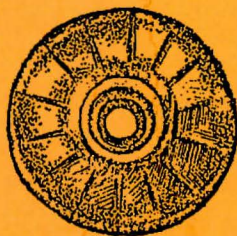


VLADAS ŽULKUS

PALANGA IN THE MIDDLE AGES.
ANCIENT SETTLEMENTS




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Vladas Žulkus

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Translated from Lithuanian by
Vijolė Arbas



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CONTENTS

I.	Foreword	7
II.	History of Ancient Palangas Settlement Studies	10
III.	Palanga Sites in a Paleogeographical Environment	14
IV.	Birutė Hill and its Environment	23
	Write-up of Areas Researched	30
	Prospect Holes, Survey Excavations and Trenches.	30
	1976 Trenches	31
	1983 Trenches and Research Areas	32
	17 th -18 th century Layers and Finds at the Hill's Platform	33
	Graves of the 17 th - 18 th century	35
	Pagan Sacral Place Layer	39
	Fortifications on the Western Part of the Hill.	50
	Cultural Layer of the Hill-Fort	55
	Reconstruction of the Hill's Cultural Layers	58
	Pagan Sacral Place	62
	Paleo-Astronomical Interpretation of the Alkvietė Pagan Sacral Place	64
V.	Settlement at the Foot of Birutė Hill	72
	Write-up of Areas Researched	72
	Cultural Layers.	75
	Surfaces of the 17 th - 18 th century	76
	Cultural Layers of the Rampart.	77
	Layers of the Settlement	90
VI.	Žemaičių Hillock	147
	Situation	147
	Write-up of Areas Researched	148
	Cultural Layer Horizons	151
VII.	Roužė Stream Settlement	164
	Cultural Layer Horizons.	165
	Interpretation of the Layers	167
VIII.	Southern Settlement	169
	Write-up of the Research Areas.	171
	Cultural Layers.	174
	Survey of the Cultural Level Applying the Geophysical Method.	198

IX. Structures	199
Old and Middle Iron Age	199
Middle Ages Structures	200
Žemaičių Hillock Settlement.	209
Construction Traditions in Palanga.	215
X. Naglis hill	230
Write-up of the Research	231
XI. Finds.	234
Ceramics	234
Commerce and Craftsmanship	324
Food preparation and storage	324
Spinning	325
Weaving loom weights	327
Fishing tools and means	337
Construction parts and wood-working tools	339
Bone and horn artifacts	344
Household Items	345
Jewelry	352
Unaccountable Plates	354
Silver Ingot and Coin	356
Metal Artifacts of an Unclear Designation	357
Amber Processing and Items Produced	358
Items for Pagan Cult Worship	361
Weapons	363
XII. Chronology and Synchronization of Settlement Cultural Layers	367
XIII. Dwellers and Their Ethnicity	377
XIV. From Curonian Village to a Baltic Trade Center and An Early Town	380
XV. Economic Structure of Palanga	382
XVI. Appearance of Palanga and the Early Towns of Lithuania.	386
XVII. Results of analysis on Osteological Material Excavated from the Settlement at the Foot of Birutė Hill by Linas Daugmora	394
Abbreviations	404
Resources	405
Bibliography	407
Addendum I Formal Table for Writing-up Ceramics	422
Addendum II Markings predetermined	423

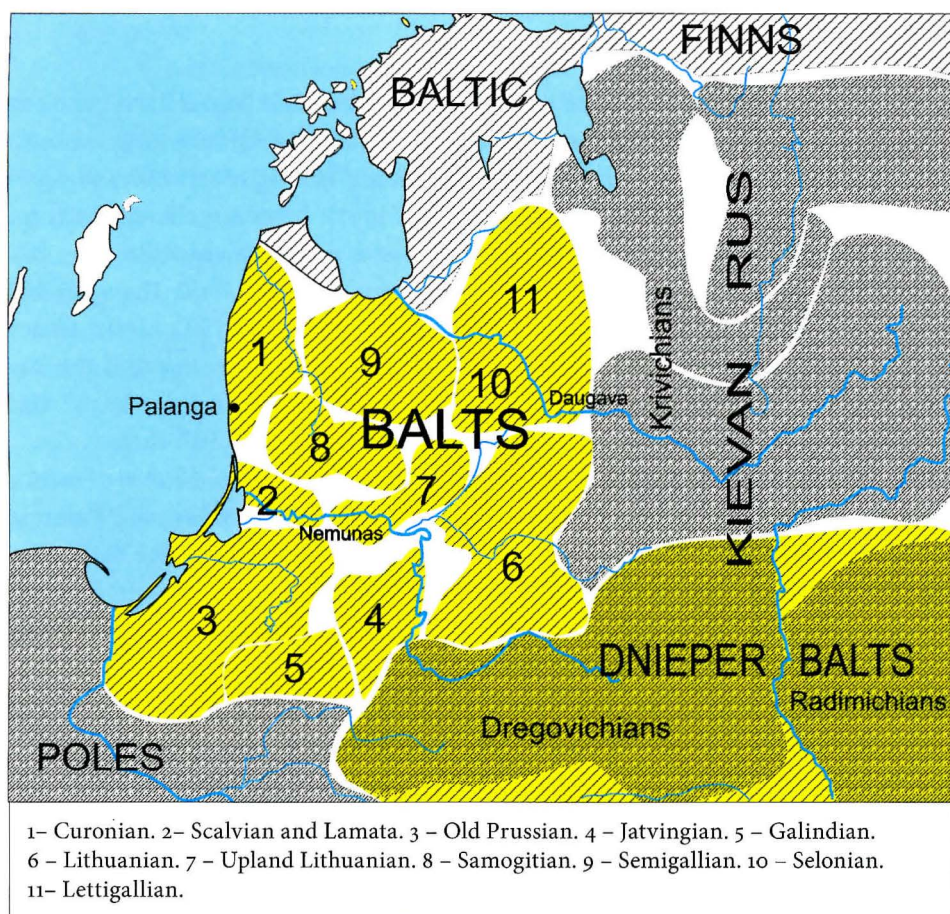
I. FOREWORD

It will soon be thirty years since a systematic exploration began of the ancient settlements in Palanga, a small seaside town of Lithuania. Quite a large amount of material on the excavations of these settlements, lasting more than ten years with intervals, was published in 1997 (Žulkus 1997); however, there is still no comprehensive publication. Many questions and premises regarding the history of Palanga during the Early Middle Ages remain unresolved. The available material is obviously insufficient for an objective discussion of certain issues on the archaeology of Palanga within the context of archaeology and the history of the Baltic Sea basin, an area of study that is becoming more broad and deep over time. Further excavations are necessary to accomplish this.

The research on the ancient Palanga complex was a continual chain of minor discoveries. Initially it was thought that, during Viking times, the Palanga settlement fit within the foot of *Birutės Kalnas* (hereafter Birutė Hill), the ancient locale of Pagan worship. Later another ancient settlement of a significant area was found and named the *Pietinė gyvenvietė* (hereafter Southern Settlement). After that cultural layers and graves were unearthed in Žemaičiai Hillock. Finally, after a lengthy search, yet another settlement was discovered by Roužė Stream. As such Palanga “grew” from a small settlement at the foot of Birutė Hill to a sizeable complex of four settlements along with burial grounds. It will take further observations and excavations at Palanga to learn their actual number and those which have survived.

The unusual artifact findings from Palanga settlements not only distinguished them from the rest of the ancient seaside settlements of Lithuania but also raised the prominence of Palanga itself as a key trading center of the Curonians (Figure 1) during the Early Middle Ages. The Baltic cultural maps of Viking times show Palanga slowly becoming entrenched alongside other known, ancient Baltic centers, such as Grobin and Kaup-Wiskiauten.

The purpose of this monograph is to submit material on the excavations that is as thorough as possible. However, due to the limited scope of the book, it is not possible to write-up the ceramics of the settlements in sufficient detail notwithstanding that publications have paid far more attention to their analysis than other archaeological excavations in Lithuania have received. Since there is no longer any remains of wood in the sandy layers of Palanga settlements, ceramics and other artifacts constitute the main keys for establishing chronology.



The findings unearthed at the Pagan sacral places attracted much attention from archaeologists and the public. Initially their views were rather skeptical on the matter. Nonetheless, it has been a decade since scholarly interpretations have appeared on the phenomenon of the ancient Baltic culture from archaeological, astronomic, mythological and religious perspectives. This book does not delve into paleoastronomical and mythological interpretations to a greater extent. The explanation about the Birutė Hill sacrificial offering place does not deviate from the material on the excavations and empirical facts from practical and theoretical experiments.

The evolution of Palanga settlements and their socioeconomic characteristics called for answers to the following questions: Was Palanga an early rudiment of a city? What was its role within Mėguva lands and the entire southern Curonian region? How much can the excavations performed there explain the process of cities originating in Lithuania? Then there was another aspect that also unfolded in the effort to treat the Palanga culture comprehensively. It is possible that the first seeds of Christianity were planted precisely at Palanga during Viking times – 200 years before Lithuania officially became a Christian country.

The structure of this book is not uncommon. Only the readers who are colleagues might be disappointed that the description of cultural layers appears in the middle of the explanation rather than somewhere in the beginning. The opinion of the author here is that an accurate approach for thorough argumentation is an analysis of other archaeological material and the conclusions drawn from such. There are newly drawn conclusions and a more accurate chronology, differing somewhat from those published in the earlier articles on Palanga. As any other researcher, the author here is not pleased that certain, earlier published positions of his own need revision. Nevertheless, this seems unavoidable now that new data has appeared, and the interpretation of it has been reconsidered.

Just like every book on archaeology published, this monograph also has an entire group of generally anonymous co-authors. The author extends his sincere gratitude to all the helpers who labored at the excavations in Palanga and especially those, who spent more than a single year on the repeated excavations and worked at arranging the ample material from the expeditions as well. This includes the author's wife, Leonora Žulkienė, who performed nearly all the field measurements and drafted some of the drawings presented in this book, and artists, Liolė Paulaitytė and Anatolijus Tuzovas. Further the author cannot forget the heads of Palanga Town Municipality. Their efforts assured that the excavations never desisted even during the most difficult times. Gratitude is also extended to the sponsors, such as the head of the Palanga Botanical Gardens, Antanas Sebeckis, and the head of the Amber Museum, Vytautas Juodišius.

The author is thankful to numerous colleagues but especially to Prof. Libertas Klimka and architect Saulius Manomaitis, who proceeded to interpret the material from the excavations at the Pagan sacral place of Birutė Hill boldly. Their works have been used in one way or another for this book. A separate note of gratitude is due to the editors of the manuscript, Habil. Dr. Vytautas Urbanavičius, Habil. Dr. Vytautas Kazakevičius (RIP), and Dr. Gintautas Zabiela.

II. HISTORY OF ANCIENT PALANGA SETTLEMENT STUDIES

The history of the investigations of ancient Palanga settlements is very brief. Singular pieces of ancient items have been found at Palanga and its neighboring areas for a long time. However, these were usually associated, not with ancient settlements but rather, with ancient gravesites, the “soldiers graves” (Basanavičius 1922: 28-29). Indeed these usually were actual findings from graves, and they raised considerable interest from the public. The press reported the finds of weaponry and coins in the 3rd century burial grounds that were being disturbed at Baltic Square (Tautavičius 1968: 123-137) as early as 1870 (Šliūpas 1884 (1983): 264). Petras Tarasenska compiled a listing of these Stone Age findings from the surroundings of Palanga. Tarasenska happened to be the first scholar to ingrain in archaeology the opinion that Birutė Hill was a former “shrine of Lithuanian idol worshipers” since *Naglio Kalnas* (hereafter Naglis Hill)—the “*Švedkapiai* ‘Swedish Burial Grounds’”—could have been a hill-fort. He was also prone to considering the ramparts by Basanavičiaus Street as an archaeological site (Tarasenska 1928: 201). Scientists who researched the past of Palanga paid their greatest attention to Birutė Hill. Birutė Hill appears in the 1973 Listing of Archaeological Sites of Republican Significance as a Pagan sacral place (Lietuvos TSR 1973: 97) and later as a pagan sacral place and hill-fort (Žulkus 1977; Baubonis, Zabiela 2005: 164-167). Another mound, not far from Birutė Hill, is also associated with an ancient castle. The map in the 1781 inventory of the Palanga Eldership marks a mound north of the Nemirseta Settlement with the description written as “*Pilali Kopiec dawny* ‘Old Castle earth pile’” (MAB, F. 11-43). This mound ended up falling within the artillery grounds of the Soviet military and it was destroyed. Singular pieces of old artifacts from Palanga territories were included in the private collections of Dr. Jonas Šliūpas and others; however, the exact locations where they had been discovered were not clarified. Seemingly these again were mostly findings from the ancient gravesites, some of which were from the burial grounds investigated during 1961 - 1962 (LAA Vol. III 1977: 80) and later (Žulkus 1988: 123-125; Žulkus 1993: 143, 144; Žulkus 1994: 197-170).

Scientific research on the ancient settlements of Palanga began in 1958. That year, under the leadership of Pranas Kulikauskas, the remains of a 3rd millennium B.C. settlement were an isolated find in the riverbed of Roužė Stream (Kulikauskas 1959). The research on Middle Age settlements is considered to

have begun in 1976, when the Archaeology Department of the Monuments Conservation Institute of those times proceeded with the excavation of the platform on Birutė Hill (led by Vladas Žulkus). Prospecting archaeological excavations were performed in 1976 for drafting the plan to restore the chapel and re-arrange the area of the hill's platform. Since then this author has led the work by the so-termed Palanga Expedition. The Monuments Conservation Institute organized the expedition until 1989. Then, in 1990, the organizer was Budys, the Lithuanian Culture Fund Club and, in 1991, the History Museum of Lithuania Minor of Klaipėda. Meanwhile, since 1993, the Center of History of West Lithuania and Prussia of Klaipėda University (now it is the University's Institute of the Baltic Region's History and Archaeology) has been handling this work. The Palanga Town Municipality supported the studies of Palanga's archaeological sites the entire time and financed it most of that time.

Layers of the settlements at the platform and foot of Birutė Hill were excavated in 1983, 1990 and 1993 (Žulkus 1984: 43-46; Žulkus 1985: 424, 425; Žulkus 1994a: 94-96). The National Museum of Lithuania stores the findings that were gathered in 1976 and 1983. The material from the other Palanga settlements is stored in the funds of the History Museum of Lithuania Minor of Klaipėda. An excavation took place at Naglis Hill in 1978, and a survey was made of its environment. This excavation refuted the claim that a castle had once stood there. However, 16th - 19th century burials were discovered along with their disturbed older layers, which could be ascribed to a Pagan sacral place (Žulkus 1981: 63-72). Searches for traces of ancient settlements and burial grounds between Naglis Hill and Ežeralis Stream proved unfruitful (Žulkus 1989. PRPI. F. 5. B. 44).

Jonas Genys, who explored the central part of Palanga in 1982, excavated the first trial trenches at the foot of Birutė Hill and discovered cultural layers there (Genys 1983. PRPI. F. 5, b. 3168). While excavating in 1987 at the edge of a 8th - 12th century burial grounds in Palanga, a female native of Palanga reported that "a large ancient cross had been found by the dance square" several years ago. A survey was made of the indicated territory that same year. One more, previously unknown, ancient settlement was found in the area of the old watering spot and the hippodrome referred to as the "Second Ancient Palanga Settlement" or "South Palanga Settlement". It was explored in 1988 and 1989 (Žulkus 1988a: 45, 46; Žulkus 1990: 37-41). During the 1990 survey of the Birutė Hill area, layers of ancient settlements and graves were found at Žemaičių Hillock in Palanga Park. Excavating also took place there in 1991 (Žulkus 1992: 66-68). In 1994, as an engineer observed the excavations near Roužė Stream, traces of yet another ancient

settlement was rather unexpectedly detected near the stream. Low volume excavating showed that only a few traces of this settlement had survived - the layers were strongly disturbed by underground communications lines and buildings. For now the size of the Roužě Settlement can only be guessed. Planned excavations in Palanga broke off after 1994. To date there are only small survey tests, relevant to construction jobs, being conducted in various areas of Palanga. These have not revealed any new information.

A large complex of archaeological sites in Palanga is now known (Figure 2). Although the research material on the burial grounds had been published in scientific works for a long time fragmentally (albeit not yet in its entirety), the research material on the ancient Palanga settlements was not released until 1997. Prior to that, only brief informational articles had appeared; the broader coverage was only on Naglis Hill (Žulkus 1981: 63-72) and the data from the 1976 and 1983 excavations of settlements on Birutė Hill and at its foot (Žulkus 1986: 21-35). The results of the excavations to 1997 were discussed in various articles by authors of books (Žulkus, Klimka 1988: 127-136; Žulkus, Klimka 1989; Žulkus 1990: 73-41; Žulkus 1991: 15-29; Žulkus 1992a, S. 46-47; Žulkus 1995: 190-206; Žulkus 1995a: 2-6; Žulkus, Urbanavičius 1995: 9-13; Žulkus 1999: 79-94; Žulkus 2004: 181-185) as much as by other researchers (Zabiela 1995: 68, 69, 86, 98, 110, 115; Vaitkevičius 2003: 18, 48).



Figure 2.
 Archeological sites at
 Palanga:

1. Birutė Hill
2. Žemaičių Hillock
3. Southern Settlement
4. Roužė Settlement
5. 8th - 12th century burial grounds
6. Roman period graves
7. Neolithic settlement
8. Naglis Hill
9. Isolated finds from the Early Middle Ages

Based on an aerial photograph

III. PALANGA SITES IN A PALEOGEOGRAPHICAL ENVIRONMENT

As the last glacier of 15,000 - 10,000 years ago was melting, it left behind moraine hills in West Lithuania along with formations left by the melting ice—mostly short strips of hills in various directions (Gudelis 1998: 285). Two glacier arms lasted for a considerable time at the seashore and, as they melted, they formed two bends of moraine hills: Priekulė-Karklininkai and Virkštininkai-Lazdininkai (Basalykas 1965: 53-54; Gudelis 1998: 285). The crust of the earth began elevating after the glaciers had melted. In Estonia the ground rose as high as 40 - 60 m, at the Curonian Peninsula—15 - 30 m and at the Lithuanian seashore—up to 13 - 14 m (Блажчишин, Гудялис, Литвин 1976: 35-94).

The coastline at Palanga changed considerably during the post glacial period. During the Ancylus Lake and Litorina Sea-1 periods, the seacoast had been pushed considerably westward. The shore of Litorina Sea-1 (~ 8000 ÷ 6200 yr BP) at the mouth of the Roužė was about 8 km wider (Bitinas, Damušytė, Stančikaitė 2002: 20). At that time the Lithuanian seashore was strewn with cobbles and overgrown in pine woodlands. Pine stumps (8094 BC) were found by Juodkrantė at a depth of 27 m (Bitinas, Žulkus, Mažeika, Petrošius, Kisielienė 2003: 43-46), by Melnragė (about 7770 ± 120 BC) at a 14.5 - 15 m depth and by Smiltynė at a 11 m depth (survey of Žulkus 2003 and 2007, unpublished). During the late Litorina Sea and post-Litorina Sea periods, the sea level was higher than it is today (Bitinas, Damušytė, Stančikaitė 2002: 20).

Two more Baltic Sea transgressions were during the former, late Holocene (beginning 2,500 years ago). The sea water did not recede until as late as the 10th to 11th centuries. At about the year 500 BC, as the Early Iron Age was beginning in Lithuania, the waters of the Palanga surroundings were about 2.5 m above the current sea level. During Viking times, at about the year 1000, the sea at Palanga could have still been about one meter higher than it is today (Kabailienė 1990).

The influence of the glacier on the movement of the earth's crust diminished in due course. However, due to the uneven structure of the tectonic plates, the crust of the earth has not settled even today. The earth's crust from Palanga to Klaipėda is now sinking, though actually, by less than 1 mm per year. Conversely, the sea level worldwide has been rising by 1 - 1.5 mm each year (Блажчишин, Гудялис, Литвин 1976: 35-94). Taking these movements into account together, it is obvious that the waters at the Palanga coast flood, rising a minimum of 1.5 mm each year. Over a century this amounts to 15 cm and over 500 years - as much as up to 75 cm.

The sea formed most of the geographic environment of Palanga and its surroundings. Strips in parallel with the shoreline are clearly noticeable on the relief. The narrow terrace plains of the Litorina Sea begin beyond the beach and the strip of hilly sandhills. The front is swampy in certain places and, onward, the basin beyond the sandhills is higher and drier. Larger bogs have remained in the Litorina plains (earlier there had been more of them). There is a seashore swamp which is over 5 km² in width and 3 - 4 m in depth. It formed as the Litorina Sea was receding. The eastern and of the sandy, hilly Litorina plains is an abrasive cliff—formerly the coastline. The strip washed by Baltic Glacier Lake stretches beyond it. In certain places there, the earthwork of the old shore is distinguishable (Figure 3). The terraced plains of Baltic Glacier Lake extend eastward all the way to the Lazdininkai - Virkštinkai strip of hills, formed by the melting edge of the glacier. Large, gently sloping hills changing into hollows predominate in this sandy plain (Basalykas 1965: 52-64). Between Palanga and Šventoji, the seaside road from Klaipėda to Liepoja extends from the foot of Baltic Glacier Lake (Kunskas 1995: 34; Kunskas 2005: 23-29). Formations from the old seashores have also survived in Palanga itself. The terrace of the Litorina coastline can be seen in Tiškevičius Park, south of Birutė Hill, whereas the earthwork of Baltic Glacier Lake can still be traced today in the terrace that is at the western edge of Vytauto Street, towards the Botanical Park greenhouses. This terrace is about 12 - 15 m above current sea level.

People stumbled into the Palanga area quite frequently and settled for some time as early as the Mesolithic period (LAA, Vol. I. 1974: 47, Map 2), although decent conditions for the first people to take up ongoing habitation in the areas surrounding Palanga only formed around 2500 BC, during the late Neolithic period. These people are categorized as the so-named Narva culture. Once the third Litorinian transgression ended and the water receded, many small, shallow lakelets and lagoons appeared at the seashore. The climate at that time was quite favorable (Stančikaitė 2004: 135-148).

