51).

A total of 56 m<sup>2</sup> were opened at the *Suur-Mikli* hillfort, but only flints and a dozen potsherds were recorded. The foundations of a stone wall were observed on the southern and eastern sides. The walls had been destroyed but they were at least 0.5 m high. The entrance mentioned by *Appelgren* (1891) is no longer preserved.

There was no cultural layer on the hillfort of *Mäkisalo* Island, where three trenches of 6x2 m

<sup>1</sup> According to Kirpichnikov (1984:145) "there are no data on the existence of Tiversk before the 14th century".



Fig. 6. Lopotti in Kurkijoki: Building foundations.

were excavated. However, the defensive constructions are more complex and have been preserved up to a height of 1–2 m (3–4 x 38 m). A 1.5 m wide passage is 7 m from the eastern end of the hillfort, and another 2 m wide passage is 9 m from the western one. A second 23 m long wall moves away at right angles with the main wall. At its middle part, there is a rectangular enlargement of 7.3x4.5 m that reaches up to 1.7 m high (the remains of a tower?). The entrance to the site is clearly seen.

Fortifications were built to protect the more accessible gentle slope on the northern side. The remaining steep precipitous slopes needed no protective measures.

It is difficult to determine the antiquity of such hillforts due to the lack of finds, but the indisputable fact is that they were built by Korelas. Common construction features with the fortified settlements confirm it.

Some other sites with *linnavuori/linnamäki* toponyms were also investigated (Kochkurkina 1981: fig.1). Ruin-like stone formations are still visible on certain hills mentioned by Appelgren in 1891 (Hiiretsaari, Tukianmäki, Otsoisi, Kiislahti, etc.), but these cannot be regarded as

man-made artificial constructions. They are not even suitable for temporary refuge purpose, and the stone accumulations are probably the result of natural geological processes. The same conclusion can be drawn about other sites like Linnamäki (Rytty), Linnakanta (Lahdenpohja), Linnasaari (Riekkala), etc. On most of these hills the alleged fortifications are either natural stone accumulations or artificial ones made in connection with land clearance (Kochkurkina 1981:118–123).

The appearance of such placenames can be explained as follows. According to Hakulinen (1949:33–40) the term *linna* does not come from 'castle, fortress' but from its earlier meaning of *vuori*, or *kukkula*, *mäki* (hill, mountain). That is why such toponyms abound within a vast territory outside that of hillforts. Indeed, if all points marked on the map by Appelgren (1891) are regarded as settlements, then it would be necessary to admit an unusually high population density in Northwest Priladozhje. It seems likely that natural jagged rocks, steep slopes, cliffs, inaccessible islands and talus formations were associated by the local population with ancient fortresses built by legendary giants. In spite of this,



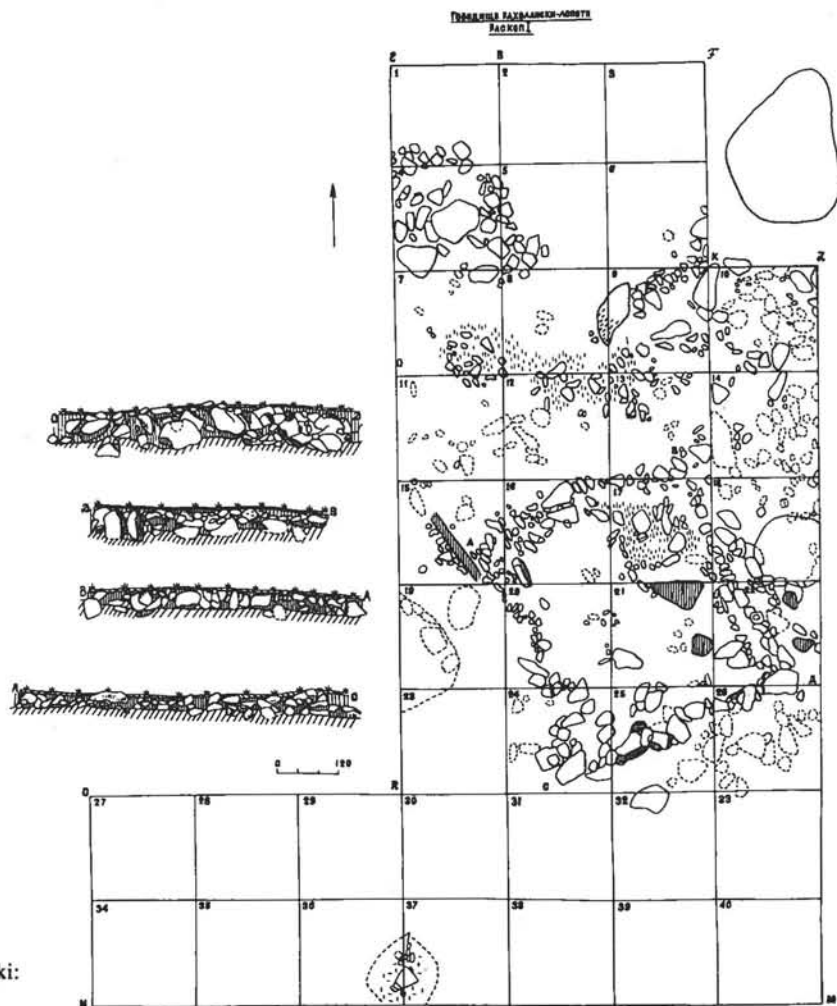


Fig. 7. Lopotti in Kurkijoki:  
Plan of dwelling.

the study of sites with such toponyms continues because some may turn out to be of archaeological interest after all.