During the 3rd millennium BC, one of the settlements had established in Palanga itself. It was found at the bottom of Roužė Stream while clearing its bed. The size of this settlement is not entirely clear since the Roužė destroyed its traces as it slunk in stages from north to south. The layers of the settlement stretch in a southerly direction for about another 20 meters from the current bottom of the stream (Žulkus 1997: 13-14). Now it is difficult to say whether this settlement had been established near a stream or alongside one of the lakelets which had been scattered in a stretch by the seaside. The comparatively poor and disturbed

layer of the Neolithic settlement already lay at water level. Many natural as well as cut and polished animal bones and horns, a fragment of a bone hoe or axe, artifacts similar to hatchets made of bone and raw pieces of amber were found there. The produced pieces lay in a layer of peat where oak logs had well survived. Deeper down was a stone paving of as many as three layers—the remains of structures were there (Kulikauskas 1959). None of the usually abundant pottery was found in the early Neolithic settlement of Palanga.

The rising water level and a damper and colder climate began interfering in the lives of people who had been settled there rather peacefully by the streams and lakelets of Palanga and Šventoji for centuries. People were forced to move to higher locales further from the sea (Rimantienė 1980; Rimantienė 1995; Rimantienė 2005). During the Neolithic period (~ 4000 yr PB), the mouth of the Roužė was about 60 m east of the current shore (Bitinas, Damušytė, Stančikaitė 2002: 20).

The sea that originated during the Bronze Age (16th - 6th centuries BC) advanced again, and the people who had lived right next to the water had to retreat to drier land. The people in Palanga had built their homes at that time on the terrace of Baltic Glacier Lake which has, by now, lifted nearly 15 meters above sea level. In ancient times it was about a meter lower since the sea was higher. Homes stood on a clayey hill covered in sand. An environment suitable for agriculture could have also determined the situation of such a settlement (Bagdanavičiūtė, Marmaitė, Valiūnas 2004: 135).

The landscape of Palanga during the Middle Ages has been restored on the basis of archaeological studies, excavations by different engineers and data from geological bores (Figure 4). A thousand years ago, Palanga had looked entirely differently. The current sandy plains of Palanga with their small sandhill crests are deceptive. Cultural layers being found in the surface layers of the earth throughout all of Palanga are relatively young, dating only from the 17th - 20th centuries. The ancient earth surfaces in Palanga, holding traces of human lives, lie hidden beneath sand layers, from 0.5 to 2.5 meters in thickness. Today there are flatlands where there had once been lowlands and swamps. The cultural layers of the 16th to start of the 17th centuries were found in a depth of more than 2 m next to S. Daukanto Street. The drifted sand layer in the settlement of Birutė Hill also reached a depth of 2.5 meters. A sand layer of up to 1.5 meter thickness has drifted into the terrace of Baltic Glacier Lake, by as much as 1 km from the sea. In the northern part of Palanga, while excavating at Naglis Hill and the environment of lakelets to the east of it, 15th - 16th century findings were

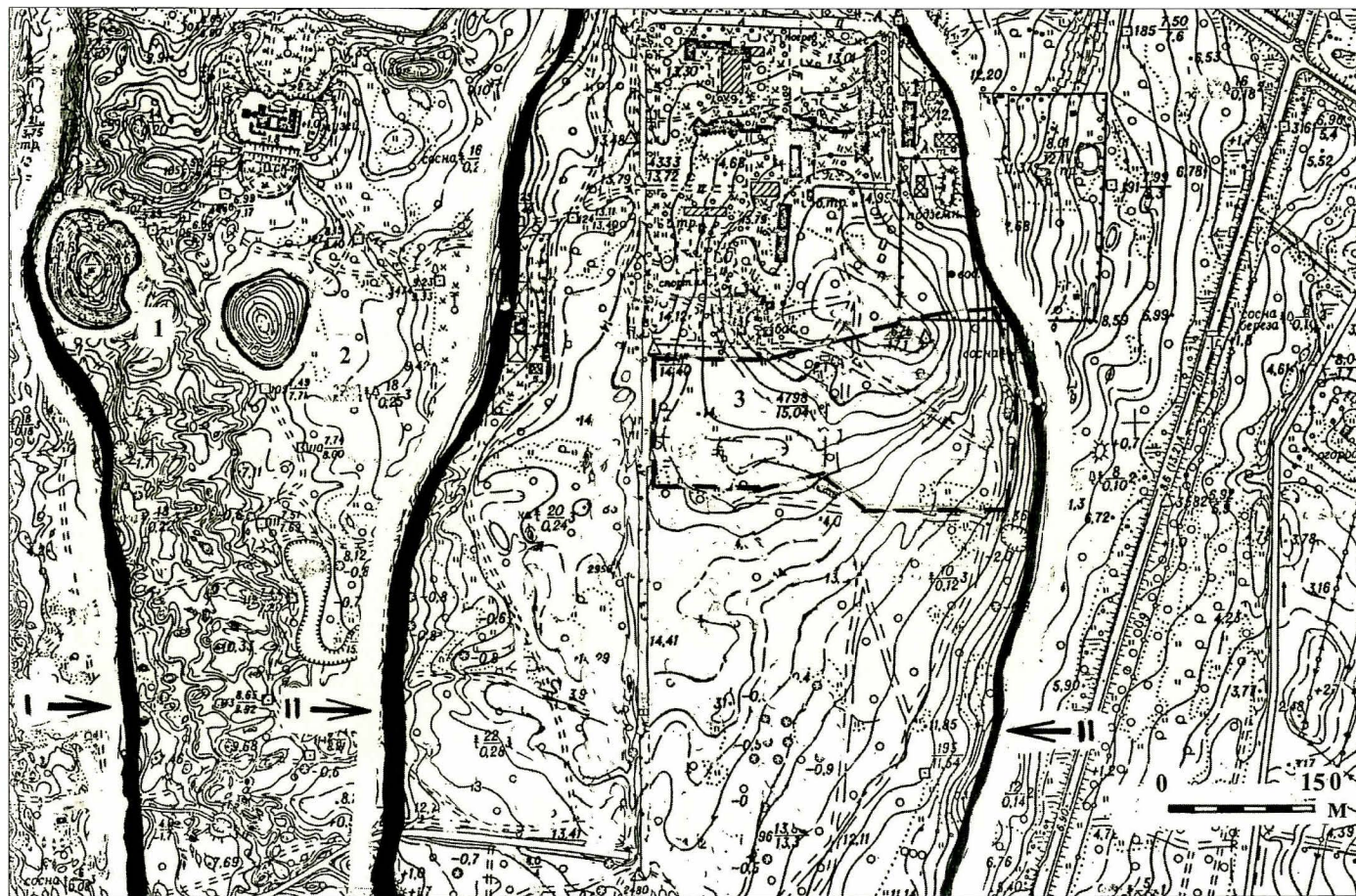


Figure 3. Ancient terraces on the Palanga relief map:

I. Litorina Sea terrace

II. Baltic Glacier Lake

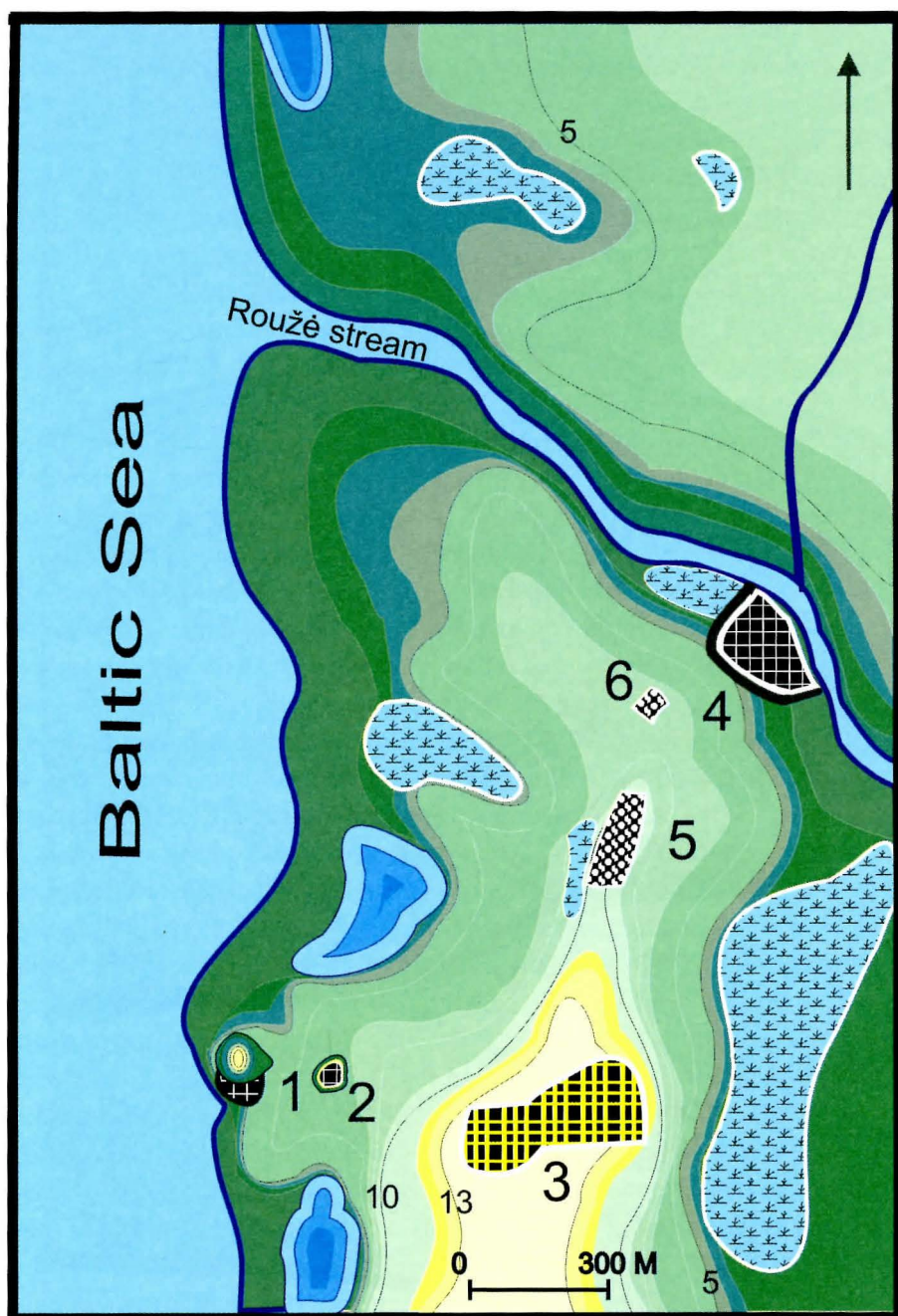


Figure 4. Palaeographic environment, settlements and burial grounds of 8th - 13th century Palanga

discovered in the sand that had drifted above the surface. Here, at the former lakeside flatland about 1 km from the seashore, a sandhill of several meters in height looms today (Žulkus 1991). The ramparts by J. Basanavičiaus Street constitute a most interesting natural formation that is highly reminiscent of a man-made fortification (LAA Vol. II 1975: 194). No trace of any human-made item was found in a section of these ramparts. Meanwhile the test pits and bores indicated that there were no cultural layers in the square either. The guilty party for the appearance of those "fortifications" should be considered the sea winds which blew in the well-formed sandhills during the 17th - 19th centuries. Similar ramparts with fence pickets still sticking out of the top also existed at a village of Šventoji (Končius, Ruokis 1926: 245). Beneath the sandhills lie the 16th - 17th century layers of a Curonian town in Šventoji. Written references discuss huge sandstorms and, at the end of the 18th century in Klaipėda, sand overwhelmed the pasture lands that were 3 km from the sea. Tremendous sandstorms began along the entire seacoast of Lithuania in the 17th century (Žulkus 1990a).

Data from all the existing results of archaeological studies and geological tests available to the author, executed prior to new building constructions, were used for reconstruction of the ancient Palanga relief (MSPI. Geologija, b. 5169, 5198, 5325, 5435, 5503, 5549, 5790, 5977. 11; KŪPI. Geologija, b. 2691/5, 2891, 3064, 3134, 3900, 8476, 14101, 17096; b. 1630, 1085). The archaeological data provided the key for explaining and interpreting geological material.

A humus layer that marks the surfaces of formerly arid or turf lands was found nearly everywhere in the process of excavating, at greater or lesser depths, under a layer of drifted sand in Palanga. Darker or lighter brownish earth, sometimes peaty, comprises the humus layer. Cultural layers are also found on these surfaces at times. All the grave pits in the 8th - 12th century burial grounds were excavated from the bottom of this humus layer. The humus layer that had formed prior to the 13th century is found in nearly all central and southern parts of Palanga. It is truly very indistinct and difficult to trace in certain places. Only the deposits of the poured layer and drifted sand are indicated by geological bores. Thus this author has performed numerous archaeological tests of small capacity and supervised ground works during excavations by engineers in archaeologically valuable territories as well as observed various excavations throughout Palanga during 1975 - 2003 to define the data from the geological bores more specifically.

The seashore north of Roužė Stream, at around the year 1000 AD, was approximately where it is located today. The left, southerly shoreline had previously been 100 - 200 m from the current shore and even further to the east in certain

places. The waves of the sea washed over the Litorina terrace towards Birutė Hill; the coast there, at that time, was at the current location of the intersection of Birutė and Dariaus ir Girėno Streets. The mouth of the Roužė was some 400 - 500 m south of where it is today—the sandhills that were blown in later forced it to turn north. The upper riverbed was not entirely the same but similar to what it is at present. The narrow valley of the stream indicates this. At that time small brooks flowed into the Roužė, which was then much more watery than it is today. One of them on the right shore was distinct as long ago as a good hundred years. In the lowlands, between the sea and the litorinian terrace of about 5 m in height, there had been small streams, some of which reached the sea.

Traces of three such small streams were found at the right shore of the Roužė. The litorinian terrace, which has been leveled considerably, used to be here, some 500 m from the seashore. One such brook of barely several hundred meters in length was along the sea to the right of the current mouth of the Roužė. Marks of other bogged streams were found between the present-day streets of Vytauto, Smilčią and Jūratės ir Gintaro. A small bog even lay in the litorinian terrace itself by the present-day Gintaro, Janonio and Kastyčio Streets. There had been an entire range of such streams to the north of Palanga. A larger one, named Ežeralis, was in Vanagupė—now new reservoirs have been excavated in its locale. A hundred years ago, the waters in this place had still been sufficiently plentiful (Končius, Ruokis 1926: 94). According to the data from archaeological surveys and tests, there are sea sand deposits, 1.5 to 2.5 m in thickness, blown in by the wind at the foot of Naglis Hill. East of Naglis Hill, between it and Ežeralis Stream, there had been a plain until the 18th century. The sandhills along the former lakelet, where the old Jewish burial grounds are presently, only appeared during the 17th century. East of the former lakelet, at the western hillside of the terrace, fragments of pots and tiles, characteristic of the 16th - 17th centuries, were found in gardens by Vytauto Street. This is the same place where there had also been an ancient settlement, the old Palanga manor (Žulkus 1978. PRPI. F. 5, b. 1917).

By it, at Plytų and Bangų Streets, there had been a swamp and a small hill. A terrain rose upward to the east from Plytų Street, and there was a clayey flatland of a thin gravel layer. The more hilly places had been right by the Roužė. In the cape of one such small hill, alongside the former swamp, the current town was forming on the right shore of the stream. There, next to the current church, 16th - 17th century cultural layers were found in a depth of about 1.5 m (Genys 1983. PRPI. F. 5, b. 3168).

The relief was more varied on the left, southern side of the Roužė. One of the swamps of the old riverbed used to be right by the valley of the stream towards the current Baltic platform. Another, smaller one is higher and more westerly. A small hill, a relic sandhill, had risen by the aforementioned swamp in the territory of the present Baltic platform, the location of a 3rd century burial ground. Yet another small hill was also right by Roužė Stream on the left side of its bank. The old *kurhaus* stands there now. Earlier a former 16th - 17th century cemetery was at this location.

Quite a larger and deeper lakelet had been at the southern edge of the current town along Dariaus ir Girėno Street by the intersection of Vytauto and S. Daukanto Streets. North of the lakelet, along Dariaus ir Girėno Street, there had been a plain with low, small sandhill crests. Next to S. Daukanto Street at Vydūno Takas Path, the land surface was about 2 m lower than it is at present. At that depth the remains of a pot-kiln dated at the 16th - 17th century were found (Žulkus 1988. PRPI. F. 5, b. 3604). There had been another small swamp, 100 m east of the lakelet under discussion, next to a low, long hill where the people of Palanga buried their dead during the 8th - 13th centuries. East of this small cemetery hill and the earthwork on the shore of Baltic Glacier Lake in the lowlands, where today the highway to Klaipėda passes, there had been a belt of large swamps extending along the sea. Its relicts are still obvious today—those are the swamps from the camping grounds at the south, all the way to the old graveyard at the northern edge of Palanga.

At the location of the current park ponds, there was a fairly large lakelet, probably lagoonal. Another similar lagoonal lakelet was farther to the south where the new park ponds are located. As per geological data, this lakelet actually did have a link to the sea (KŪPI. Geologija, b. 2691/5, 2891, 3064, 3134, 3900, 8476, 14101, 17096; b. 1630, 1085). There had been small swamps at the earthwork at the shore, formed by Baltic Glacier Lake. One such swamp has been discovered at Dariaus ir Girėno and Plytų Streets at the side of the 8th - 13th century cemetery.

Several, considerably larger relict sandhills stand out on the flat seashore. The largest is Birutė Hill, which has emerged more than 20 meters above sea level. A smaller relict hill, over 12 m in height, lies 90 m to the east—the Žemaičių Hillock. Naglis Hill is in the northern part of Palanga. The hill is also known as *Olandų Kepurė* (hereafter Dutchman's Cap) or the Hill of Graves. It also rises above the sea about 12 m. The rather high sandhill at the front of the park is Jaunimo Hillock, which was later called the Jewish graveyard. It drifted in later; it did not yet exist a thousand years ago.

All the known archaeological sites in Palanga are in higher locales on the aforementioned terraces. The ancient, Second (Southern) Settlement of Palanga at the former hippodrome platform (now football field) by Vytauto Street, also where Bronze Age findings were discovered, is on the eastern side of the Baltic Glacier Lake terrace between Vytauto Street and the Klaipėda - Liepoja circuit road. The settlement by Roužė Stream, next to which there had been a 3rd century cemetery of graves inside stone circles and, to the east, the existing 8th - 12th century cemetery, lies in the plains of the litorinian terrace. Birutė Hill with the ancient settlement at its foot and the ancient settlement of Žemaičių Hillock are on the relict hills of the litorinian terrace.

IV. BIRUTĖ HILL AND ITS ENVIRONMENT

Birutė Hill—a litorinian terrace hill—stands 150 m from the seashore at this time. The western half of the hill is the steepest. On the eastern side, behind a small site, a semi-arc of sandhills up to 10 m high, reminiscent of earthworks, has survived. As per 1926 data, the height of the hill reached 20.67 meters above sea level and 16.44 m from its foot. The hill is elongated in a southern - western direction, and its length had been 99 meters. The platform of the hill has not been geologically tested. Archaeological excavations and bores also substantiate the claim that “either in the actual hill or around it, there is no clay” (Končius, Ruokis 1926: 95). The actual platform of the hill at that time was smaller, and there was a tiny terrace at its northern edge; whereas, in the southern part, the earthwork continued to stand. The larger earthwork had been poured on the northern half of the small platform.

The explorations of the hill and its environment showed that the relief has changed considerably with the passing of centuries. The 14th - 15th century relief of Birutė Hill and its foot has been reconstructed based on data from excavations and bores (Figure 5). Impassable, marshy swamps overwhelmed in silt had once surrounded Birutė Hill from the Palanga side. The terrace left by the sea could only be approached from the south, as though it was a gigantic bridge by the hill (Končius, Ruokis 1926: 95). As the sea was tossing forth significantly more sand during the 17th century, it also blew it in around Birutė Hill. The sand blown in at its foot reaches 2 meters. The wind also carried sand to the hilltops - a sand deposit, up to 2 m in thickness, covered the excavated layers of the Pagan sacral place (Figure 6). The sandhills of drifted sand are also the “earthworks” at the eastern foot of the hill. This was substantiated after having bored the ground and excavated the test pits. The “earthworks” north of the hill formed in exactly the same way. Between the hill and the Tiškevičius manor estate, there is the so-named, *Mažoji Birutėlė* ‘Little Birutė [name in the diminutive]’. Two test pits of as many as 4 m in depth were excavated there, and only drifted sand was found. By means of the test pits, it was established that even the mound on which the Tiškevičius manor estate stood had been poured artificially. Prior to its construction, this locale had been a plain which was entirely undifferentiated from its environment.

An even place had been in the stead of the current sandhills towards Birutė Hill. In the picture of Birutė Hill by N. Orda, taken from nature during the latter half of the 19th century (Figure 7), there are still no sandhills there. A flat beach,

Figure 5. Birutė Hill and the settlement at its foot-relief reconstruction

1. Castle - Pagan sacral place
2. Settlement at the foot
3. Sea



built-up with fishermen's huts, stretches along the beach. At the turn of the 19th to 20th centuries, the sand again began to accumulate on the shores. What could have affected this were the piers constructed at the Port of Klaipėda during the end of the 19th century, the deepened opening and the pier ("bridge") built in Palanga (Gulbinskas 1999).

The current seashore sandhills toward Birutė Hill did not exist before then; they formed later. The new sandhills flooded the groundwater, and a chain of swamps formed between them and the terrace of old sandhills.

Important to note is that people considerably rearranged the relief of the hill's platform over the past hundred years. The form of the hill's platform had to change a good deal in 1898, when a cave imitating Lourdes was built on the

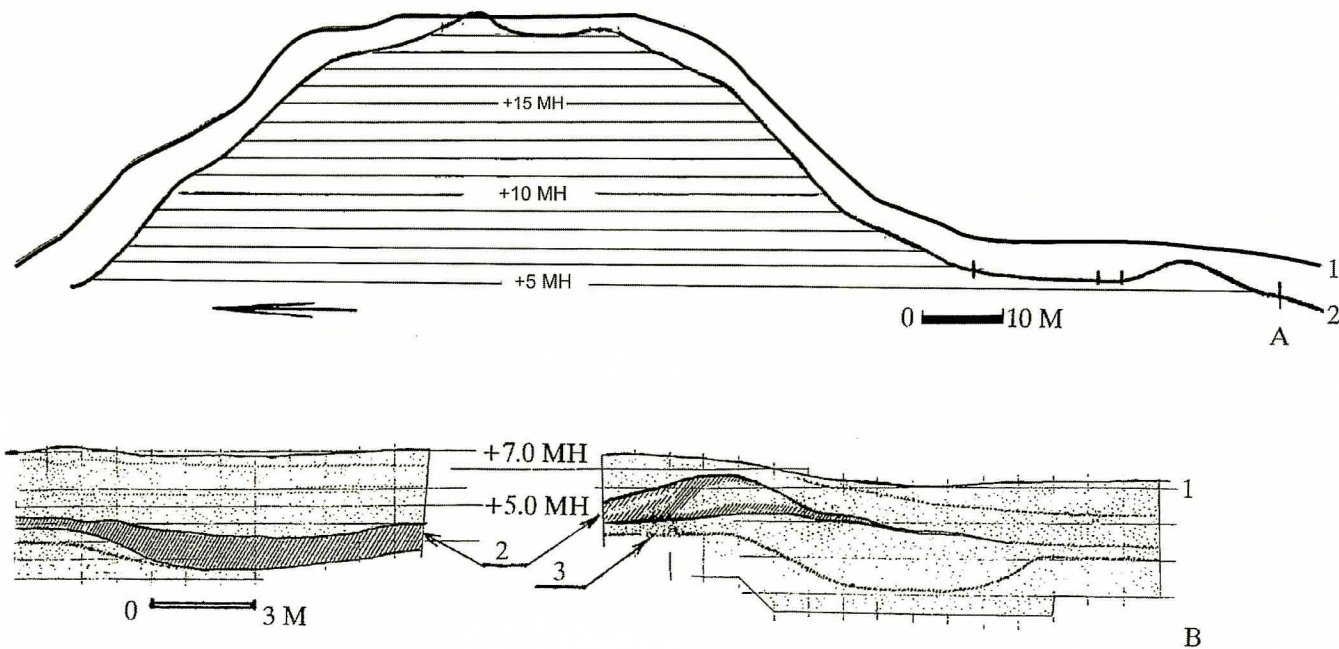


Figure 6. Birutė Hill and the settlement at its foot—north to south cross-section

A - 1. Current surface

A - 2. Reconstructed old surface (cross-section through the settlement at the foot)

B - 1. Current surface.

B - 2. 10th - 13th century cultural layer

B - 3. Old earth surface

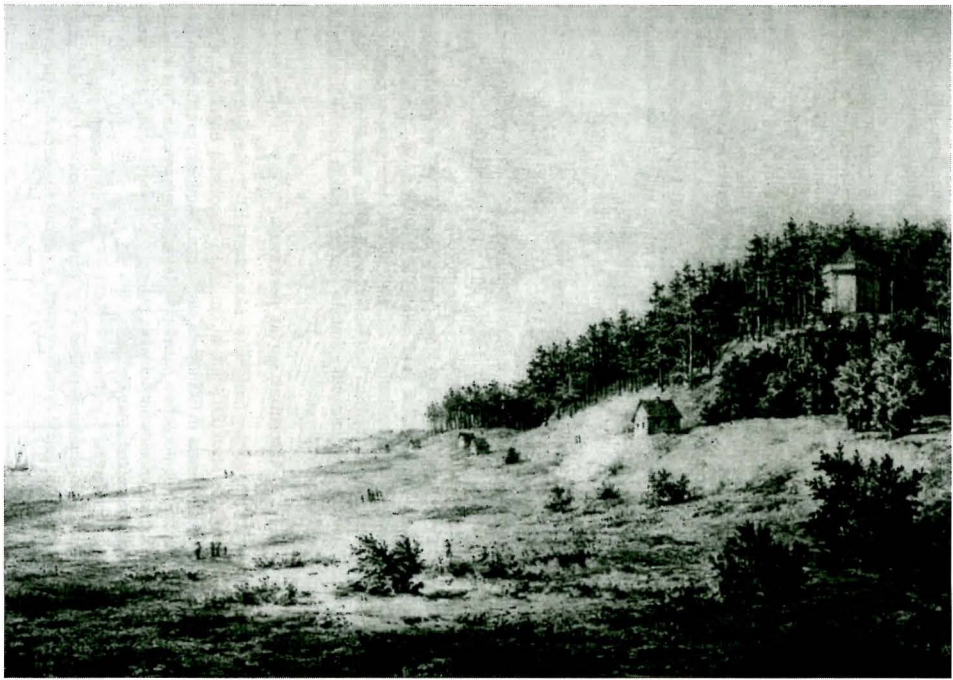


Figure 7. Birutė Hill in the latter half of the 19th century

southern slope of the hill (Končius, Ruokis 1926: 239). Already in the beginning of the 20th century, Palanga residents adzed the remains of the embankment (Figure 8), encouraged by the local church monsignor to put the surroundings of the small chapel in order. The appearance of the hill's platform changed even later because Birutė Hill was not seen as a cultural site for a long time, and no one attempted to safeguard its authentic relief. A wooden observation tower, erected by the Soviet border patrol after the war, stood here. Its posts, driven into the earth, had been reinforced with concrete. The platform was upgraded again during the 1950s and 1960s by laying new paths, retaining walls and observation platforms. The result of the works on this hill appeared on the lower, albeit rather broad, northern side of the platform. The top of Birutė Hill at this time has an oval form, stretched in a northerly to southerly direction. Its length is 40 m, and its width at the northern end is 25 m and at the southern—15 m. The platform is 20.5 m above sea level, and the brick chapel built in 1869 is at its highest place in the center (Končius, Ruokis 1926: 237 [Figure 9]). The slope and foot of the hill are overgrown in trees, primarily pines.

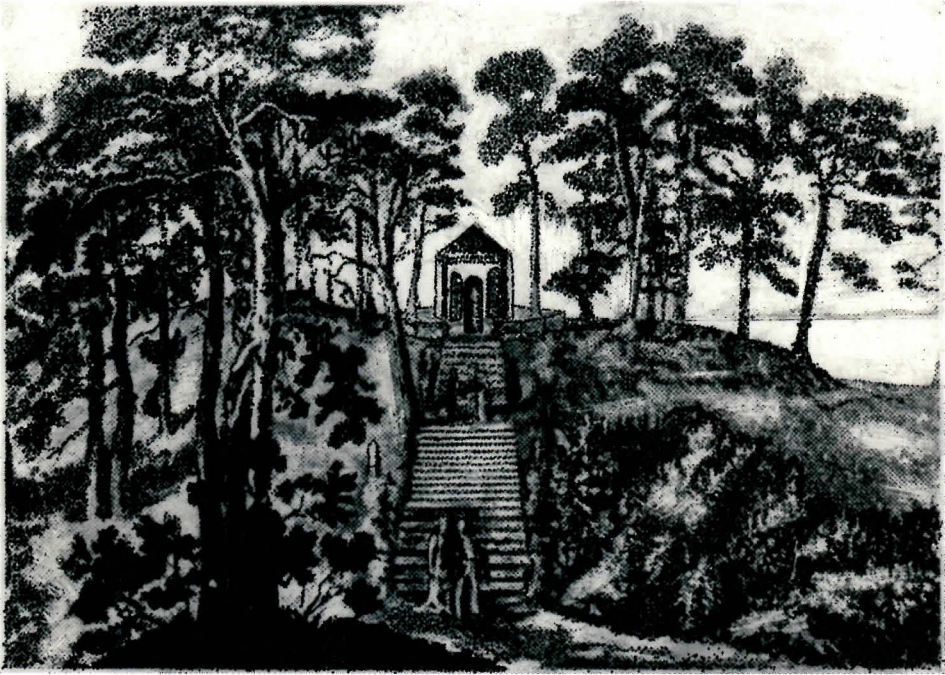


Figure 8. Birutė Hill from the eastern side during the end of the 19th century-an old postcard



Figure 9. Birutė Hill platform from the western side-2007 photograph

Birutė Hill, as an archaeological monument of republic-wide significance, was considered a hill of sacrificial offerings. Information taken from historical written resources indicates that Birutė Hill in Palanga was one of the centers of Paganism, a holy animist sanctuary where the eternal flame burned centuries ago in honor of Praurimė or other Goddesses and Gods (Bychovco kronika 1971: 72-73; Daukantas Vol. I, 1976: 513-514; Baliński Vol. III, 1846: 531-532; Basanavičius 1970: 99; Tarasenko 1928: 201; Remeika 1939: 88). M. Valančius wrote that sacrifices were again burned in offering to Perkūnas, the God Thunder, on Birutė Hill in the 19th century, when practices in the ancient faith revived (Valančius 1972: 87).

The *Bychovco* or *Lithuanian Chronicle* was probably the first to write a telling about the vestal virgin, "Goddess" Birutė, attending the eternal flame for the Gods; she was the wife-to-be of Kęstutis Grand Duke of Lithuania. Over time this tale became a widely known legend, and the hill by Palanga began being considered as the grave of Birutė (*Chronika Litovskaja i Žmojtskaja*, 1975: 62; *Chronika Bychovca*, 1975: 138).

Chronicler M. Strykowski visited Palanga before issuing his chronicle in 1582 and learned that the people of Žemaitija [hereafter Samogitians] and Curonians referred to their hill as Holy Birutė Hill (*Kronika Polska, Litewska, Żmódzka* 1846: 44). As it is sometimes claimed—and local residents believe this—Duchess Birutė is buried right at the spot where the chapel now stands (Basanavičius 1922: 29). Simonas Daukantas wrote, "It seems, over there is the last grave that Samogitians had to pour for such a long time since, to this day, the proverb is that, no matter where one might go, the answer to a questioner is, 'to Birutė Hill to load bales of hay.'" The name of Birutė Hill was related to the *Ginčio žinyčia* 'Gintis Temple' mentioned by S. Daukantas, which Swedes translated in 1700 (Daukantas, Vol. I, 1976: 96, 558).

Later resources do not always name this hill Birutė. At around 1641 (or about 1660), the plan of Birutė Hill drawn in the name of Polangschers Berg notes it as "Palangos Hill" (DSB. Sign. 11999/50).

At times it was speculated that Birutė Hill was a hill-fort. B. Dundulis supports this claim, using a 1425 letter from a Livonian magistrate that mentions a hill suitable for building a castle near Palanga (Dundulis 1960: 292; Valančius Vol. II. 1972: 87; Končius, Ruokis 1926: 235-239). Furthermore, a record in *Lietuvos metraštis* 'Chronicle of Lithuania' writes that, in the beginning of



Figure 10. Areas researched of Biruté Hill and the settlement at its foot

the 15th century, Samogitians knocked out an army of Germans readying for a march with stones from the sandhills near Palanga (Lietuvos metraštis 1971: 72-73, komentarai: 276). M. Baliński believed that this occurred in 1409. Historian A. Raulinaitis supposed that Birutė Hill was a hill-fort with an outer ward at its southern foot. He also discerned ramparts around that area (Raulinaitis 1961-1962). The basis for the opinion that the fire on Birutė Hill could have served as a beacon for boats sailing into Palanga Harbor is not clear (Baliński T., III, 1846: 528; Lietuviškoji enciklopedija, T. 3, 1935: 1169; Samas, 1970, Nr. 7: 29).

The *Lietuviškoji enciklopedija* 'Lithuanian Encyclopedia' indicates that Ona Jogailaitė built a chapel named for Šv. Jurgis 'St. George' in about 1506 (it should be about 1596). She later replaced it with a new one that stood all the way to the beginning of the 19th century (*Lietuviškoji enciklopedija*, Vol. 3, 1935: 1169). An inventory compiled in 1709 informs that this chapel, named *Capella Birutta nad morzem*, had been "... old, damaged by sea storms." Storms finally demolished this chapel in the mid 19th century, and construction of a new brick chapel was started in 1866 that still stands today. After the brick chapel was built, the site was upgraded. At the start of the 20th century, a wide, winding path "with stairs in some places" led to the hill. At the top, there is a rather wide, flat platform (Končius, Ruokis 1926: 235, 239).

WRITE-UP OF AREAS RESEARCHED

The hill's platform was surveyed in 1976 and thoroughly examined in 1983. An area of 111 m² was prospected in 1976, and another of 153 m² was uncovered in 1983. During two excavations of the 263 m² area, the condition of the greater part of the platform's center was examined (Figure 10).

Relatively small trenches were used for the surveying in 1976; in 1983 all the excavations were enjoined with additional research areas. That same year the hill and its foot were surveyed by means of prospect holes and survey excavations. The obligation to protect the landscaped planted sites, pathways and flower gardens caused a great deal of difficulty in our digs on the hill's platform.

PROSPECT HOLES, SURVEY EXCAVATIONS AND TRENCHES

The boring was accomplished with a manual geological prospect hole using a "spoon" of 10 cm in diameter, which is applied for taking samples of undisturbed structures in layers of up to 40 cm thick. The prospect hole with the spoon was lifted every 0.5

m, and the layers therein were recorded. A depth of up to 3.5 m was reached with the manual prospect hole. The prospect holes permitted a better selection of places for future trenches and provided supplemental information to describe the ancient platforms and rampart boundaries of the hill. They also indicated the thickness and nature of the cultural layers in places that had not yet been researched.

Seven prospect holes—Nos. 1 - 7—were drilled in the hill's platform. Traces of more pronounced cultural layers were discovered in some of them (in Nos. 1, 3, 4 and 7)—bits of burnt-out clay and charcoal. In others gray earth layers, which could have marked a disturbed cultural layer or former hill surfaces, were discovered.

Test Pit 1 was dug at the western edge of the platform immediately behind the retaining wall, between the bushes and trees. Its size was 1 x 1 m because, due to the growing trees, there was no room for a larger trench. At a depth of 1.4 m (17.0 m in absolute height), a layer, up to 20 cm thick, of large charcoal pieces and burnt-out sand was discovered in the test pit.

1976 TRENCHES

Trench 1

A small, 13.5 m² trench was dug over 10 m southwest of the small chapel at the edge of the platform. A 20.0 m contour line passed through the area of this trench.

Trench 2

The size of this one was 10.5 m². The trench was by the foundation of the small chapel between the counterforts west of the northern buttress. The terrain at the site of the trench was about 20.7 m above sea level. Trench 2 connected with the 1983 Trench IV.

Trench 3

A trench, sized 44 m², was dug between the counterforts by the southern wall of the small chapel. In the middle part of the trench, the elevation rose highest—up to 20.6 m above sea level—whereas the eastern and western edges lay some 20 cm lower. When work on the excavations continued in 1983, Research Areas I, II and III were nestled alongside Trench 3.

Trench 4

The examination in this trench was to determine if there are layers to the east of the chapel. This little trench lay 2.5 m east of the stairs to the chapel and measured

4 m x 2 m in size. The surface of the hill's platform in the area of the trench was well-nigh horizontal, lying at a height of some 20.5 m in absolute height.

Trench 5

This is one of two trenches on the incline of the hill, southwest of the small chapel, beyond the trenches that are excavated behind the brick retaining wall. At first it was 8 m x 3 m in size; later it was expanded to 25 m². The hill's incline led steeply downward at the site of the excavations and, if the end of the eastern trench was some 18.4 m in absolute height, then its western end descended down to 15 m in absolute height.

Trench 5a

An attempt was made to extend Trench 5 to the west, down the slope; therefore, another small trench of 5 m x 2 m in size was excavated. The highest point of Trench 5a was 14.5 m in absolute height where the lowest, westerly point was about 11.7 m above sea level.

1983 TRENCHES AND RESEARCH AREAS

The 1983 Research Areas were laid out in such a way as to assure that no areas remain unexamined between these and the 1976 trenches. Furthermore, the research areas were nestled, one against the other; thusly they enjoined into one area in the central area of the platform (Figure 10).

Research Area I

The size of it was 5 m x 6 m. At 0.8 m - 0.9 m in depth, the eastern edge of the research area covered the 1976 Trench 4. At the locale of the research area, the surface of the hill's platform elevated in a northeasterly direction from a height of 20.22 m in absolute height up to 20.95 m in absolute height.

Research Area II

This research area was excavated east of Research Area I at a size of 30 m². The ground surface at the site of the research area was well-nigh horizontal, about 20.50 m in absolute height. The northern border of the research area covered the southern border of the 1976 Trench 3.

Research Area III

This research area was west of the small chapel alongside the 1976 Trench 3. The research area that was examined comprised 41 m. The ground surface at the site of the research area was at 20.4 m - 20.55 m in absolute height.

Trench IV

A trench in the size of 22 m² was excavated north of Research Area III. The northeastern corner of Trench IV touched up against the 1976 Trench 2, whereas the northwestern corner—against the 1976 Trench 1. The ground surface at the site of the trench was 20.4 m - 20.5 m in absolute height.

Trench V

Trench V was excavated across 4 m west of Trench IV, and Research Area III on the opposite side of the pathway. The overall area of the trench was 10 m². The ground surface at this location was at an absolute height of 20.1 m - 20.3 m.

Trench VI

Trench VI was excavated in a size of 5 m x 2 m to survey the cultural layer after traces of it were discovered in Prospect Hole 7. The terrain in the area of the trench descends in a westerly direction. To the east, it measured 20.2 m, whereas to the west—19.8 m in absolute height.

17TH-18TH CENTURY LAYERS AND FINDS AT THE HILL'S PLATFORM

Trench 1

There was no success at distinguishing any more pronounced layers in this trench. Only several pieces of brick and fragments of glass indicated that there had been a 16th to 18th century layer here as well.

Trench 3

At the surface of a layer of blown in sand, there were three to five layers of brownish earth which had demarked the old surfaces. The surface layers were more horizontal, while the deeper ones had an ever more noticeable westward incline. At a depth of some 0.5 m - 1 m, there were some random stains of rotted through wood, fragments of flat roof tiles, bits of charcoal, pieces of brick and fragments of window glass.

Trench 4

The latest cultural layers were discovered in a depth of 0.4 m - 1.5 m in the western part of the trench. A fragment of a pot, handmade nails, fragments of window glass with evidence of framing—Finds Nos. 22(76) - 26(76)—and fragments of flat roof tiles were found there.

Research Area I

A layer of sand mixed with earth lay in the research area beneath the turf and very hard pathway cover. A very indistinct, darker surface with charcoal bits, semi-worked stones, an iron nail and a small, 18th to 19th century pot fragment were found at a depth of 0.3 m - 0.6 m. This layer could have marked the surface of the hill's platform, the one where the present chapel is built. Clean sand was found everywhere at a deeper depth except that over the entire research area, at a depth of 0.7 m - 0.85 m, there were dark stains of rotted through wood, which comprised the 10 cm - 15 cm thick layer of dark sand. Within it were fragments of semi-worked stones, fine brickbats and "Dutch", wavy roof tiles.

Research Area III

Sand was found over the entire research area under the layer of turf and black earth. A dark brownish surface from rotted through wood was discovered at a depth of some 0.5 m - 0.7 m in which fine brickbrats and fragments of "Dutch", wavy tiles were found. This could be the surface, surviving since the times of the 17th century chapel. Within the barely 2 cm - 3 cm thick layer that marked the surface, there lay a fragment of a ceramic wheel. There were various marks of trenching at this depth in the research area. Gray sand with earth was found everywhere deeper than this layer lay.

Trench 4

A small fragment of a pot shaped by hand with a plain surface was found in the gray earth under the turf, at a depth of 0.3 m. Somewhat deeper, in the lower part of the gray earth, fragments of 17th - 18th century ceramics produced on a rotating wheel were found in the middle of the trench. A layer of darker, brownish earth covered the northern part of the trench at a depth of 0.4 m - 0.5 m, elevating in a southerly direction. It was disturbed in the middle of the trench. The surface of this layer was also found in the trench's southern part where it descended in a southerly direction. There were several layers in between this layer which were found to contain fine fragments of "Dutch", wavy roof tiles.

Trench 5

Sand mixed with earth and crumbs of clay lay under a thin layer of turf in the trench. At a depth of 0.3 m - 0.4 m, there was darker earth with bits of charcoal in the northern part of the trench. Iron nails and 17th century ceramics were found in it. Under these, in-between layers, at a depth of 0.4 m - 0.6 m, there

were pots shaped by hand and ceramics produced on a rotating wheel (Nos. 20 - 22), crumbs of burnt through clay daub and flakes of stones found in the gray sand. However, there were 17th century ceramics and iron nails alongside—the layer was clearly mixed or wind blown.

Trench 6

Relics of times not so long ago were found here. At the western edge of the trench, at a depth of 0.4 m - 0.5 m, the top of a large tree or post (28 cm - 29 cm in diameter) appeared. The contour of a pit was noticed somewhat more deeply around the post, and rocks were found that had been thrown in. This post had been sunk up to 1.55 m deep. It possibly could constitute the remains of one of the crosses which, during the 19th to 20th centuries, had stood not far from the chapel.

GRAVES OF THE 17TH-18TH CENTURY

Grave No. 1

This grave was found in the middle of Research Area III. Rotted through wood appeared at a depth of 0.95 m and, soon after, the contours of a grave and the top of a skull outcropped (Figures 11 and 12). The coffin was made of planks that were 1.75 m long and up to 0.45 cm wide. The pit of the grave was 2.3 m long and 0.7 m wide. The deceased had been buried in a 68° - 248° direction, head to the west. The skeleton of a male, 1.64 m in length, was uncovered. The right arm of the deceased was bent and lying atop the pelvis. The left arm was placed on the right one, and it remained on the chest. Its spine is somewhat bent. Among the bones, there were remains of cloth by the timber of the coffin; no such remains were found beneath the mid-calf, where the bones were also white. Apparently the deceased had been fitted into a long shirt. Iron nails had been used to nail the planks of the coffin; these were found among the bones and the corners of the coffin. No details of the apparel were found. Traces of hair remained under the skull and neck vertebrae.