In the Middle Ages there were some open unfortified settlements known as *selishche* in Northwest Priladozhje. They are in the process of being studied. Preliminary investigations on the Karelian Isthmus have revealed that they were located on hills and coastal slopes of lakes and rivers and that they usually had an extension of 3000–3500 m<sup>2</sup>. The character of settlement structure, the dwelling and household complexes, are analogous to those of *gorodišches*. Wooden houses on stone foundations with a stove at a corner served as dwellings. Circular open stone hearths were used outside the houses. A forge was found in one of the *selish-*

*ches*, some distance from the dwellings. Small settlements with a few houses are also known (Saksa 1985:81–84).

Settlements with different topo-geographic characteristics do not seem to exhaust the diversity that existed in Old Karelia during the Middle Ages. It is quite possible that new field investigations will change the scheme given in this paper and will reveal some new yet unknown details.

The artefact material was studied according to various methods of the natural sciences to obtain a better picture of the economy of the Old Karelians during the 12–15th centuries. Northwest Priladozhje, traditionally connected with the Novgorod state, was under strong influence from the Old Russian art and handicrafts, a situation

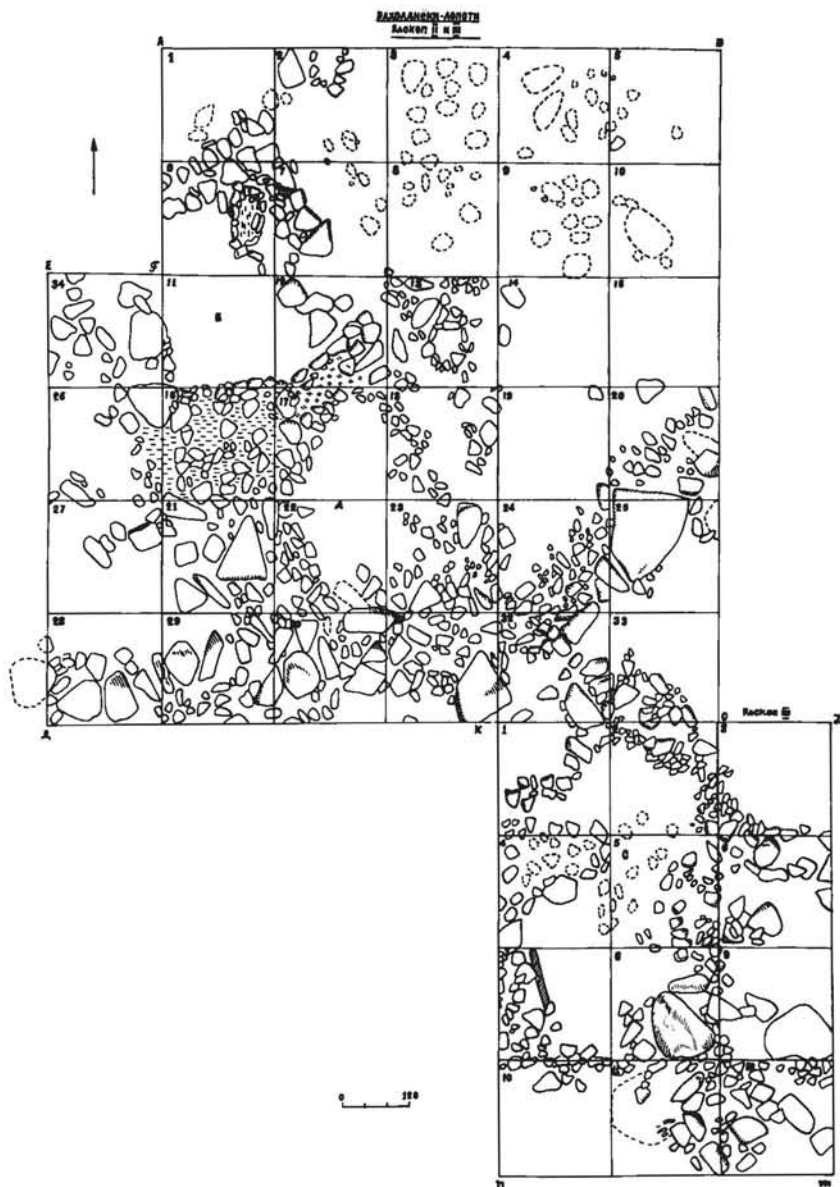


Fig. 8. Lopotti in Kurkijoki: Defence works.

that favoured the economic and socio-political development of the region (Kochkurkina 1982: 76–180, 1986:49–94).