Grave No. 2

A tibia was found in the sand, right alongside the southern edge of Research Area III in its southeast corner, at a depth of 1.15 m. A skeleton, 2.1 m long and 0.85 m wide, was found in a pit, narrowing as it descends. The orientation of the grave is at 47° - 227°. The head points west (Figure 12). A rather bent skeleton lay in a darker stain in which no coffin marks were found (however, there was a handmade nail between the kneecaps). The arms of the deceased were crossed on the chest; the bones of the left arm were at the bottom. The legs stretched

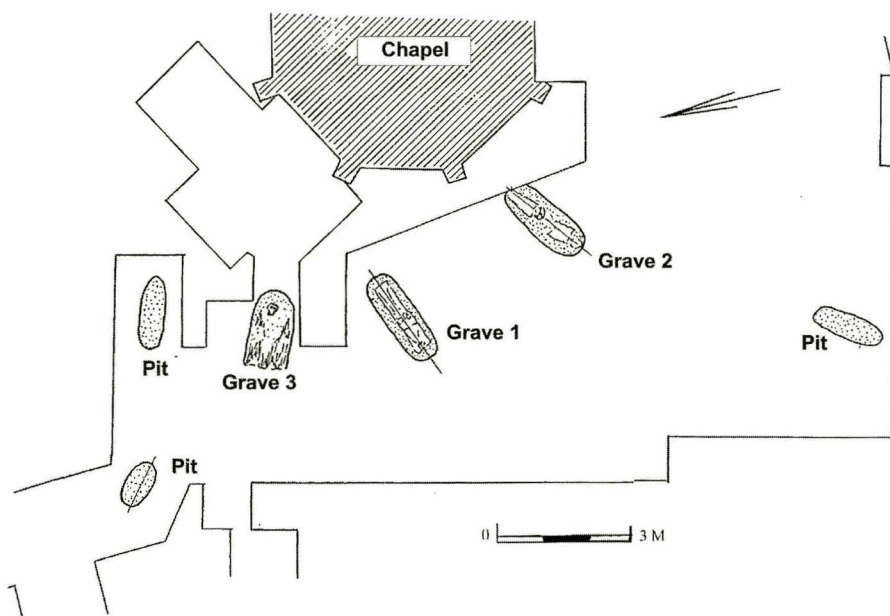


Figure 11. Graves and pits, assumed graves, on Birutė Hill

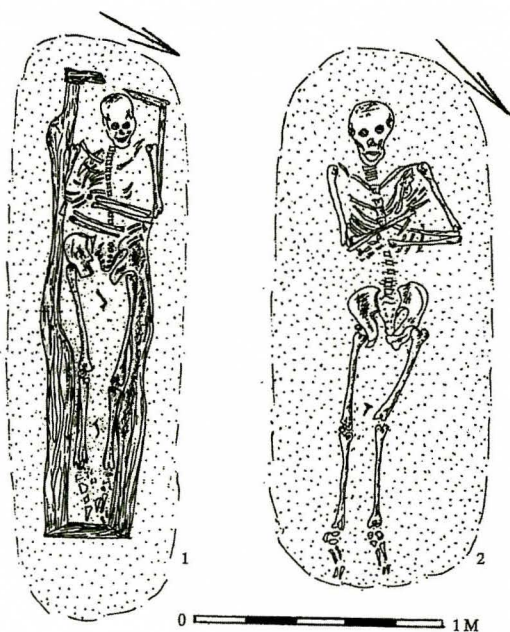


Figure 12. Graves No. 1 and No. 2 of men found on Birutė Hill.

straight. A piece of rough cloth survived rather well on the left side of the pelvis. On the right side of the pelvis, meanwhile, a brass brooch with a tab were found among the cloth. While removing the bones, a small iron hook was found under the neck vertebrae. The skull of the deceased had very masculine features. According to it, the buried person had been about twenty-five years in age.

*Find*s

5. Brass brooch with a fragment of woolen cloth
6. Brass hook and loop of brass wire for the tab

Grave No. 3

A supplementary trench, 2 m x 2 m-in size, was made at the southeastern corner of Trench 4. This exposed an elongated oval stain, 1.7 m in length (with the western end disturbed) and up to 1.1 m in width. Decomposed wood was found in it and, at a depth of 1.3 m at the eastern edge of the pit, the remains of a skull outcropped. A very decayed skeleton was oriented in a 110° - 290° direction (Figure 13). Rusted nails and brownish earth with decayed wood were found on both sides of the skull. Better-surviving wood was found alongside the skull and, more deeply, the remains of coffin planks with two nails. Between these planks, in the middle, a piece of cloth outcropped and beneath it - brass artifacts that lay on a woolen cloth. The material had conserved here, and even the print on it was discernable—the clothing had been patterned in darker stripes. Atop the material in the area of the chest, there lay the remains of two brass rings, fragments of a cast brass ring and an openwork ring wound with brass wire. Among these artifacts and the skull in the sand lay one more, well-preserved brass ring with a widened center.

Based on the skull remains, a girl of some five - six years of age had been buried here. Nothing more was found in the grave after removing the skeletal remains.

*Find*s

14. Brass ring with a widened center (a signet type)
- 15 and 16. Brass rings with widened centers, analogical to No. 14 (decomposed)
17. Brass, sash-like ring decorated with small, protruding rings containing small beads in the center
18. Ring plaited of brass wire (fragment)
19. Cloth fragment, a material made of thick, brown wool yarn with black stripes of 5 mm - 6 mm wide, inner woven every 18 mm

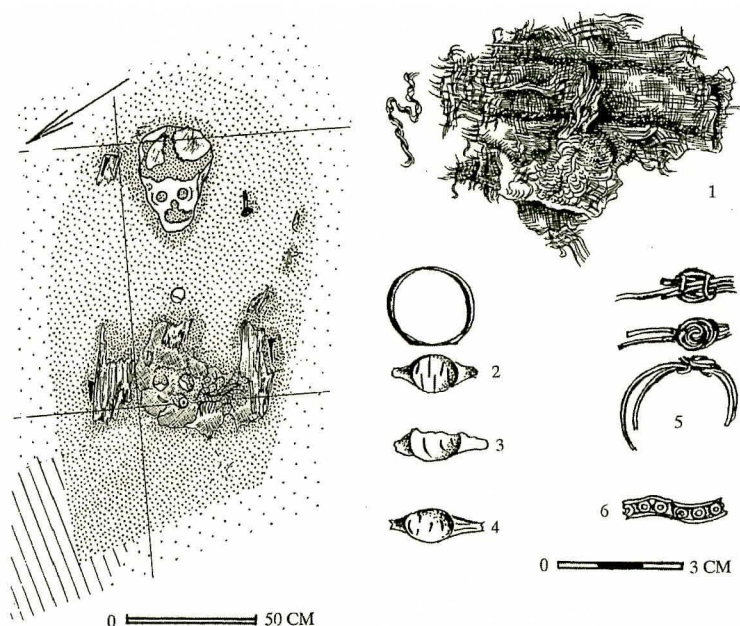


Figure 13. Finds in Grave No. 3 at Birutė Hill:

- | | | |
|--------------------------|--------------------------|--------------------------|
| 1. cloth (Find 19), | 2. brass ring (Find 14), | 3. brass ring (Find 15), |
| 4. brass ring (Find 16), | 5. brass ring (Find 17) | |

Grave No. 4, disturbed

In the northeastern corner of the supplementary trenches in Trench 4, at a depth of 0.7 m, a layer of a Pagan sacral place outcropped. Within it the oval-formed contours of the pit, 1.8 m by length and 0.9 m by width, were well defined (Figure 11). The pit is poured over with grayish sand; there the fragment of a 17th century pot was found. At a depth of 1 m - 1.3 m of the pit, rotted through wood was noticed and an iron nail and two decayed human bones were found. This was seemingly the remains of a disturbed grave.

There was also a similar pit at the northwestern corner of this trench. The contour of this oval pit, 1.1 m by length and 0.6 m by width, became well defined at a depth of 0.6 m. The only finds, while preparing the base of the pit, were patches of rotted through wood lying in disarray and three decayed iron nails. These were seemingly the remains of a coffin in a grave, which had already been disturbed earlier. There were no bones.

An oblong, 1.8 m x 0.7 m-sized pit with rounded corners was also found in Research Area I. Its orientation was in a northern - southern direction, reminis-

cent of a grave pit. This pit appeared to be rather deep; its base was found at a depth of 2.3 m. There were layers of brownish and seemingly rotted through wood in the pit; however, nothing more was found. This pit had been dug from the surface at the southern boundary of the research area, which was at a depth of 1 m (19.45 m in absolute height); in other words, it had been above the layer of the sacral place.

Dating of Graves

There is practically no data for dating Graves Nos. 1 and 2. In consideration of the items found in Grave No. 2, a male had been buried in the hill's platform during the 18th or 19th centuries. The same time period is also ascribed to Grave No. 1.

A girl of five to seven years of age was buried in Grave No. 3. The grave is dated easily albeit not very accurately according to the ornaments found. No other rings exactly like those from Grave No. 3 were found at the graves researched at Palanga. Those found there were from the end of the 15th - 16th century at Žemaičių Hillock and the 16th - 17th century at Naglis Hill. On the other hand, the small, signet-type rings decorated in slanted lines like the one from the grave at Birutė Hill are found at 16th - 17th century cemeteries of Lithuania (Svetikas 2003: 75, 76). Therefore, the grave of the girl on Birutė Hill should be dated as being from the second half to the end of the 17th century.

PAGAN SACRAL PLACE LAYER

Trench 1

No undisturbed layers were discovered in this trench. The pieces of roof tiles found in the lower sand bear witness that the land here had been previously excavated.

Trench 2

The layer of the Pagan sacral place was discovered along the chapel foundation at a depth of 0.35 m. It had elevated by as much as up to an absolute height of 20.5 m. The burnt up and rotted through remains of wood lay nearly horizontally, somewhat higher than the homogeneous layer of the sacral place. Chunky pieces of charcoal were also "making their way" under the foundation of the chapel, which had been deepened here up to 0.55 m. Within the cross-section, the traces of a rough-hewn beam, approximately 12 cm x 8 cm in size, and a smaller beam of some 10 cm in diameter could be seen. A 3 cm - 5 cm thick layer of rotted through wood with charcoal bits lay alongside them. That indeed was the layer of the sacral place; it descended noticeably in northerly and easterly directions. The layer was disturbed in the western part of the trench.



Figure 14. Plan of the central part of the Pagan sacral place layer on Birutė Hill

Trench 3

The layer found at this trench, which cut across the hill's platform in an east to west direction, was at a very unequal depth. The layers elevated to an absolute height of about 20.4 m (0.2 m by depth) in the eastern part of the trench, on the western slope of the Pagan sacral place earthworks. Further from here, they had been disturbed. The layer at the western end of the trench was over 4 m from the chapel, at a depth of 1.8 m - 2 m (some 18.5 m in absolute height). Both layers of the sacral place enjoined at the eastern edge of the trench. The upper layer was composed of the remains of burnt through beams, and the bottom layer,

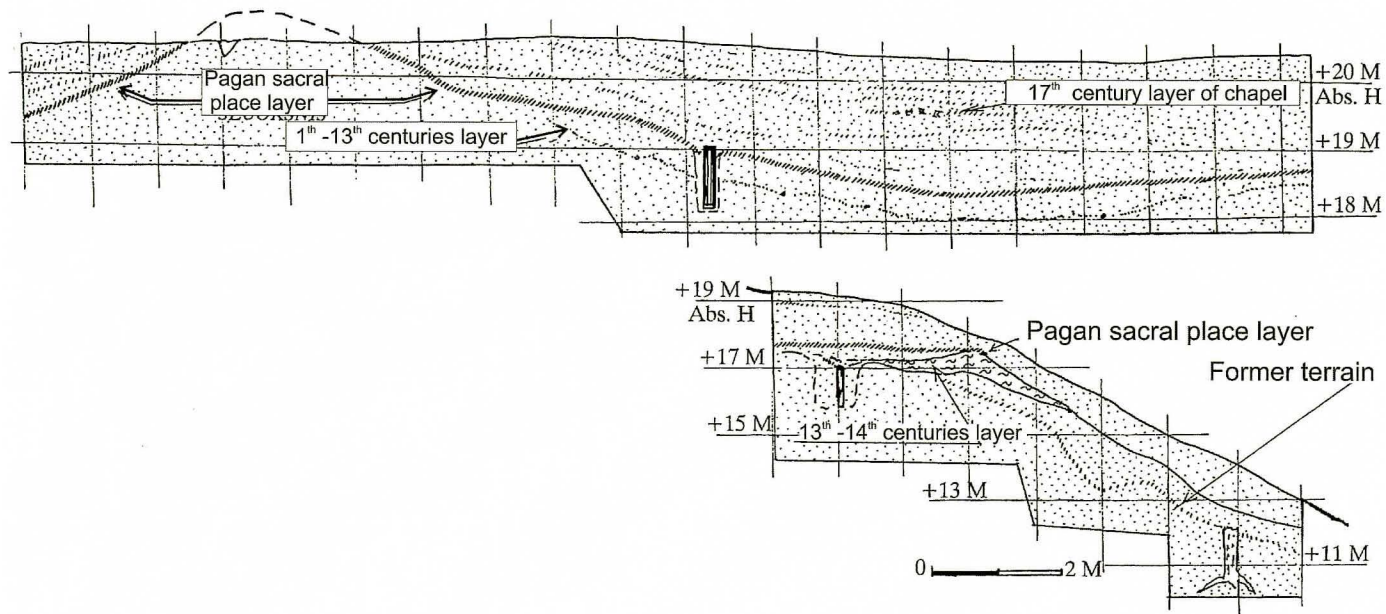


Figure 15. Cultural layers of the Biruté Hill platform—cross-section from east (at the left) to west

of a surface of black earth with charcoal bits along with postholes. Elsewhere, in a westerly direction, there was a layer, from 20 cm up to 50 cm by thickness, between the two layers. No continual layer was found at the eastern end of the trench - there were only layers of darker earth with charcoal, which all inclined downward at the same angle from west to east (Figure 14). In the cross-section of the trench (Figures 15 and 16), it is not difficult to establish that the layer of the ancient Pagan sacral place lay on a rampart, the top of which had elevated above the current pathway to a height of up to 1 m.

Charred planks were found on the horizon of the upper layer, at the eastern end of the trench. Traces of six planks were markedly distinguishable. Four lay parallel to each other in a northerly to southerly direction. Only their southern terminals were in the trench. Except for one plank that was completely burnt, the others were only charred at the top. These were 32 cm - 25 cm wide and 8 cm - 3 cm thick. There also were remains and traces of burnt up planks, which had lain in the same direction, further south in the supplementary trench that was in the southern part of the trench. Only one burnt up plank, 34 cm - 30 cm wide and up to 10 cm thick, was lying in a diagonal position from the rest. There were charcoal and ashes among the burnt up planks. Burnt up planks and small beams were only found in the eastern part of the trench toward the chapel and they spread out in a northerly - southerly direction in a stripe, some 3 m in width. Further west there were no traces of planks or small beams, although there were random larger pieces of charcoal and soot.

Traces of places for fire were found at the lower horizon of the layer, in the coaly earth at the eastern part of the trench, which was in a higher place on the western slope of the former rampart. Small charcoal pieces lay at the surface of the layer within stains, 60 cm - 30 cm in size. Small pits of up to 20 cm deep with ashes and small bits of charcoal could be seen in the cross-sections. About twenty small stains with charcoal were found in the eastern and central parts of the trench. Most of them could have been fire places.

Two postholes were found in the layer of the Pagan sacral place at the center of the trench. The holes marking them were about 60 cm - 50 cm in diameter and 15 cm by depth with a layer of charcoal at the surface. The posts were in a row oriented in a northwestern - eastern direction. There was a 1.75 m distance between their centers. The postholes were found beneath the layer. A pit sized 50 cm x 30 cm had been dug for **Post No. 1**, the eastern one and for the other, **Post No. 2**, about 80 cm in diameter. Both posts were of coniferous wood, about 20 cm in diameter and entirely rotted through. The bottoms of the posts found

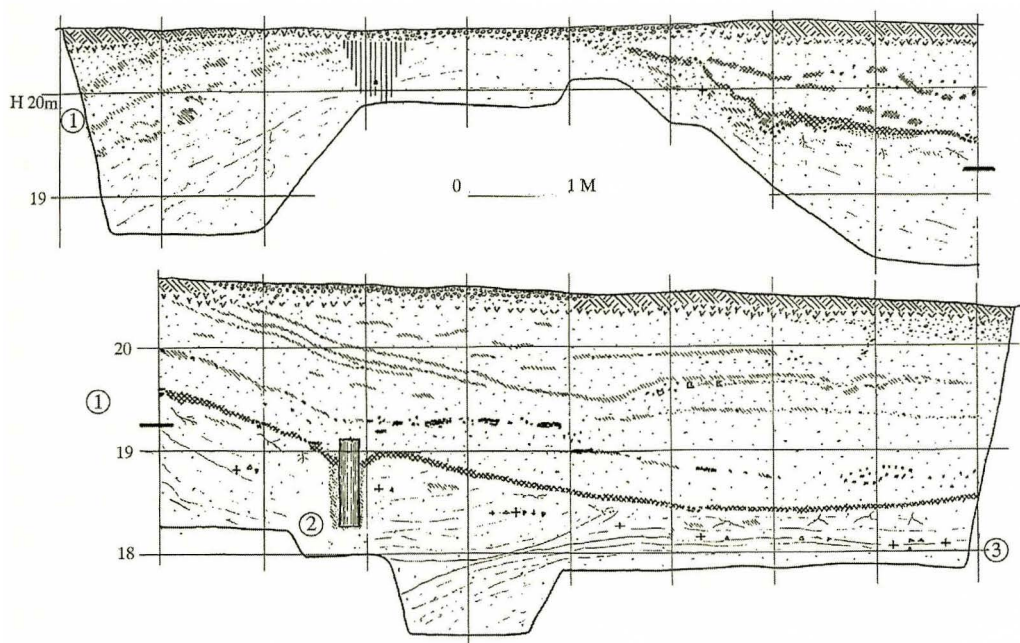


Figure 16. Cultural layers in Trench 3 of Birutė Hill—cross-section of the southern boundary:
1. Pagan sacral place layer, 2. Post No. 1, 3. Hill-fort layer

had been vertically chopped off (Figure 16). The first post had a length of 85 cm remaining, and the second, 72 cm left. Both had been dug into the sand about 60 cm from the surface of the layer. Nothing was found around the posts except that, in the hole of Post No. 2, there were two fine bits of amber and a small piece of burnt through clay daub.

Trench 5

The cultural layer of the Pagan sacral place was only noticed in the north-eastern corner of the trench; elsewhere it was disturbed. The layer was nearly horizontal here and lay at an absolute height of about 18.4 m. The trench was on the slope of the hill, thus the layer was found at a depth of 0.8 m - 0.1 m. Just as elsewhere, it was composed of humus with small charcoal pieces except that here the layer was less intensive than it was in the eastern part of the hill.

Research Area I

The traces of the Pagan sacral place were already being covered at a depth of 0.8 m - 1 m (at a height of about 19.7 m above sea level). Large charcoal pieces were

found here. While preparing the surface, charcoal was discovered over nearly the entire research area. Fine charcoal bits were scattered and blown through with sand throughout the entire layer at the southern edge of the research area; therefore, the surface is difficult to notice here. There were no traces found in the southwestern part of the research area. Isolated pieces of charcoal with rotted through wood also lay in the eastern edge at a depth of 1.6 m (19.2 m - 19.3 m in absolute height). The remains of two small beams, some 6 cm - 8 cm thick, lying in a northerly - southerly direction, were discerned here. An oval, 15 cm x 16 cm stain of a charred post was found between these firebrands. The charcoal lay in a heterogeneous layer, approximately 10 cm thick, in the sand, rusted from the heat.

The true surface of the Pagan sacral place was deeper, at a depth of 1 m in the southeastern corner. It was a black earth surface composed of a small layer of rotted through vegetation (?), soot and small pieces of charcoal. The surface of the layers, covering the entire research area, inclines to the northern side. An incline from east to west was less noticeable.

A circular depression, some 0.3 cm - 0.41 cm in diameter, appeared quite clearly at the surface of the layer in the southern corner, around **Post No. 3**, measuring 16 cm in diameter (Figure 14). It appeared that the post had been dug into the ground before the layer of black earth (of the sacral place) had formed; however, it had been dug from that same surface. The diameter of its hole was up to 0.7 m at the top and 0.4 m - 0.5 m at the bottom. The post had been sunk 84 cm from the surface of the sacral place; its terminal was upright. No artifacts were found when preparing the surface of the sacral place. The charcoal was dispersed in the layer crumbled and, only in certain places, formed darker, 0.2 m - 0.5 m stains of a greater concentration—those could be traces of small fire places. A clay stain, about 20 cm in size, was noticed at the western edge. Remains of a large fire place was found to the north of the burnt up, small beams. The place was a size of 1 m x 1.1 m and had an irregular form that was longer in an east - west direction. Charcoal from large coniferous beams (possibly planks as well), about 50 cm wide, lay in the center of the fire place.

The layer was not very thick, barely 2-5 cm, everywhere. Beneath it sand was everywhere. No artifacts were found while preparing this layer.

Research Area II

A layer of dark earth with charcoal began covering over the surface of the Pagan sacral place at the southern edge of the research area almost as soon as

the turf was removed. The layer had a clearly noticeable surface incline towards the northwest. Once the entire research area had been uncovered, it became clear that the layer of the sacral place had only survived in the western part of the research area.

At the surface of the layer, at a depth of 0.6 m - 0.8 m, there were darker stains with charcoal and rotted through wood—the traces of fire places. There was a greater amount of charcoal and rotted through wood at the northern edge of the research area. Distinguished therein were the remains of a charred and rotted plank, some 30 cm wide and 10 cm - 13 cm thick. Clay that was not burnt through was also found next to it. The plank lay 0.4 m - 0.5 m above the sacral place layer. Rotted through wood stains and charcoal were found in the southwestern part of the research area; however, there they did not comprise a homogeneous layer. A homogeneous Pagan sacral place surface with several marks of fire places only lay deeper, under a 0.2 m - 0.3 m thick layer of wind blown sand. It descended sharply in a westerly direction. Many of the darker stains with charcoal extended directly over the layer's surface, and only one stain (truly a fire place) deepened insignificantly in the layer. Crumbs of lightly burnt clay daub were found amongst its charcoal. There were eight fire places distinguished over all of Research Area II. They were in irregular forms, sized 0.3 m x 0.5 m, 0.4 m x 0.4 m, 0.5 m x 0.5 m, 0.3 m x 0.4 m and 0.6 m x 0.4 m (Figure 14).

While preparing the Pagan sacral place layer, it was determined that its thickness is from 5 cm to 20 cm, and the earth in its bottom part is not as dark because there is less charcoal in it. Artifacts were not found, neither at the layer's surface nor while preparing it; however, two holes for posts were discovered. One (Post No. 4) had been in the northeastern part of the research area—decomposed wood and charcoal marked its hole on the surface of the layer. The posthole had been dug 0.7 m - 0.8 m in diameter and up to a depth of 1.2 m from the surface of the layer. The post, somewhat decayed, must have been knocked over because only its traces remained in the hole—stains of rotted through wood; the upper part contained charcoal as well.

Post No. 5, in the western supplementary trench, survived markedly better. A small depression and charcoal marked its hole on the surface of the layer. The post had been inserted into a hole of about a 0.6 m - 0.7 m diameter at the top and about a 0.5 m diameter at the bottom. The hole had a flat bottom, which was 0.9 m in depth from the surface of the layer. According to its decomposition, it was determined that the post, which had survived better at the base, had been 16 cm - 18 cm in diameter.

Research Area III

Sand, mixed somewhat with gray earth, lay beneath Graves Nos. 1 and 2 over the entire research area. Charcoal was noticed in the sand at a depth of 1.3 m - 1.5 m. Not far below this, dark gray sand stains with rotted through wood and larger pieces of charcoal outcropped. The stains did not comprise a homogeneous layer but they were sufficiently pronounced. In one of them, at the northeastern corner of the research area, there were the remains of charred and somewhat decayed planks. The remains of another, larger tree were in the northwestern corner; whereas, in the southwestern corner, there was a patch of burnt through clay crumbs. The surface of black earth with charcoal—the Pagan sacral place layer—outcropped at a depth of 1.4 m - 2.2 m. Within the boundaries of the research area, the Pagan sacral place layer descended from north to south. The surface was very uniformly spread with fine charcoal. Indistinct traces of a fire place, 0.4 m x 0.6 m in size, were noticed by the southern boundary of the research area. Somewhat more charcoal lay in a stain of another fire place, 0.7 m x 0.5 m in size, at the northwestern corner of the research area. Small, brownish stains of burnt through sand appeared randomly in the layer, and clay crumbs that had burnt through in red were rare. The thickness of the layer was 3 cm - 10 cm. No artifacts were discovered while preparing the Pagan sacral place layer.

Trench IV

The surface of the sacral place layer had elevated the most at the eastern edge of the trench, appearing 0.65 m from the surface of the ground (19.95 m in absolute height). A narrow strip covered the layer along the eastern boundary of the trench whereas, further west, the layer was disturbed. Its surface descended in a northern direction, towards the exterior of the former rampart; the former internal slope of the rampart is towards the south. The layer was darker in the interior of the rampart, containing more charcoal; there was considerably less charcoal noticed externally. While shaving the layer in the middle of the trench, a characteristic depression, 0.7 cm x 0.6 cm in size, and the charred top of **Post No. 6** (Figure 17) appeared. The post had been dug into a depth of 1.4 m from the layer's surface into a hole, 0.65 m - 0.7 m in size. Part of a 0.7 m long post, which had survived better, was found at the base of that same hole. The post had been about 24 cm in diameter, seemingly of pinewood, and its terminal had been chopped vertically.

Traces of one more post were at the eastern edge of the trench. The top of **Post No. 7** was charred and somewhat decayed, and the terminal had been chopped

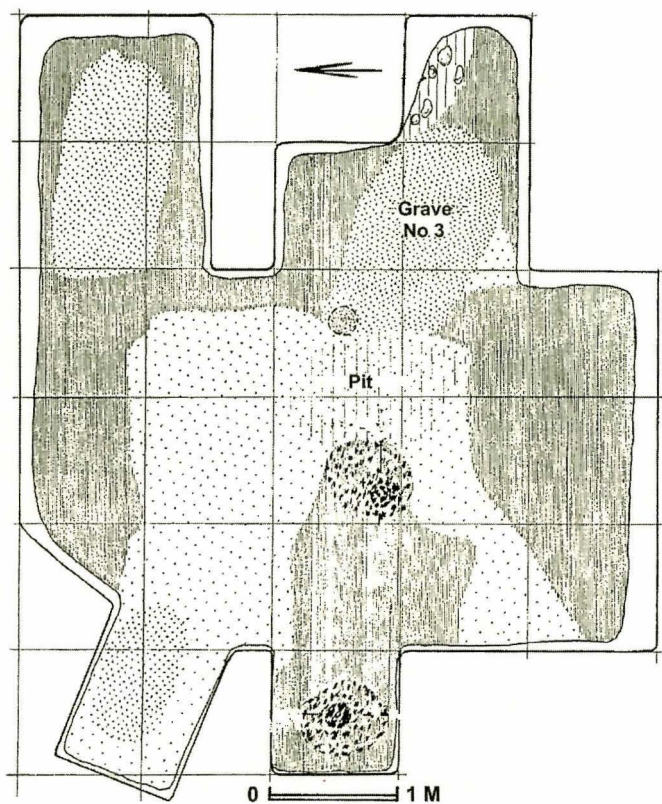
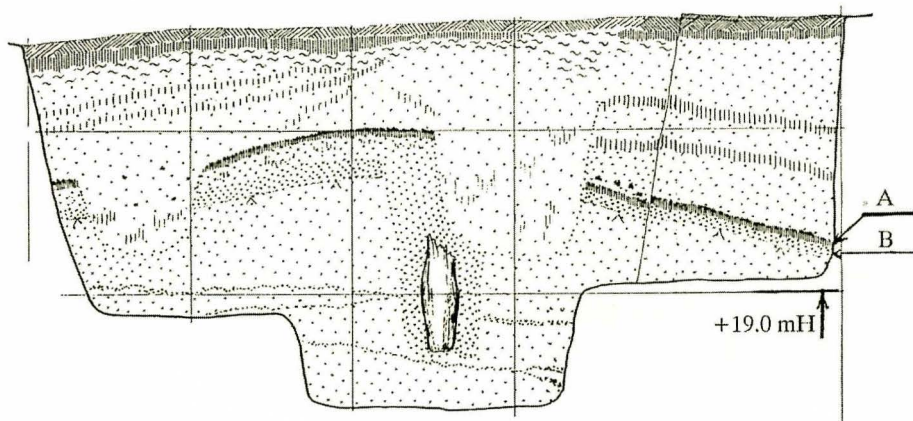


Figure 17. Birutė Hill—somewhat disturbed Pagan sacral place layer and Posts Nos. 6 (A) and 8 (B)

Figure 18. Birutė Hill—Pagan sacral place Post No. 7 in the cross-section of Research Area IV
A – sacral place layer
B – hill-fort layer



off (Figure 18). Seemingly, it had been from a deciduous tree. Its diameter reached 26 cm - 28 cm. The posthole had been dug to a depth of 0.85 m. The distance between the centers of Posts Nos. 6 and 7 was 1.4 m. Meanwhile the posts lay straight, oriented specifically in an east - west direction. It was hypothesized that there could have been one more post, approximately the same distance to the west, especially since there were larger pieces of charcoal above the layer here. The surface of the Pagan sacral place surface was found in a small, 1 m x 1 m supplementary trench under the pathway covering, and the hollow with the charcoal, at the former locale of **Post No. 8** (Figure 17). The top of the post was charred. It had been lowered into a 0.9 m deep hole, dug from the surface of the sacral place. The vertically-cut bottom was at a depth of 1.56 m from the ground surface (18.84 m in absolute height) and 6 cm higher than the base of the hole. The diameter of the post was at 15 cm - 16 cm. It was markedly leaning (9 cm per 0.8 m in length) towards the south side.

Trench V

A layer of dark earth with charcoal was unearthed at a depth of 0.7 m—it was the surface of the sacral place, descending in a southerly direction (from 19.6 to 19.25 m in absolute height). There were stains of brown sand at the surface along with random, larger pieces of burnt clay daub. The thickness of the Pagan sacral place layer was only 3 cm - 10 cm. Traces of a post were found in the southwestern part of the trench, at a depth of 0.9 m. In the oblong hole, 0.9 m x 0.45 m in size, a decomposed stain of the hewn, **Post No. 9**, sized 15 cm x 15 cm, was found. The upright terminal of the post was found at the base of the hole, at a depth of 1.6 m. The post had been sunk up to 0.9 m from the surface of the sacral place (Figure 19).

Trench VI

The dark layer of the Pagan sacral place was reached at a depth of 1 m (19.3 m in absolute height). While covering the layer, it was established that it had a slight incline to the west. The surface of the Pagan sacral place in this trench was not as pronounced as it was elsewhere, and there were fewer charcoal pieces in it. The layer broke towards the middle of the trench. Traces of it were found further west, some 20 cm deeper. Additionally, these were not as pronounced here and did not comprise a homogeneous layer. Only a landslide on the hill could explain such a sudden break in a layer, the signs of which were already noticed in **Research Area I**. There was more charcoal on the western side, the side that had slid, at the level of the layer. Meanwhile **Post No. 10**, which was a large, charred

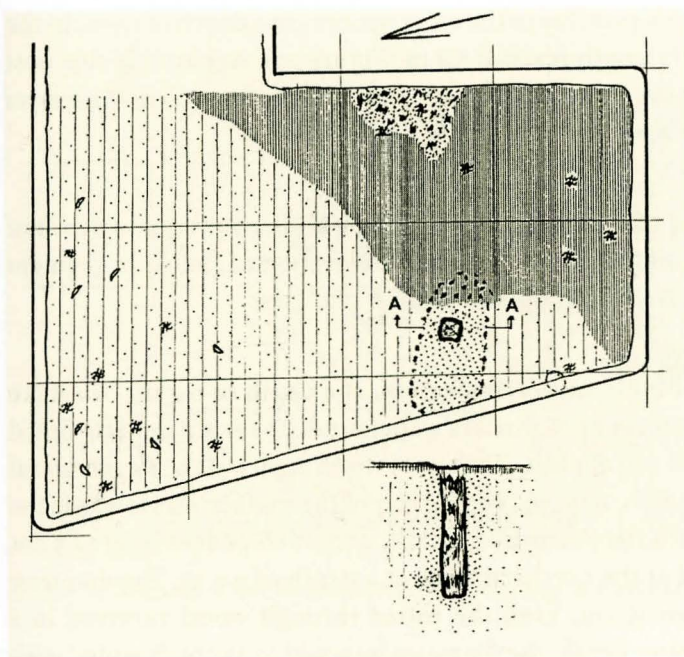
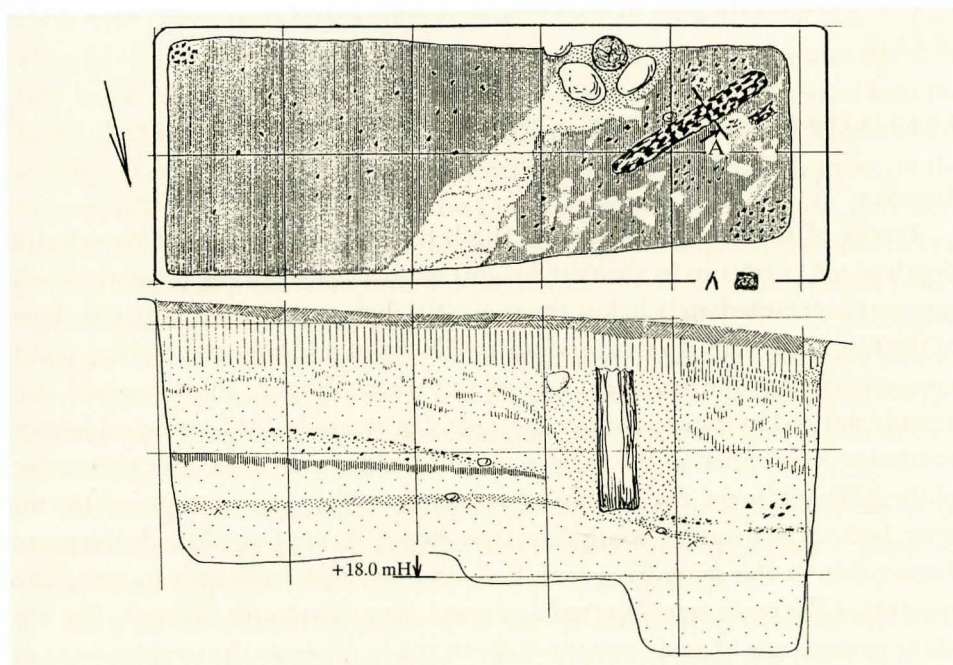


Figure 19. Pagan sacral place of Birutė Hill, Post No. 9 in Research Area V

Figure 20. Post No. 10, felled by a landslide and the post dug in later at Birutė Hill— Trench 6 plan and cross-section



and rotted through, hewn post, lay in the cross-section, at a depth of 1.5 m, in the southwestern corner. Its length reached 1.4 m (Figure 20). Apparently this post was one that had either been torn out or fallen down. The 3 cm - 10 cm thick layer of the Pagan sacral place was entirely sterile.

Test Pit 1

The rampart surface of the Pagan sacral place was discovered at a depth of 1.15 m. The layer had a southeastern incline (the elevation of the 1.2 m segment reached 35 cm). The layer was only 3 cm - 5 cm in thickness.

Test Pit 2

In the western end of this survey excavation, at a depth of 0.4 m, two stake holes measuring 7 cm - 8 cm by diameters were found. These are not attributed to the layer of the Pagan sacral place. The top of the rampart of the Pagan sacral place outcropped at a depth of 0.5 m. The incline of the surface was towards the southeast. The layer with the charcoal is sterile, and its thickness is up to 5 cm. A posthole was noticed at the northern edge, at a depth of 0.9 m. The diameter of **Post No. 11** had been 15 cm. Even the rotted through wood survived in a depth of 1.4 m. At a greater depth, the diameter lessened to 12 cm. It ended with a vertically chopped terminal, at a depth of 1.92 m. A hole, sized 0.5 m - 0.55 m, had been dug for the post in the sand. Its contours were traceable from a depth of 1.2 m.

FORTIFICATIONS ON THE WESTERN PART OF THE HILL

Trench 5

Traces of the reinforcements of the hill's platform were discovered at a depth of 0.8 m (18.2 m in absolute height) while the clay of the formerly small rampart lay immediately below the turf. Still farther to the west, on the slope of the hill, they were at a depth of 0.4 m. Traces of reinforcements were found everywhere over the research area of the trench (Figure 21). Charcoal was already noticed in the sand above the layer. Locales of burnt beams and former postholes outcropped in the eastern part of the research area. Along the edge of the hill's platform, five postholes outcropped. They were composed in two rows, laid out in a north - south direction. Red crumbs of wood made the posts discernable in the sand. Tree bark had also survived from spot to spot. The remains of the posts were charred and some were even burnt through. The top of the eastern row of posts measured about 17.9 m, whereas the western—17.5 m

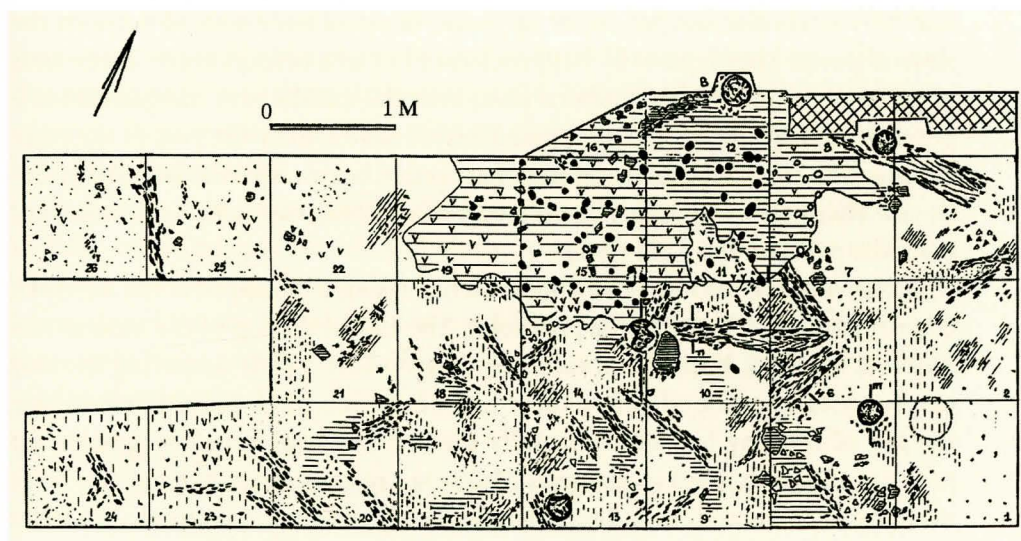


Figure 21. Remains of fortifications on the western slope of Birutė Hill—Trench 5 plan

above sea level. There was a distance of 2.2 m between the centers of the posts in the eastern row. In the western row, three posts were discovered situated 2.1 m and 1.55 m from one another (from north to south). There was a space of 1.3 m - 1.9 m between these two rows. The posts had been dug into the sand into holes, 1.3 m - 0.8 m by diameter, of an uneven depth and placed into the bases of those holes. The posts were from coniferous trees, with diameters of 26 cm - 18 cm. The bottoms were vertically chopped off. The two posts on the eastern side were thinner whereas on the western, the external side, they were thicker. Neither had they sunk into the holes equivalently. In the eastern row, 76 cm and 95 cm posts remained in the ground whereas, in the western row, it was the parts of posts, 1.2 m and 0.3 m long, that survived. For the latter post, a deeper, 0.6 m hole had actually been dug; later it had been partially poured over. Apparently a pine growing here had been used for the post in the third, western row. There was no re-excavation around the post, and traces of bark survived at the top of the wood.

The trees in the eastern row were dug in with their tops down, whereas in the western one—it was the opposite; the butt headed downward. One of the posts in the eastern part had been charred prior to its excavation.

Many pieces of burnt through clay in various sizes, ashes, charcoal and small, burnt beams were around the posts. The surrounding sand was burnt through

and brown in color. Larger, burnt up pieces of wood were noticed between the rows of posts. They lay not by happenchance but in a certain order. Three ends of burnt up beams of the southern post, near the middle row, merged into one point. Similarly, traces of criss-crossed beams were also by the post in the external row. The cross-sections indicated that certain beams had diameters of 35 cm - 20 cm. There were also large, burnt pieces of charcoal, over 4 m - 5 m westward from the posts on the hill's slope.

A clay mound, the height of which reached 0.5 m, outcropped at the northern edge of the trench towards the postholes. The clay at the top of the mound was charred; however, it had been rammed down below. While preparing the clay, empty spots were found where there had once been birch bark. Furthermore, the top of the clay had been virtually pierced in circular and oval holes, up to 15 cm in depth, having diameters from 12 cm to 4 cm. Charcoal bits were in many of them and, in others, there was only decomposed wood. The latter had apparently remained after the roots of the trees that formerly grew here had rotted at some later time. These small holes are laid out, as though in rows, alongside the rows of posts - these are peg marks. The empty spots with charcoal bits had formed once the roots that had been rammed into the clay had burnt

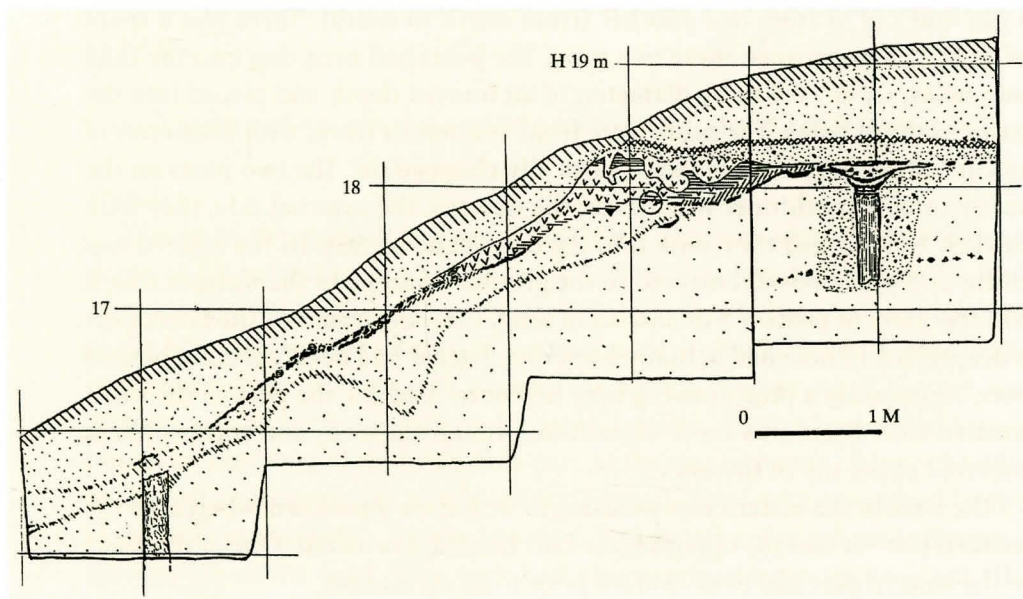


Figure 22. Fortifications on the western slope of Birutė Hill—cross-section of the northern boundary, Trench 5

up. In the exterior of the mass of clay, large burnt through pieces of clay were found and, in certain places, entire rows of burnt through clay clods. The small clay ramparts formed these strips as they slid. Towards the middle, western row of posts, there was a large lump of burnt through clay with a surface that had been leveled manually.

It can be seen in the longitudinal cross-sections of the trench (Figure 22) that the initial edge of the hill's platform had been over 1.5 m to the east—the platform had been extended about 1.5 m when building this little rampart. The layers show that the initial slope of the hill was uneven, pocked with pits, and there were pines growing on it. The pines had been chopped down when building the fortifications.

Finds (Figure 23)

- 26 and 27 (76). Fragments of ceramics made by a rotating wheel
- 28 (76). Burnt up lath sliver with an axing mark
- 29 (76). Blue enamel (glass) bead
- 30 (76). Iron knife with a bent backside
- 31 and 32 (76). Iron rivets
- 33 (76). Handmade nail
- 34 to 44 (76). Pieces of burnt through clay daub with impresses of a cloth, posts and stakes

Finds from disturbed layers

- 20 and 21. Fragments of pots shaped by hand
- 22. Fragment of ceramics made on a rotating wheel
- 23. Fragment of a glazed, ceramic pot made on a rotating wheel
- 24. Iron handmade nail
- 25. Piece of burnt through clay daub with an impress

Trench 5a

This trench was west of Trench 5, down low on the slope of the hill. However, charcoal appeared immediately below the turf here as well. Although the charcoal did not comprise the semblance of burnt through beams, certain pieces were rather large. More charcoal was found in the formerly small pits on the hill's slope. No doubt these were traces of burnt fortifications found in Trench 5. Charcoal was also found in the continuation of Trench 5a, already at the foot of the hill, under the turf.