The Korela territory differed by its well-developed iron production from the farming-trading Novgorod district. The Korela iron industry was based on local resources and its production scale exceeded local demands. Cadastres contain references to agricultural products and objects connected with iron working which had to be supplied by the Old Karelians.

The iron finds were put through metallographic analysis which allowed the determination of certain technological schemes in the forging processes. In general, all of them were characteristic of the Old Russian handicraft of the 9–14th centuries (Homutova 1982:188–208). The welding of three flat metal bars (three layer pack), two iron ones sandwiching one of steel resulting in a self-sharpening blade, was the technique most used by Old Karelian blacksmiths and masters of other northern regions of

Old Russia during the 9th–11th centuries. Knives, sickles and razors were made by this method. Sometimes craftsmen made rejects, iron and steel bars were confused giving rise to a pseudopack. Some rejects occurred at Tiversk and Paaso. Welding took place at the necessary temperature regime with flux, so joints were thin and clean. After being so prepared, the multilayered flat bar was shaped on grindstones. The technology of three-layered packs insured high quality products.

Meanwhile, this laborious technology could not satisfy the increased demand, so at the beginning of the 12th century it was replaced by a more economical one by which the flat steel bar was welded into the blade. The latter technology was in use by the Old Karelian blacksmiths until the end of the 12th century, when it was replaced by a more simple technique: the welding of steel cutting edge to iron blades. Economical pressure developed creativity. If in the 12th and early 13th centuries nearly half of a blade surface was steel, later only a narrow steel bar was left on the very edge of the blade. To make arms according to this technology is easier but their useful life shorter. The welding of a steel end to an iron base with the joint line at right angles to the blade axis was used by craftsmen rather often, while the even more economical one with inclined joint line was used later in the 14th–15th centuries. The latter technique gave products that became useless within a short time and was rarely used by Old Karelians.

The technology of all-steel products was at the second stage in the Old Russian handicraft. Like Old Karelians, they had very few such articles made by the cementation technology and by that of welding out of one iron and one steel (on the blade) flat bars. The blacksmiths' skills are characterized by their ability to use heat treatment: the Old Karelian craftsmen mastered and applied it correctly. In lock-making they skilfully used soldering. To join two parts some easily melted metal was introduced between them through heating. The technology of coppering iron objects was based on the same principles. Exceptional welds indicate the high skill of the craftsmen. The cattle bell found at Paaso had a steel base with both inner and outer copper coating to make its sound melodious.

Various methods were used in the manufacture of different tools such as drawing, cutting, trimming, punching, bending and twisting. All these operations could be performed only on hot metal. Artistic smith forging is observed on some articles. Two parallel lines of incrustations with

non-ferrous metal on battle axes were observed.

As a whole, Old Karelian iron handicraft was notable for the high degree of complexity equal to that of Old Russian towns, particularly Novgorod, which influenced its development.

The masters not only possessed advanced technology, they were also able to make various instruments used in wood and jewelry processing, in shoe- and saddle-making, weaving, weapon manufacture and in agriculture. Diverse objects were produced for daily needs. On the whole they are both similar and synchronous with those from Novgorod.

Locks and keys were indispensable during the 12th–15th centuries. Keys were particularly numerous and varied in shape. Like today, several keys were apparently made to a single lock. Padlock keys, cylindrical and inner locks as well as T-shaped masterkeys for wooden bolts were reported. In Tiversk some unusually shaped steels were found: the handle of one was a running dog. Another is interesting because the handle and the working part are joined by forge soldering.

Domestic knives are also rather frequent finds. There are diminutive ones with blade lengths ranging 3.4–5.1 cm. The length of the rest fluctuated within 9.3–17.1 cm. Most of the knives were probably put to domestic uses. Pan handles, iron spring scissors, shingle-holders, razors and other iron objects were also widely used. Razors were made of two flat bars of iron and steel with their cutting edge of steel. They were kept in cases.

Copper foundries were developed in Old Karelian territory according to the best Novgorod traditions. Complex melts similar to those of Novgorod were used for the production of adornments that were made mainly of copper-zinc melt during the 10th–12th centuries. In the 13th–15th centuries the share of products of "pure" copper, zinc-tin and tin bronze increased (Vasiljeva 1982:185–188).

Various instruments for working jewelry were found at Northwest Priladozhje sites. A plate for bronze wire drawing was found at Paaso. Wire-drawing consisted in passing metal previously forged in thin bars through drawing-plate holes. The drawing-plate had 14 holes ranging between 1 and 2.5 mm in diameter. Drawing-plates are usually tetragonal bars with holes of various sizes and shapes. Our drawing-plate had been forged out of an iron pig, after which cementation and heat treatment (cold water hardening) were applied (Homutova 1982:203).

The jewelers used the following tools: small

hammers for jewelry forging, chisels, drifts, bronze pincets for holding fine objects and for wire bending in filigree work. Small bronze weighing scales belong also to this group.

Agriculture and handicrafts were developed among the Old Karelian population. Weaving, sewing and skin treatment do not seem to be of domestic production, but they satisfied the needs of the population.

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#### ABBREVIATIONS

- КСИА — Краткие сообщения Института археологии АН СССР.