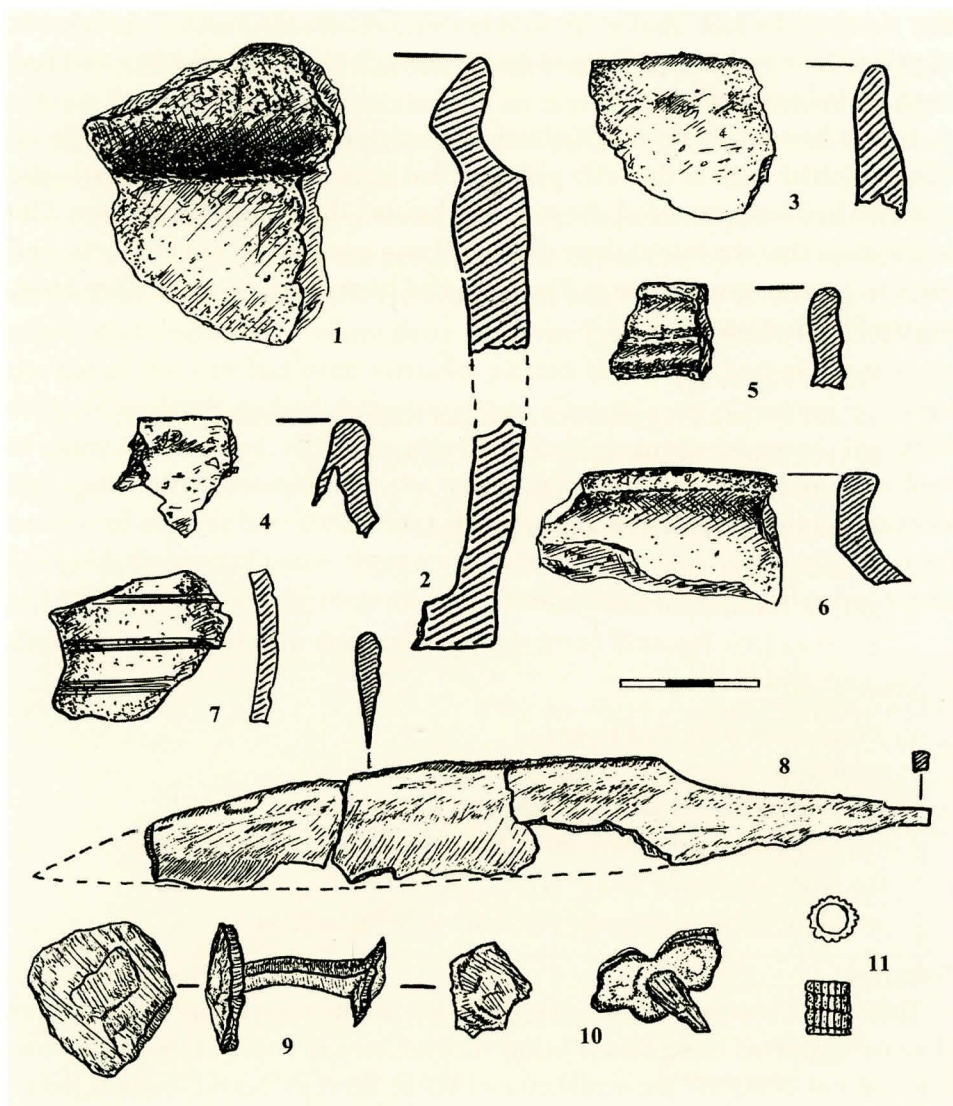


Figure 23. Finds in a 1st - 13th century layer of Birutė Hill

1. 2 (76)	2. 3 (76)	3. 4 (76)	4. 5 (76)	5. 8 (76)	6. 6 (76)
7. 26	8. 30	9. 31	10. 13 (76)	11. 12 (76).	

Nos. 1 - 6, 10 and 11 are from Trench 3

Nos. 7, 8 and 9 are from Research Area V

In many places of the hill's platform, under the rather pronounced layers of the Pagan sacral place, older layers were discovered. Marks of this older cultural layer were found at a depth, which was deeper than the surface of the sacral place was by 0.3 m - 2.4 m.

Trench 3

Surfaces with stones, fine pieces of clay daub and one or another fragment of a pot were found over the entire area of the trench under the Pagan sacral place layer, either immediately beneath it in some places (at the eastern end) or, in other spots, under a layer of windblown sand, as much as 1 m in thickness. Everywhere the layer is not very distinct and, in some places, greatly blown over. The finds were scattered vertically in a sand deposit, up to 30 cm thick. This surface was not horizontal. At the eastern end, it rose up to 19.4 m in absolute height; whereas, at the western end, it was found at 18.1 m in absolute height (at a depth of 2.4 m). Such a great difference in heights over a segment that is only 9 m long clearly shows that there had been a rampart during the time the layer had formed on the eastern side. From the middle of the trench, this layer also elevated sharply towards the northern side, towards the chapel. More stones, burnt through clay and ceramics lay in the middle of the trench, in the former platform of that time. It can be clearly seen in the cross-section (Figure 15 and 16) that the layer, which rises in the eastern part of the trench, was disturbed prior to the time that the surface of the Pagan sacral place formed.

Finds (Figure 23)

- 1 - 5 (76). Ceramics shaped by hand
- 6 - 11 and 21 (76). Ceramics produced on a slowly rotating wheel and on a rotating wheel
- 12 (76). Fragment of a bead made from enamel
- 13 (76). Fragment of a spur with a spike
- 14 (76). Flake of a stone axe (?)
- 15 (76). Fragment of a rotary quern (?)
- 16 and 17 (76). Flakes of stones with a ground surface
- 18 and 19 (76). Natural amber pieces
- 20 (76). Piece of burnt through clay

Trench 5

A layer of the hill-fort was also discovered in the eastern part of Trench 5. It lay at a depth of about 1.8 m (17.3 m - 17.5 m in absolute height), 0.9 m deeper than the surface of the Pagan sacral place and 0.7 m deeper than the layer of platform fortifications were (Figure 22). Its thickness did not exceed 5 cm. The layer descended towards the slope and broke off over 2 m from the eastern edge of the trench. By comparing the height of this layer at Trenches 3 and 5, it can be seen that, over a length of 12 m, it only descends in a western direction for about 0.6 m. That shows that the surface during that time, differently than it is now, was rather horizontal.

Research Area I

A layer of darker sand with crumbs of stones, a larger grade of gravel and very fine fragments of pots lay below the Pagan sacral place layer and the sand deposit of 0.5 m - 0.6 m thickness under it. The surface of this layer was uncovered over the entire research area. Found therein were fragments of ceramics produced on a rotating wheel (Nos. 1 - 4), fine bits of amber, crumbs of entirely decomposed iron workings and a hunk of slag.

This delicate cultural layer, which has nearly disappeared in certain areas, was rather horizontal at the boundaries of the research area. It lay at an absolute height of 18.3 m - 18.4 m. Deeper in this layer, there was sterile, wavy sand everywhere.

Finds

1-4. Ceramics produced on a rotating wheel and shaped by hand

Research Area II

Sand that happened to contain be very fine charcoal lay everywhere under the Pagan sacral place layer. A surface of darker sand with small stones was only found at a depth of 2.0 m - 2.1 m, along with a bone fragment. The layer descended from south to north (from 18.3 m akin to 18.0 m in absolute height). Sterile sand lay under this surface.

Research Area III

The deposit of windblown sand under the Pagan sacral place layer was about 10 cm by thickness. Under it were traces of the hill-fort's cultural layer. The layer lay in a depth of 1 m - 2.4 m, accordingly 18.9 m - 18.3 m in absolute height. Its descending incline corresponded everywhere to the incline of the former Pagan

sacral place layer. Small seashore stones marked its surface. Some were natural and others split, and some that were well-burnt through happened to be found there. More stones were found along the slope of the rampart. These formed something akin to a 2.5 m - 3 m partition in the center of the research area, stretching from west to east. Some very fine crumbs of ceramics were found between these stones. A rust stain was distinguished in one place, consisting of the traces of decomposed iron work. In the partition of stones, very pale stake holes were detected; these remained after the 6 cm - 7 cm diameter stakes had decomposed. These were also laid out in a western to eastern direction. There were nearly no stones in the southern edge of the research area (on the side of the former platform of the hill), and no stake holes were found either. Only slightly darker sand distinguished the layer here. Apparently the wind had blown through the layer. Deeper, over the entire research area, sterile, wavy sand of a brownish color, settled in the ground, lay over the entire research area.

Finds

7. Fragment of a pot shaped by hand
8. Fragment of the brim of ceramics produced on a rotating wheel
9. Fragment of a sandstone spindle

Trench IV

Traces of the hill-fort's cultural layer—the brownish sand with small stones—were detected under the undisturbed layer of the Pagan sacral place in patches. This cultural layer was up to 15 cm thick; however, it was very rare. Apparently it had been windblown. Sterile, wavy sand of a brownish color lay everywhere at a greater depth.

Finds

13. Fragment of a pot shaped by hand with an even surface at its base

Trench V

A layer, up to 15 cm by thickness, with stones and one or another very fine piece of burnt through, brownish clay was only found in the southern part of the trench. This is the cultural layer of the hill-fort. The brownish sand that was sunk in the ground was found at a depth of 0.8 m - 1.3 m.

Trench VI

The hill-fort layer – a surface of dark brown sand with small stones—was noticed below the Pagan sacral place layer under a sand deposit of 30 cm thickness. It was discovered at a depth of 1.7 m - 1.8 m (18.7 m in absolute height) in the eastern end of the trench. The layer was barely distinct, being brown sand, barely up to 10 cm thick. Among the small stones that happened to be in the layer, a not-very-large fragment of a pot shaped by hand was found. The surface of the layer descended somewhat in a southerly direction. There were only very wan marks of it towards the place where the landslide of the hill had occurred.

RECONSTRUCTION OF THE HILL'S CULTURAL LAYERS

Hill-fort layer

While observing the oldest, barely noticeable cultural layer, it was established that, at that time, a sand rampart, 1.5 m - 2 m high and up to 6 m wide at the foundation, had encircled the oval hill's platform which was 16 m wide (directed west to east) and over 17 m long. Only in the east, it was double the width and taller, reaching 3 m in height. No traces of a defense rampart were found on the western, sea side (Figures 16 and 22). The top layers of the rampart are disturbed, and it is not known if there had been any sort of fortifications here. Only meager marks of erections were found in the platform: there were stake holes, about 10 cm in diameter, on the interior slope of the northern rampart and more small stones than there usually are. No other fortifications or enclosures were observed in the sand ramparts that were quite disturbed.

It is clear that the top of the hill during the Early Middle Ages¹ had been fortified with sand ramparts and, apparently, rather ordinary wooden barriers. It is possible that the locales for posts had not been traces of fortifications but had some other designation instead. The ramparts are poured on the hill in a half-moon from the north, east and west whereas, in the west on the side of the sea, the platform was open. The explanation could be that the sea waters and a steeper cliff protected the hill from the west. It is known that ramparts of uneven heights and widths in the form of a semi-arc are at many hill-forts of Lithuania (Zabiela 1995: 72-80). On the other hand, the special designation of the hill could have been responsible for such a form of the ramparts. The thought, which comes from noting the open horizon on the western side and the nearly same sorts of ramparts of the later Pagan sacral place, is that the platform of Birutė Hill had already

1. Lithuanian archaeology traditionally considers the Early Middle Ages to be the 9th to 13th centuries. The Middle Ages proceed from the 13th century (Kuncevičius 2005: 16-18).

been designated by the Early Middle Ages, not so much as a place for defense from enemies but the performance of the Pagan rites of worship. The artifacts characteristic of the Early Middle Ages, the ceramics, fragments of small stone paddle spinning frames and the notched bead in the form of a spool-shaped head provide signs that women and men visited on the hill at that time.

The isolated artifacts on the hill (the spur fragment, certain spindles and ceramics) are dated at the start to the middle of the 1st millennium A.D. The effort to distinguish cultural layers that are more clearly indicative of that time was not successful. The layers were windblown; therefore, nothing more can be said about the designation of the hill during that time. Nevertheless, the isolated artifacts at the foot of the hill from those times would indicate that people had already settled on the hill and at its foot by the Roman period.

Reinforcements on the West Side of the Platform

The remains of rather well-surviving defense ramparts on the western slope of the hill's platform already belonged to a later time period. These could be related with the later fortifications of the settlement at its foot. Sand ramparts still surrounded the platform of Birutė Hill at the east and northeast at that time. Clay and wooden reinforcements were constructed on the western edge. The hill's platform, bordered with defensive barriers, was much smaller than the present one is.

The western edge of the platform was reinforced with a clay structure and posts. It was established that, prior to equipping the fortifications at the platform's edge, the upper part of the hill's slope had been leveled, the pits filled in and the pines growing there at that time chopped down. Certain of them had been used for the fortifications instead of posts. Burnt up beams that were laid out systematically were excavated at the western edge of the platform. There posts of coniferous wood, 18 cm - 32 cm in diameter, were buried in two relatively parallel rows in 1.3 m - 1.8 m intervals. The spaces between the rows were 1 m - 1.7 m. Among the posts there were 15 cm - 55 cm diameter beams crossed one over another and leaned against each other; these comprised the foundation of the ramparts. The barks of certain of the beams for the framework had been stripped; others had been laid with their barks intact—the impresses in the burnt through clay so indicate. Between the beams, there was packed clay into which small tree stumps and branches had been added. Rocks were not used for the construction of a rampart. Stakes of 4 - 10 cm in diameter were stuck into the packed clay; some had been stuck into the point of the sterile sand. The stakes are laid out as though in rows. They were probably designated to hold the rampart beams that

had been placed lengthwise. The surface of the clay rampart had been manually leveled. Considering the larger lumps of clay that had not been moved, the upper layer might have also been charred. Clay fragments from the rampart's surface show that its western slope elevated at about a 60° angle. The very top of the ramparts must have been horizontal - a mighty wall of fortifications in two rows rose above it (Figure 24).

Ceramics produced on rotating wheel were found in the foundation of the ramparts. The layer of fortifications was indiscrete with no signs of repairs or reconstruction, and this indicates that they had existed only a short while. These fortifications burned up—wood charcoal and traces of charred beams that had rolled down were found while excavating the small pits on the slope of the hill.

The reinforcements on the western edge of the platform on Birutė Hill are similar to other reinforcements of the Baltic people from the end of the 1st millennium to the start of the 2nd millennium. However, certain details distinguish

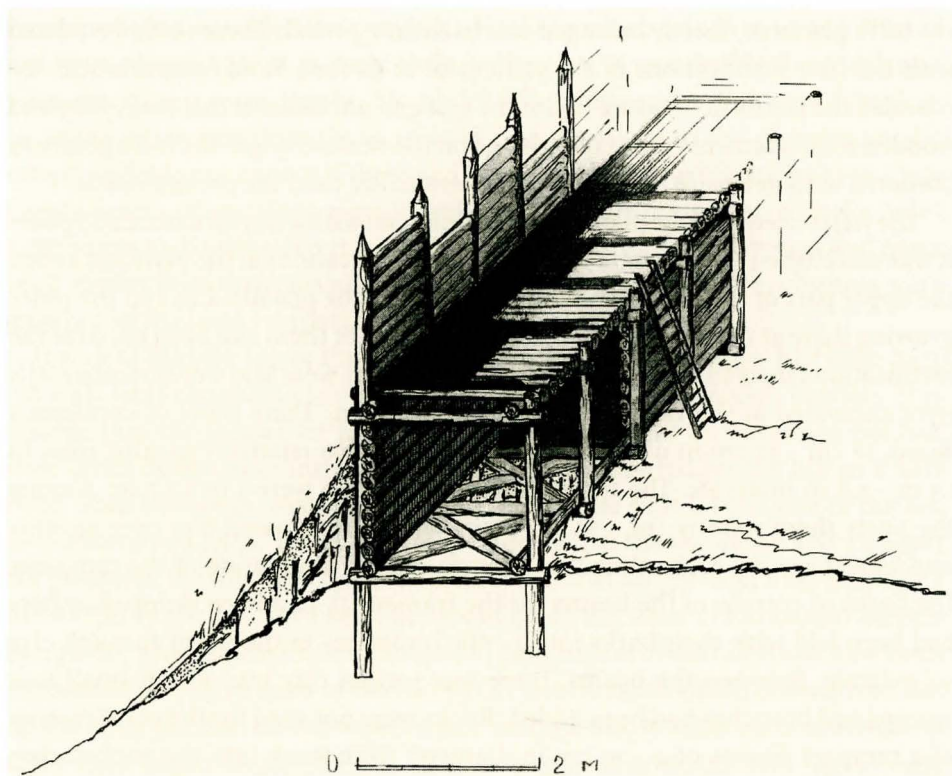


Figure 24. The 13th - 15th century reinforcements at the western edge of the Birutė Hill platform (reconstruction)

them from many other ramparts on Lithuania's hill-forts. Although the exact chronology of the ramparts on Birutė Hill is not known, it is possible to presume that these had been built during the 13th or even the 14th century. The system for reinforcing the post-bearing ramparts encircling the top of the hill-fort, in the opinion of G. Zabiela, was only used as a temporary means of reinforcement. Furthermore, at the time, they were already an anachronism because the more reliable, lafted structure was usually being used in Lithuania (Zabiela 1995: 89-90). The post-bearing structure of the defense wall on Birutė Hill could have been employed in consideration of existing conditions. This sort of structure better bound the rampart with the crumbly sand of the hill. Then again, the packed clay made the walls of the post-bearing building sturdier. Additionally, this sort of structure was built more quickly. The small clay rampart of Birutė Hill had a steepness of about 60°; meanwhile, many ramparts on Lithuania's hill-forts had been constructed at an angle of 45° (Zabiela 1995).

The framework of crisscrossed beams formed a unique structure for a rampart foundation in Palanga. As per the latest data, the rampart foundations at only a few of Lithuania's hill-forts (Punia, Kumelionys and, possibly, Impiltis) were truly lafted structures in a rectangular form (Volkaitė-Kulikauskienė 1974: 19; Kulikauskas 1982: 34; Zabiela 1995: 87-88). Nevertheless, this was different from the one on Birutė Hill (Figure 21).

It is believed that a framework structure for ramparts is characteristic of 13th to 14th century state castles and came from the East (Zabiela 1995: 88). The framework structure from stripped planks of timber that is unique to West Slavic lands was already being used as early as the 9th century. For the fortifications of ramparts at Starigard/Oldenburg, lasting about 800 years, complex wooden structures—"boxes"—sized some 2 m x 2 m were used. At later ramparts, similar structures were built, only now at a size of 3 m x 3 m (Toločko 1991: 105, 110, Abb. 5). Such structures also existed at other researched Slavic fortifications (Scharstorf, 10th - 11th centuries; Warder (Leciejewicz 1989: 157, ryc. 80; Olsen, Schmidt 1977: 69, Fig. 49). However, during that same time, timber frameworks in the form of lafted structures were also used to reinforce the foundations of ramparts (Kolobrzeg, latter half 10th century [Leciejewicz 1989: 178, ryc. 92]). Reinforcement frameworks, made from timber that was not hewn, began being used for rampart foundations in Eastern Slavic lands somewhat later—such fortifications in Minsk are dated from the end of the 11th to beginning of the 12th century (Загорюльский 1982: 157-159, рис. 79). Rampart framework structures, analogous to those at Birutė Hill were not discovered.

A Pagan sacral place layer of black earth with charcoal bits was found over nearly the entire research area of the platform. It survived better in the central part of the platform, where it lay at a depth of up to 2 m. At the edges, this layer rose to the present surface and it was destroyed. Landslides had destroyed the layer at the southwestern corner of the platform.

A deposit of humusified black earth with charcoal bits comprised the Pagan sacral place layer of 3 cm - 15 cm in thickness. Found within it were rotted through needles, fine remains of twigs, burnt up planks, posts and fire places. At the northeastern and southern sides of the hill's platform, the surface of which

lay 19 m above sea level, there were sand poured ramparts, up to 2.5 m high, found (the crest of the ramparts did not survive) as well as a rotted, oval-form platform, 16 m x 13 m in size. The rampart had been 6 m wide and it only widened to 12 m at the eastern edge. There was no rampart at the west (Figure 25). Found on the inside of the rampart's edge were places for eleven wooden posts. The charred ends of the posts stuck out above the former surface by up to 20 cm. These were found dug into 0.5 m - 0.8 m oval holes. Only one (Post No. 9), found at the northern point of the rampart, had been dug into a small ditch. The posts were of coniferous and deciduous wood; their diameters were 16 cm - 28 cm. Most of the posts had not been hewn. Only two—No. 9 at the northern and No. 10 at the southern horn of the ramparts,

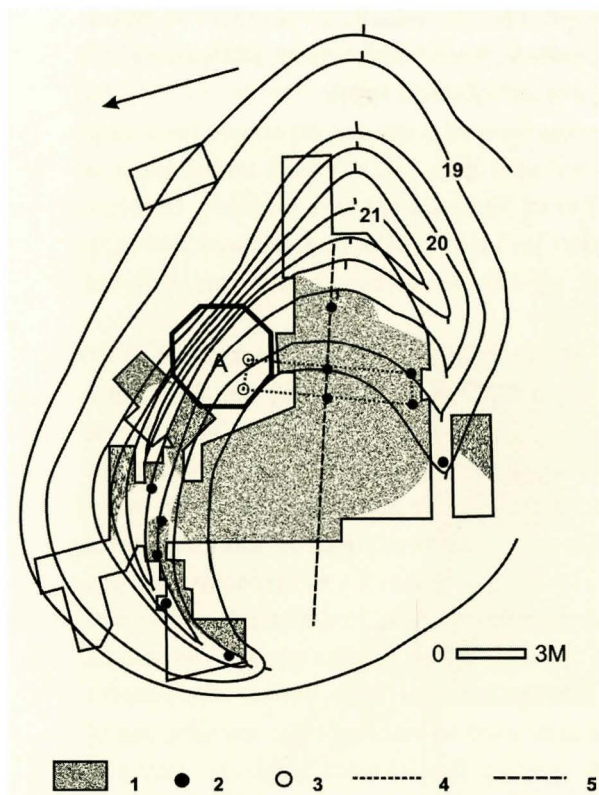


Figure 25. The 14th - start of the 15th century Pagan sacral place layer within the examined research area of Birutė Hill

1. Sand with soot and charcoal bits
2. Discovered postholes
3. Surmised postholes
4. Surmised contour of the erection
5. Main axis of the Pagan sacral place A. Chapel

15 cm x 15 cm and 18 cm x 15 cm in size—had been rough hewn. The latter one was no shorter than 1.4 m (it was found either fallen over or felled). In consideration of the traces remaining on the ground, the posts had been dug into the sand vertically. Only Post No. 11 was found leaning some 7° towards the southern side—this could have occurred due to soil deformations. The posts were laid out at different intervals. Two pairs of posts, separated by a distance of 1.75 m - 1.8 m between the posts and 4.25 m between the pairs, were on the interior, eastern slope of the ramparts. The burnt up crescents and rough-hewn planks indicate that one more pair of posts should be beneath the existing chapel. Besides that, the orientation of the burnt up wooden structures, with the rows of posts laid lengthwise in a north - south direction, would indicate that the aforementioned three pairs of posts (one of which is presumed to be under the chapel) could have comprised an erection, 8.5 m x 1.75 m in size. Since no marks of any walls were found, it can be surmised that this erection only had a roof that was propped up by posts or, most likely, a former elevation - platform between the posts. Stratigraphy shows that the Pagan sacral place had been neglected, and this erection at the eastern foot of the rampart had only burned after this had happened. One more post (No. 4), over 3 m east of the erection's middle pair of posts (Nos. 2 and 1), had been dug in farther away, in the upper part of the rampart. These three posts comprised the orientation axis of the platform and rampart. Five posts stood on the northern slope of the ramparts about a meter above the platform. There was one separate post (No. 10) on the southern edge, which had been felled by a landslide on the hill.

The fire places found at the surface of the layer did not comprise a clear system, even though there had been more fires on the western slope of the sand ramparts. Further, towards the middle of the platform, the amount of charcoal significantly decreased. There were a total of about twenty, more or less pronounced fire places, but only one was a larger place.

The dating of the Pagan sacral place layer remains problematic because no artifacts were found there. The effort to date the former fortifications at the western edge of the platform, the Pagan sacral place layer and the remains of the erection on the eastern slope of the Pagan sacral place by the radiocarbon ¹⁴C method gave no results. The Pagan sacral place layer is stratigraphically dated from the latter half to the end of the 14th century. There were no signs found of any possible change or duplication of the places for the posts. Therefore, the Pagan sacral place could have only existed for no longer than a couple of decades before the posts had rotted. Afterwards it appears to have been neglected and burnt up.

No finds were detected while exploring the layer of the Pagan sacral place and the fire places there; neither was a place for a permanent fire found. The many fire places scattered around unsystematically indicate that a fire would be lit at a different place each time. Further, there were no marks found of any larger structure, such as a "temple". Nevertheless, the installation at Birutė Hill reasonably could be called a temple, since temples—sacral wooden erections designated for sacrificing—were not necessarily places in which the Gods had to be completely closed in. In transalpine Europe, an open sky is a condition for the existence of a place for worship (Beresnevičius 2002: 30-31).

The eleven posts of the Pagan sacral place, six of them very precisely, align into a circle of 16 m in diameter. The center of the circle is the middle of the platform. Three former posts lined up at the slope of the eastern rampart mark the symmetrical axis of the Pagan sacral place. It was noticed that an imaginary line drawn through these aforementioned posts points to the position where the Sun sets into the sea on April 23, during *Jurginės* (lit. 'St. George's Day', also known as *Jorė* in more ancient times) which Lithuanian farmers celebrated as the "Greening of Spring", especially in Eastern Lithuania. Therefore, it was assumed that the posts dug into the ground at unequal intervals form a system, which could have marked certain positions of celestial bodies, beginning with the setting of the Sun. Paleo-astronomical research substantiated this assumption. The fundamental azimuths of characteristic Sun and Moon positions within the celestial sphere, observed from the Pagan sacral place, were established by Libertas Klimka (Klimka 1986: 21-35; Klimka 1986a: 43-46; Klimka 1989: 73-93; Жулкус, Климка 1988: 126-136). According to Klimka's published research, the positions of the Sun and Moon could have been observed from the axial locales of three posts (Nos. 8, 9 and 10) which were directed towards the other posts. It was ascertained that certain observed directions conformed, during certain days of the year, with the azimuths of the Moon and the setting of the Sun. (The azimuths were measured in a southerly direction, as customary in astronomy.) From Post No. 9 through Posts Nos. 1, 3, 11 and 13, it was possible to observe the marginal azimuths of the Moon in the Metonic Cycle, the "high" and "low" Moon appearing in the western part of the horizon. From the locale of Post No. 10 through Posts No. 2 and 12, it is possible to trace the setting of the Sun on June 22 and December 22, the two solstices. The azimuths of the small posts on Birutė Hill correspond with positions where the Sun and Moon set in the horizon, to an accuracy of approximately 1°.

The circle of posts forms an integral system for observing both celestial bodies. Therefore, there is practically no chance that this is mere happenstance. The tracing of the marginal celestial body azimuths also indicates the purpose of these observations are calendric measurements. The Moon elapses over the annual path of the Sun in a month. Thus the same posts were not always used for observing the Sun and Moon. The main post, where the directions of the Moon would converge when it landed in the marginal azimuths of the Metonic Cycle, was Post No. 9, located on the main axis of the temple. Since the Moon repeats its path in the celestial sphere over a rather short time, 29.5 days, it was more convenient to follow it from one location. Post No. 9 had little importance for establishing the main areas where the Sun sets. Post No. 10, which stood apart, higher up on the small eastern rampart, was used for observing the main azimuths from the temple, namely the "axial" direction (112.5°) and the location in the sea where the Sun sets during the summer solstice (137°). It is interesting that, on Birutė Hill, there are no posts which could be used to establish the setting of the Sun during times of the equinox, when the Sun specifically sets in the west. The main reason for the observations from Birutė Hill could have been to align the archaic Moon calendar (a 9-day week) that livestock farmers used with the later, Sun calendar (a 7-day week) that crop farmers used; the Sun calendar was also used to establish the time for calendar holidays.

In the course of studying the operational model of the paleo-astronomical observatory of the Birutė Pagan sacral place, the table compiled by Klimka was supplemented with established observational directions of the Sun's setting. Additionally, the model, made by Saulius Manomaitis, of the Birutė Hill Pagan sacral place that was constructed on a sandhill near the seashore showed that, to accomplish astronomical measurements, the long shadows from the posts during sunset could be used. These shadows enjoin the corresponding posts very clearly and precisely. Observations using a viewfinder would have been inconvenient due to the ramparts and a platform or other erections, which might have been located between the posts on the eastern slope. The experiments of Manomaitis were also applied to establish that the sand ramparts intensified the sound of a human voice drifting from the geometrical center of the platform at the Pagan sacral place; this center was not demarked in the layer in any way. People standing on the platform or rampart could perfectly hear a person speaking quietly while standing in that center (Žulkus 1995: 2-6). Manomaitis determined that the distances between the posts and the periods of time, consisting of the dates traced via the nearby posts, are related to each other. Having approximated those time intervals, the researcher suggested a sequence of proportional numbers, which he named the *Alkos Kodas*

Table 1
Main Trends Observed at the Pagan Sacral Place of Birutė Hill and
Established Dates of Pagan Holidays

Post pairs and groups	Azimuths (by degrees)	Calendar dates of observations	Pagan holiday dates*	Gods and Goddesses worshiped during these holidays
8 - 13	0	December 22	December 22	Winter solstice—Sun, Lelas or Lelis and Lela, (first-born twins of Great Mother Lada), Žemėpatis (Homestead God) and Perkūnas ('Thunder' God)
9 - 13	57	January 26-February 2 / November 9-16	January 25-February 2 / November 1-10	Krikštai mid-Lenten period and Kirmės period—Moon God / Ilgės period for homage to the deceased, a holiday that corresponds with the archaic Celtic Halloween—Žemėpatis (brother of Mother Earth Goddess) and Vaižgantas = Vaisgamta (God = Goddess who encouraged vegetation growth)
10 - 12	61	February 2-9 / November 2-9	February 5	For Mother Gabija (Goddess protecting fire and home) / Harvest-holiday
10 - 11	70	February 17 -23 / October 17 - 23	February 16-19 / end of October	For Žemynėlė, Žemininkas (dimin. forms of endearment for Žemyna 'Mother Earth' and her brother, Žemėpatis) and Gabjauja (Goddess protecting the threshing barn fire)
3 - 1	72.5	February 19-25 / October 17-23	- October 21	Suveksis holiday of vimba fishermen
10 - 13	72	February 20-26 / October 16-25		
4 - 1	80	March 4-9 / October 4-11		

5 - 1	84	March 9-15/ September 29 - October 4	beginning of October	Autumn celebration— Perkūnas ('Thunder' God)
12 - 13	90	March 21 / September 22	March 21 / September 22	Shrovetide — Gabjaujis (God of barns), Jagaubis (God of smithery fire) and Gavėnas (male specter ridden in Aukštaitija villages) / Perkūnas ('Thunder' God)
5 - 4	96	March 27-April 1 / September 11-17	March 25	Heron Day
5 - 2	101	April 2-8 / September 4-10	April 2-8	Easter—Milda (Goddess of Love)
5 - 3	107	April 11-17 / August 26-September 1		
8 - 9; 10 -C	112.5	April 23 / August 22	April 23	For Pergrubis = Pergubrius (brings blossoms to earth and protects the first field work), Aukštėjas ('Heightening' God of Morality), Ganyklis (Patron of livestock and their keepers), Lada (primordial Great Mother, wife of the Lithuanian supreme God), Žemyna ('Mother Earth' Goddess), Žemininkas (dimin. of Žemėpatis, Ūsinis (Patron of horses), Jaučių baubis ('Bellow of bulls') / For Gabjaujis (God of barns), Jagaubis (God of smithery fire), Pergrūdis = Pergrubis, Austėja (Goddess of bees) and Javų dvasia ('Soul of grain')
10 - 1	122	May 5-13 / August 4-8	May 8	For Perkūnas ('Thunder' God) and Žvaigždikas (God of light and fertility)
9 - 1	124	May 9-18 / July 23-31 - August 4	-	-
2 - 10	135	June 22	June 22	Rasos šventė 'Holiday of the Dew'—Saulė 'Sun' and Aušra 'Dawn' (Goddesses), Laima (Goddess of destiny and birth), Vėžių karalius ('Crayfish King'), Lada and Didis Ledo = Lada (primordial Great Mother) and Perkūnas ('Thunder' God)

Data summarized according to Basanavičius 1970; Daukantas 1976; Dundulienė 1970, 1974, 1988 and 1990; Gimbutienė 1985; Grāvis 1989; Greimas 1979; Lasickis 1969 and Топоров 1970.

'Sacral Place Code'. By knowing the sequence of these "magical" numbers,² the posts can be dug into the ground accurately within the temple in a single day. That day has to be known in advance—the summer solstice of June 22, now celebrated as *Joninės* (St John's Day or earlier, *Rasos Šventė* 'Holiday of the Dew').

Once the main azimuths under observation are established (Table 1, Figure 26), it is possible to calculate the calendar dates for observance. The methodology described by Klimka (Klimka 1985: 75) was used, applying the formula, $\cos A = \sin \delta / \cos \varphi$, to calculate δ - the declination of a celestial body. This way the appropriate dates of the astronomical calendar are found. A correction in time has no essential importance when applying approximate azimuths. Taking into consideration an error rate of $1^\circ - 2^\circ$, which could be due as much to digging in the posts, their drifting or during the process of measuring them, such a table presents marginal calendar dates and their averages, according to the azimuths. Two time intervals are indicated for each observational direction since the Sun, as known, hovers in the same point twice each year.

An effort can be made to associate the observational dates with the known dates of Pagan holidays and calendar rituals. Actually it must be noted that an accurate correspondence of known, calendar holiday dates with dates possibly observed on Birutė Hill is more an exception than it is a rule due to a biases in the instruments and inconsistencies in the calendar system.

Essentially the data in this table also correspond with the most important azimuths provided by Klimka (Klimka 1977: 19-31). The most intensive calendric fields for possible observations of the Sun would occur on March 4 - May 21, August 4 - September 22 and October 4 - November 15. It is quite obvious that the most intensive observations of the celestial sphere on Birutė Hill could have been during spring (March - May) and the end of summer to autumn (August - November). These periods correspond with the natural cycles of life as well as the most important periods of human work endeavors, raising animals and crops and fishing.

The more important calendar dates in mythology are usually associated with their corresponding deities. The calendar dates established at the paleo-astronomical observatory on Birutė Hill also have their equivalents, from the established list of deities of the Baltic tribes. Included among them are also deities associated with the sea, because Baltic tribes at the seashore used to commemo-

2. The sequence of "magical" numbers is the following: 10, 2, 8, 3, 1, 3, 6, 1, 6, 7, 2, 4, 9, 4, 8, 2, 2, 7. These numbers repeat symmetrically during the course of one year, the same as the directions of the Sun's setting. The *Alkos Kodas*, proposed by Manomaitis, has been revised since it is not known which calendar holidays that the azimuths of the posts could demark were important to the residents of Palanga.

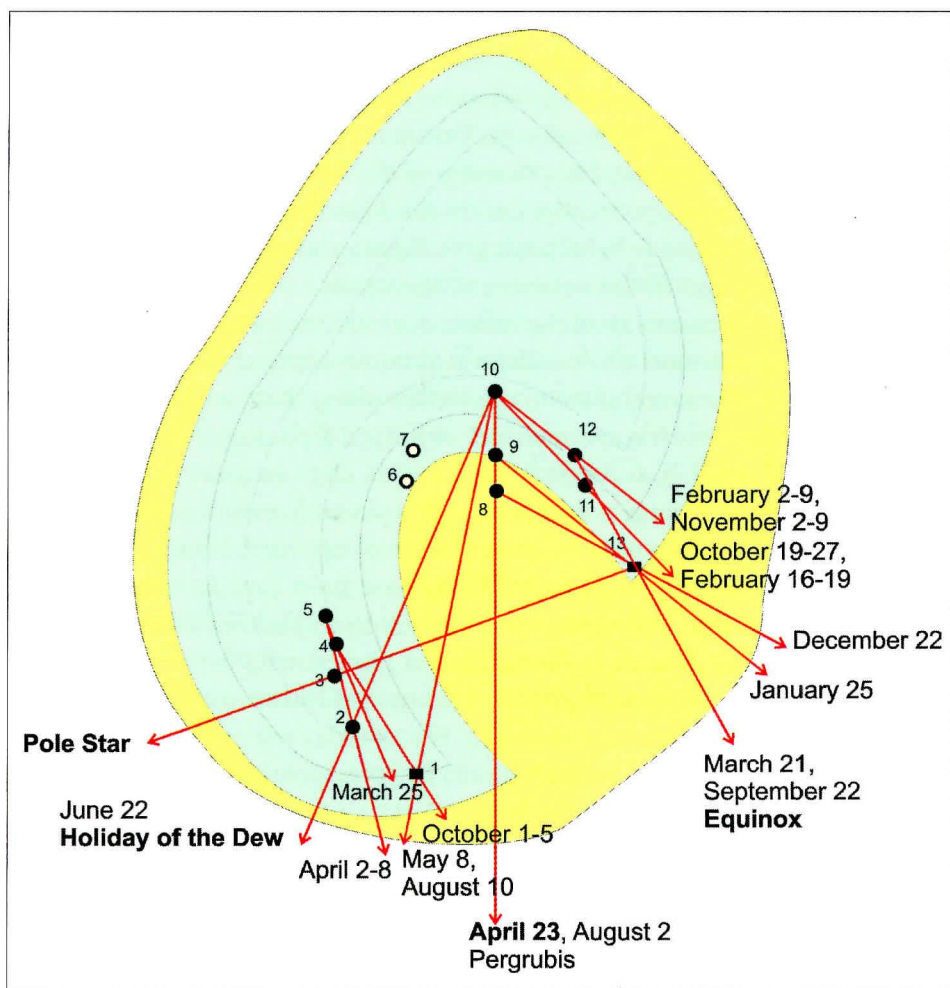


Figure 26. Major movements observed at the Pagan sacral place on Birutė Hill and established dates of Pagan holidays

rate and worship Gods, such as *Bardoaitis* or *Gardoaetas* and *Bangpūtis* also called *Vējopatis* ('God of Blowing Winds' or North Wind), *Bangulis* (referencing a wave) and *Bangų dievaitis* (Waves demi-God). The oldest stories identify this God with a giant who lived at the bottom of the sea. *Žvaigždikas* (God of light and fertility) was worshiped in spring, seemingly on May 8. He was associated with the North Star, which was also referred to as *Marių* or *Jūreivių* ('Lagoons, Seas or Sailors') Star and *Jūražvaigždė* ('Sea Star'). *Menulis* 'Moon' God deserves

individual mention. At the seacoast he was worshiped in the name of *Deuoitis*. He, the same as the Sun, swims forth from the waters. *Varūna* (?) (Goddess of moon phases) lived in the sea; she was also the mother of *Bangpūtis* (God of 'Blowing Winds') (Dundulienė 1989: 35; Dundulienė 1990: 119-124; Balsys 2003: 166-171, 198; Balsys 2006: 281-287). Worship of the Moon is very pronounced at the Birutė Hill temple, apparently, due to the Moon's functions of measuring time. The Moon also had to be important to the seacoast settlers, the Curonians, for forecasting changes in the weather and the winds.

The date that the main axis of the temple distinctly traces is April 23. This day deserves special attention while endeavoring to understand the importance of the Birutė Hill Pagan sacral place to the settlers along the seacoast of Lithuania back then. The day, which is symmetrical with April 23, is August 22. Lithuanian customs denote April 23 as *Jurginės* 'St. George's Day'. In pre-Christian times, the Pagan figure of George was *Ganyklis* (Patron of livestock and their keepers). Since St. George was also in charge of handling storm clouds, the fishing community worshiped him as well (Dundulienė 1982: 307). In addition to St. George's Day, Latvians also commemorated *Ūsinis* or *Ūsinš* in Latvian (Patron of horses, driver of the Sun's stallions) on that same day (Grāvitis 1989: 8). This figure was not only associated with horses but also linked with the custom of sacrificing a rooster (Upeniec 2002: 155). For us today the most important personage would be St. George. In Christianity he corresponds with the personages of western Baltic mythology—*Patrimpas*, *Natrimpas*, *Antrimpas* or *Trimpas* (Dundulienė 1990: 39-41). *Patrimpas* is known to be one of the three most important Gods of the western Baltic tribes, associated with the renewal of nature and spring. The spheres of water and earth are also ascribed to him. *Antrimpas* is solely considered the God of sea waters (Vēlius 1983: 61-62). Undoubtedly it was the Curonians who worshipped him, not the Samogitians. The similarity in the names of these Gods, who were worshiped at the same time, and their manifold functions is due to the different features and roles that different regions ascribed to these Gods. The day of April 23 could be related to the tradition of blood sacrifices (Usačiovaitė 2002: 61). The Curonians, sailors, fishermen and farmers as well as the relatively newly settled Samogitians of Palanga had probably felt close to the temple of Birutė Hill, specifically for such reasons. For some the paleo-astronomical observatory on Birutė Hill could have been a temple of *Antrimpas*, the God of the sea, whereas for others, a temple of *Patrimpas*, the God of livestock farmers and pastures. Therefore, the Pagan sacral place on Birutė Hill could have combined not only two different calendar systems but

also two different world-views, one of the western Baltic tribes oriented more to the sea and the other of the Samogitians oriented more to agriculture.

The Baltic tribes were not alone in celebrating spring and autumn holidays. There is an interesting coincidence in the interpretations of Arkona (Isle of Rügen, Germany) and the Palanga Pagan sacral place. According to the 1168 *Saxo Grammaticus*, there was formerly a castle, now washed away by the sea, with an enclosed temple standing during the 8th to 9th centuries, which contained a sculpture of the western Slavic God, Svantevit. This temple was located at Cape Arkona, the elevation of which is 46 m above sea level. Meanwhile, during the 10th to 11th centuries, the temple was only symbolically differentiated from the castle. Researchers believe that, at this temple, the most important rites of the religion had been held during early spring or late summer, that is at about April 23 or August 22 (Herrmann J. 1980, Feist P. 1995, Ślupecki L. P. 1998: 182; Mührenberg D. 2002: 103-104). The Arkona Temple is located in a geographical latitude (54° 41' N, 013° 26' E [www.leuchtturm-atlas.de]), which is similar to that of Birutė Hill in Palanga (55° 54' 20.5" N, 021° 03' 10.5" E [Baubonis, Zabiela Vol. II, 2005: 164]). Therefore, at both Palanga and Arkona, the main Pagan holidays could have occurred on nearly the same days, as established by the azimuths of the rising of the Sun in Arkona and the setting of the Sun in Palanga.

V. SETTLEMENT AT THE FOOT OF BIRUTĖ HILL

WRITE-UP OF AREAS RESEARCHED

1982 Trenches

The first three surveying trenches at the southern foot of Birutė Hill were excavated in 1982 (Figure 10). A 36 m² research area was examined in all three of the trenches together (PKIA, f. 5, b. 3468 [Genys 1983]).

Trench 1 was excavated on the top of a small, still visible rampart, elevated to an absolute height of 7.5 m - 8.5 m, which surrounded the southern side of the foot of Birutė Hill. Trench 2 lay in the southern continuation of Trench 1, which was 3 m behind its southern end, at a height of about 6.5 m - 7 m above sea level. Trench 3 lay in the slope of a litorinian terrace, at about 7 m in absolute height.

Prospect Holes

The surveying of the foot of Birutė Hill in 1983 was accomplished by prospect holes. In total sixteen prospect holes were drilled around the hill (Nos. 8 - 23). At the southern slope of the Birutė Hill, ten prospect holes were drilled (Nos. 8 - 17). A cultural layer was discovered in certain prospect holes (Figure 10). Prospect Holes Nos. 18, 19 and 20 were drilled eastward from the hill, on a platform between the eastern foot of the hill and a small rampart in the east, as well as on the rampart itself. Three prospect holes (Nos. 21 - 23) were drilled in a terrace to the north of the hill. Prospect Hole No. 23 was as much as 40 m to the north of the hill's foot (Žulkus 1984: PKIA, f. 5, b. 3371-3373, 5-6).

In the prospect holes at the southern side of the hill (Nos. 8, 10, 11, 13 and 15), a cultural layer was discovered at a depth of 1.1 m to 2.6 m. In Prospect Hole No. 10, at the locale of the former rampart, two cultural layers were discovered in an earthpile, one at a depth of 1.4 m and the other at a depth of 2.15 m. Two cultural layers were also discovered in Prospect Hole No. 15, east of the examined research areas. One lay at a depth of 1.1 m - 1.55 m, and the other at a depth of 2.0 m - 2.6 m. Sand with soot and charcoal and grey earth with charcoal marked these cultural layers. No cultural layers were found, neither in Prospect Holes Nos. 12 and 14 at southwestern edge of the hillside, nor in Prospect Holes Nos. 16 and 17 at the edge of the southeastern foot nor in Prospect Hole No. 18 on the eastern slope of the hillside. Further, there was no trace of human activity found, neither in Prospect Hole No. 19 on the eastern part of the former rampart, nor in Prospect Hole No. 20 that had been drilled behind Prospect Hole No. 19 towards the east. No traces of a cultural layer were found in Prospect Hole No. 23 either.

Research Area VII

The research area was dug over 17 m - 18 m south of the hill's foot, at the highest part of the rampart, alongside the 1982 Trench 1. It was sized 7 m x 5 m with an area of 35 m² and oriented perpendicularly; in other words, it was in a 350° - 170° direction.

The terrain in the area of the research area is uneven, descending in westerly and southerly directions. The highest (north - east) corner of the research area was at an absolute height of 8.10 m. The corner at the north and west had a height of 7.3 m, and the southwest corner was merely 6.54 m in absolute height.

Research Area VIII

This research area was dug in the western side of the rampart that surrounded the ancient settlement. The distance between Research Areas VII and VIII is 13 meters. Research Area VIII was 71 m² in size. The site chosen for the research area was to be perpendicular to the rampart. Since the search involved looking for larger spaces between the trees, and it was necessary to avoid disturbing the paving of the pathway, the research area was not oriented precisely north to south but in a 345° - 160° direction instead. The absolute height of the ground surface at the site of the research area was from 6.0 m to 7.1 m.

Research Area IX

This research area actually lay on the southern slope of Birutė Hill. The distance between the southern boundary of Research Area IX and the northern end of Research Area VII was 8 m. The overall area of Research Area IX was 52 m². The ground surface at the site of the research area was slightly elevated in a northern direction, rising to a height of 7.8 m according to the absolute height scale of the Baltic Sea. Since trees and bushes surrounded the research area being excavated, it had an irregular shape.

Research Area X

Research Area X was excavated in the western part of the settlement. Its eastern edge was over 13 m westward, and its northern edge was over 1 m to the south of the western boundary of Research Area IX. During the course of the excavation, the research area was expanded to a size of 96 m². A supplementary trench was measured between large trees; therefore, its edges were irregular. The ground surface at this site had a slight incline towards the western and northern sides. Its absolute height was 6.6 m - 7.2 m.

Research Area XI

Research Area XI enjoined Research Areas VIII and X, which had been examined in 1983 along with the layers west of them. The administration of Palanga Botanical Park requested that the pathway covers within the research area remain undisturbed. Therefore, Research Area XI was divided into two, the eastern and western parts. The eastern part of the research area was 43 m² in size, and its overall size reached 62 m². On the southern edge, Research Area XI covered the northern wall of Research Area VIII; whereas, on the northern edge, it covered the southern wall of Research Area X. The site was even; the ground surface was about 7.0 m in absolute height.

Research Area XII

Layers, which had been discovered earlier, were further researched in this research area. Therefore, it was excavated in the northwestern corner of Research Area X, covering both sides of it. The eastern boundary of Research Area XII covered the previously excavated research area by 1.7 m and the southern one by 1.8 m. In Research Area XII, 24 m² were examined; however, only 14 m² of the cultural layers were newly uncovered. The ground surface at the site of Research Area XII was at a height of 7 m - 6.8 m in absolute height, and higher on the western side.

Research Area XIII

The locale selected for examining Research Area XIII was between Research Areas VIII, X and XI; these were thereby enjoined. The research area was oriented precisely in a north to south direction. In Research Area XIII, 65 m² were examined overall.

Test Pits 1 and 2

Two test pits were excavated in the settlement at the foot of the hill in 1990. Test Pit 1, sized 3 m x 1 m, was located on the southern edge of the settlement's terrace, 18 m south of the southern end of Research Area XI. The second test pit was excavated farther south from the examined research areas, at the top of the litorinian terrace. This test pit was a distance of over 75 m from the southern foot of Birutė Hill and over 130 m to the east of the terrace, which is east of the present sandhills at the seashore and at the edge of the lowlands at the sandhill's foot.

No cultural layer was found in these test pits. In Test Pit 1, at a depth of about 1.3 m from the surface, there was a nearly indistinct, small darker layer of completely sterile humus. There was no layer at all in Test Pit 2—only wind blown sand.

It was not easy to link the cultural layer horizons into one system even after several years of excavating singular research areas. This was particularly so because not all the cultural layer horizons were found in each research area that was examined. Once the results of the excavations had been summarized, it appeared that the surface horizons of the cultural layer were not synchronous everywhere—the settlement had not been developed at an even density. Moreover, after analyzing the material, it was noticed that certain structures did not actually belong to those horizons where they had been designated in the beginning (Žulkus 1997: 57-58). The stratigraphic table presented below associates the cultural layers and traces of ancient structures found within them.

Table 2. Stratigraphic Table of the Settlement at the Foot of Birutė Hill

Research Areas and year of excavation	Horizons numeration	Structures found in the horizons
I 1982/1983	1 2 3 5	
VII (rampart) 1983/1984	1 2 3 3a-4 5-6	1 (rampart) 2 (ramparts)
VIII (rampart)	1 5 6	3 (ramparts)
IX 1983/1984	2-3 4 5 5A 6	1 2 3, 5 4, 5A pits
X 1983/1984	2 3 4 4A 5 5A 6	6, 7, 8 9, 10 12 11 13, 14 15 15A, 16

Research Areas and year of excavation	Horizons numeration	Structures found in the horizons
XI 1990/1991	1 2 2 3 3 3A 4 4 4A 5 6	18 19, 20 27 21, 22 28 23 24, 26 ramparts 25 ramparts pits
XII 1990/1991	1 2 4	29 30
XIII 1993/1994	1 2 3 3A 4 4A 5	32 33, 34 (23), 35 37, 38 17 36, 39

SURFACES OF THE 17TH-18TH CENTURY

Research Area VIII

White sand lay everywhere in the research area, beneath the turf. In the central and southern parts of the research area, at a depth of 0.2 - 0.9 m (6.2 - 5.2 m above sea level), a surface of darker earth was found, which sloped southward. Small stones, a small rusted iron artifact and a completely decayed blade of a small knife were found in this surface. Fragments of a foal skeleton were uncovered in two places.

Research Area IX

Wind blown sand was found everywhere below the turf, the paving of the pathway and a surface layer of humus. Within this layer, at a depth of 0.4 m - 0.5 m (7.3 m - 7 m in absolute height), another layer of humus, up to 20 cm in thickness, was found. It marked a 17th century surface.

Research Area X

This 17th century surface is darker with rotted through wood, more distinguishable in the northern part of the research area. The surface was found at a depth of 0.7 m - 0.8 m (about 6 m in absolute height). A fragment of a "Dutch", wavy roof tile was found on this surface.

Research Area XI

It was more difficult to establish the 16th - 17th century surfaces here. The small layers of darker sand with earth were found, at depths of 0.3 m - 0.35 m and 0.5 m - 0.8 m (6.7 m - 6.3 m in absolute height). One more former surface consisting of grayish sand, which was overgrown in tree roots, lay on the eastern edge of the research area, at a depth of 1.2 m.

Grave No. 1

In the supplementary trench of Research Area XI, towards the east, a skull was found, at a depth of 1.1 m, below a small, 17th century layer, in earth that had already been shifted. The pit of the grave was about 75 cm in width, oriented in a 28° - 208° direction. The head of the deceased lay in the southwest. The position of the skeleton indicates that the deceased had been laid down, or possibly tossed in, face down. The right arm, slightly bent at the elbow, lay lengthwise along the body. Hand bones were found by a thighbone. The left arm was "laid" down, also bent at the elbow. The bones of its hand were found under the neck vertebrae. The legs of the deceased were stretched straight. The skeleton found was that of a male, 25 - 30 years of age. Neither a coffin nor traces of clothing were noticed, and no burial shroud or dress details were found. It appears that the young man had been buried here hurriedly or secretly, in a haphazard way. It is possible that the grave found in Research Area XI was, like the graves of males on Birutė Hill, one for a man of an unidentified background or religion, perhaps drowned and cast ashore by the sea or a victim of violence.

CULTURAL LAYERS OF THE RAMPART

Horizon 1

Rampart of Trench 1 (1982)

The upper layer of the rampart appeared about 0.4 m from the surface of the ground. At the site of the trench, it descended in a southerly direction. At the northern edge, the rampart had elevated to its highest—up to ~ 7.7 m in absolute height—whereas, at the southern edge, it was at its lowest. Here it was found, approximately 7 m in absolute height. In the middle of the trench, stains of charred wood particles with small stones and ceramics were distinguished in the sand. Crossing it, at a depth of 0.6 m - 0.7 m towards the middle of the trench, was a partition with crumbs of burnt clay, stones and ceramics, about 1 m in width. North of this more pronounced partition, grey sand with charcoal lay. At the

northern edge of the trench, which was its highest location, there was a slightly disturbed, 1.2 m wide stone paving with charcoal bits at the edge found, in a depth of some 0.65 m, crossing the trench. The stone paving contained stones, from 10 cm x 7 cm x 7 cm to 20 cm x 13 cm x 10 cm in size; some of them were burnt through and cracked by heat. Among these paving stones, there were found fragments of ceramics made on a rotating wheel and pots shaped by hand. The stones had been placed in one layer (Figure 27 and 36).

Finds

The 1982 finds (with J. Genys leading the excavations) are indexed with a "G".

G - 204 - 220 and 224 - 249. Ceramics

G - 221 - 223. Natural amber pieces

G - 250. Iron rivet

G - 251. Fragment of an iron nail

G - 252. A knife blade with a straight back

G - 253. A brass ring with a flared middle and interchanging ends

G - 316. A blade of a small knife

Research Area VII (rampart)

A layer of brownish earth with sand, containing many roots of plants and trees, lay in the research area, beneath the turf. Its thickness reached 20 cm - 30 cm. Quite many charred stones were already in this layer at random. The surface of Horizon 1—light brownish sand mixed with earth—outcropped, at a depth of 0.5 m, in the eastern edge of the research area. Lying at the top of it, there were small stones and random fragments of ceramic pots made on rotating wheels. The surface of this layer descended in western and southern directions. Once the entire surface of the layer had been uncovered, the highest part of the former rampart, the external slope descending southward and the almost horizontal platform in the northern part of the research area, became quite distinguishable, at a depth of 0.5 m - 0.7 m (6.9 m - 7.2 m in absolute height).

After shaving the surface of the upper layer to a thickness of 5 cm over the entire research area, there appeared various stains - the traces of **Defense Erection No. 1** (Figure 28). Against the background of grey sand, the darker stains of brown earth comprised a 1 m - 1.5 m wide partition, at the northern edge. There were stones, sized from 5 cm x 5 cm to 20 cm x 15 cm, and larger bits of charcoal lying within these stains and alongside them. Darker stains of brownish earth

Figure 27. Layers of a defense rampart in the 1982 trench

1. Stone paving in Horizon 1
2. Hearth in Horizon 3

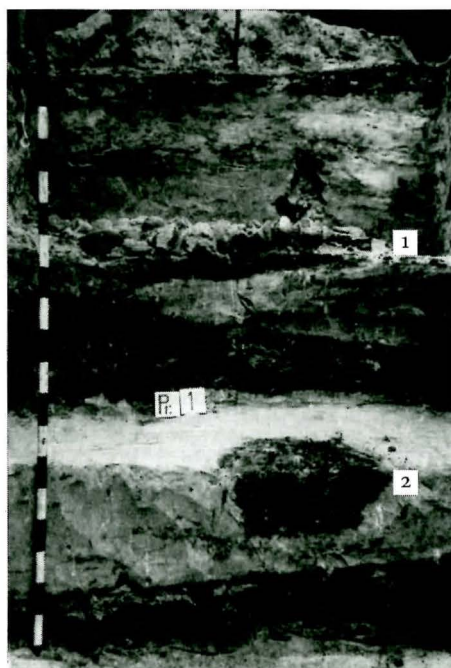
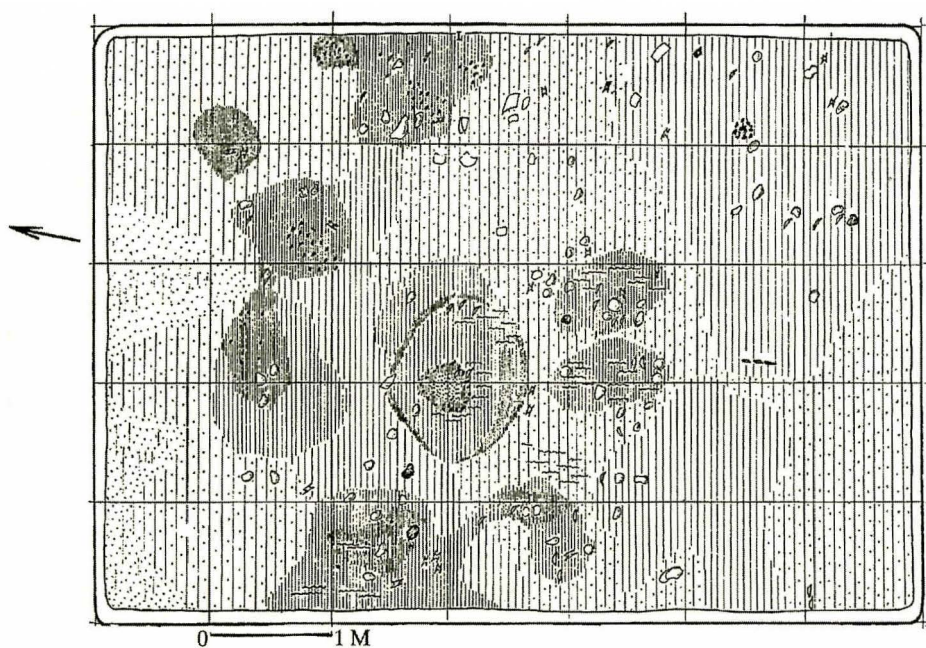


Figure 28. Remains of Defense Erection No. 1 (in Horizon 1) in rampart of the settlement at the foot of Birutė Hill, in Research Area VIII



mixed with small stones, bits of charcoal, ashes and sparse crumbs of burnt through clay became distinguishable in the central part of the research area. The stains of both rows merged at the western edge of the research area. Among these darker patches, at the highest place of the rampart, there was an oval stain of a home hearth, 1.4 m x 1.1 m in size, stretching in an east to west direction. Its edges were bordered with strips of black earth mixed with soot and ashes. In the middle of this stain, there was another oval, coaly stain, 0.5 m x 0.4 m in size. In its center there was brownish sand—a hearth. It was barely sunk into the sand. Around it were quite many bones.

Stains of dark earth with charcoal bits and ashes were positioned on the top of the rampart, comprising a partition that was some 3.5 m in width—an erection, 3 m - 3.5 m in width, had once stood lengthwise along the rampart. South of it, at an external slope of the rampart, research areas of dark grey earth, charcoal, ceramics and bones were noticed. The thickness of the Horizon 1 layer was from 5 cm to 15 cm. Everywhere beneath it, grey sand was found which was darker in the middle of the research area. There was no doubt about the nature of the poured layers; the layers in between the earthpile of the rampart could be clearly seen in the cross-sections.

Finds³

Most finds were within the boundaries of the erection's stain and in the hearth.

26 - 28, 32 - 36, 37 and 50. Ceramics made on a rotating wheel and shaped by hand

29. Stone weight

30. Fragment of a small knife with a straight back and hafted shaft

31. Fragment of a small, encased knife with a casing of bone or horn

38. Iron rivet

39. Knife blade with a slightly bent back and hafted shaft

40. A strike-iron

41. Clay weight of a low cylindrical shape decorated with stamps

3. The finds from the settlement at the foot of Birutė Hill, noted elsewhere in this book, are identified by the index, BK, with the enumeration, for example, BK 1. The structures are identified with the same index, followed by a dash - for example, BK - 1.

Research Area VIII (rampart)

At the southeastern side of the research area, under the grey Aeolian sand that still remains after the most recent winds, a dark grayish surface already appeared, at a depth of 0.4 m. It descended in northern, western and southern directions. The surface at the exterior of the rampart was no longer distinct, marked only by darker sand and small stones. Certain stones were cracked from the heat; others were burnished by sand. Once the most recent surface of all the former ramparts was uncovered, its slopes were established. At the highest point, the surface of the rampart elevated, by up to 6.3 m in absolute height. In the southern direction, the rampart descended by as much as 1.65 m (it lay at a depth of 1.4 m or by an absolute height of 4.65 m).

Finds

- 59, 62, 65, 66 and 69. Ceramics made on a rotating wheel, shaped by hand and miniature
- 73. Fragment of a sandstone spindle
- 74. Fragment of a small iron knife with a straight back and a hafted handle
- 75. Fragment of a small iron knife with a straight back
- 76 and 77. Iron rivets
- 78. Fragment of a brass band bracelet
- 79. Stone weight
- 80. Fragment of a limestone whetstone (?)
- 81. Fragment of a white, crystal-like structured rock
- 82. Amber preformation (?)
- 83. Amber blade

Horizon 2

Trench 1 (1982)

A second surface of the ramparts—black, coaly earth—became pronounced (Figure 36) at a depth of 0.7 m - 0.8 m (about 7.5 m in absolute height), in the middle of the trench, under a layer of grey sand, which had been poured before the surface of Horizon 1 had formed. Only the actual surface of the examined layer was simple; deeper down the layer had a scattered structure and was clearly poured. Small layers of sand were interspersed into the dark earth. At the northern part of the trench, this surface was horizontal, beginning nearly immediately under the paving of Horizon 1. Meanwhile, at the southern end, the earthpile of the rampart was mixed. There were many pieces of ceramics and

animals bones in the layer; however, almost all the finds were in the disturbed layer (cf. Nos. G - 254 - G - 286 and G - 316). At the northern part of the trench, the layer was nearly horizontal and had a thickness reaching up to 40 cm. The bottom of this layer was found at a depth of 1.2 m - 1.25 m. The bottom of the layer of **Horizon 2** lay on a surface of poured, white sand.

Finds

G - 254 - G - 282. Ceramics

G - 283 - G - 285. Iron rivets

G - 286. Fragment of a small iron plate (?)

G - 287 - G - 314. Ceramics

G - 315. Blade of a small knife with traces of wood casings

Research Area VII (rampart)

At a depth of merely 0.8 m - 0.9 m, in the central part of the research area, under the upper surface of the rampart (here it was elevated at its highest) and a small, 10 cm - 15 cm thick layer of grey sand, a dark surface with a pronounced incline towards the north outcropped. At the northern edge of this surface, at a depth of 1.3 m - 1.4 m, a darker stain with soot and charcoal was found. Its contours were not distinct, and its shape was oval, sized 0.5 m x 0.6 m. It is possible that this was the traces of a disturbed hearth, which had not been sunk into the sand (**Defense Erection No. 2**). A decayed bone, fragment of a brass ring with a flared middle and some ceramics, most made on a rotating wheel, lay in the hearth. This surface of the rampart was not horizontal; it descended southward then elevated again. The thickness of horizon's surface was not equal everywhere, ranging from 10 cm and thinning to 2 cm - 3 cm in certain places.

Grey earth mixed with sand lay everywhere beneath the surface of **Horizon 2**. There, especially at the northern edge of the research area, there was a happenstance of darker stains—those were clearly small, earthpile layers (Figure 29). Ceramics made on a rotating wheel, decomposed iron rivets and iron artifacts were in the earthpile (see: Finds of Horizon 3).

Research Area VIII (rampart)

In the course of shaving the rampart's surface layer of brownish earth, there were found small shards of ceramic pots made on a rotating wheel and charred stones. Throughout nearly the entire research area, the upper layers of the rampart had been disturbed during the most recent reconstructions, blown through by the wind and mixed. Horizon 2 was not differentiated.

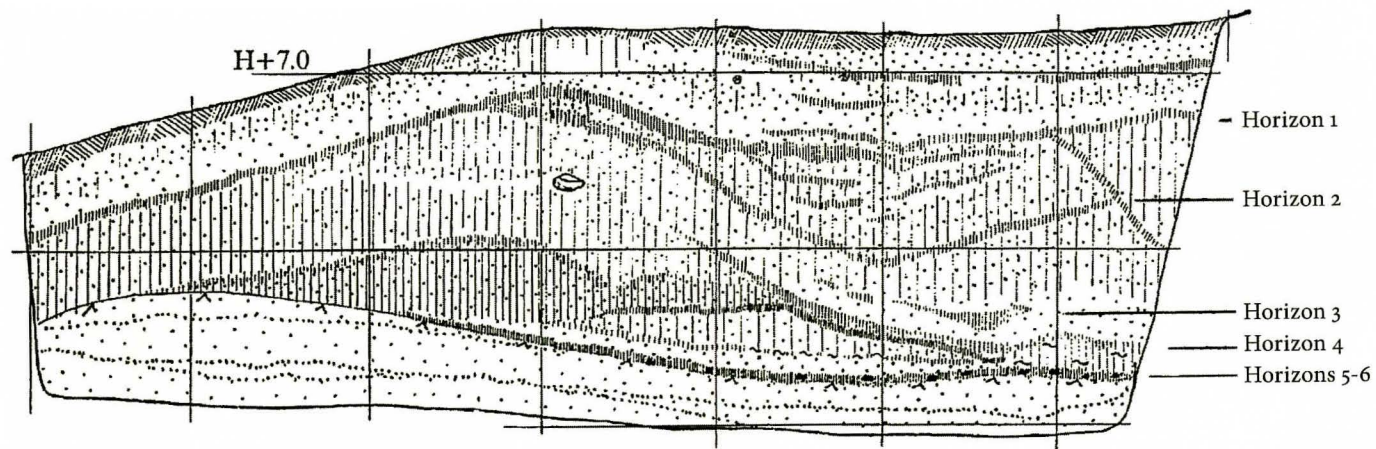


Figure 29. Settlement at the foot of Birutė Hill—horizons in the cultural layer of the defense rampart, cross-section of the western boundary of Research Area VII

Research Area XI

The layer of Horizon 2 outcropped at different depths. In the northwestern corner of the research area, this surface was found at a depth of 1.7 m (5.3 m in absolute height). In the western corner, it was in a depth of 0.95 m (6.05 m in absolute height); whereas, in the southern corner, it was in a depth of 1.35 m. The layer descended towards the north, south and east. Grey earth mixed with sparse and fine charcoal bits marked this layer. Deeper down, however, charcoal, clay patches and burnt through clay appeared. Horizon 2 marked the surface of a former rampart (Figure 35).

Horizon 3

Trench 1 (1982)

At the surface which, at the northern part of the trench, had a height of about 7.1 m above sea level, a stain of a hearth was found. This stain, having a diameter of 0.6 m, was towards the middle of the trench, at a depth of 1.2 m (Figure 2). The hearth had been sunk up to 28 cm into grey sand. Its walls were vertical, and its base was oval. In the filling of the hearth, there were ceramics and small bones in addition to fine charcoal bits (Nos. G-287 - G - 215 and G - 317 - G - 357). The deposit of sand reached a thickness of 0.75 m in the northern part and covered an older layer of Horizon 5. The surface of the horizon did not become pronounced at all at its southern terminal—there was no poured sand here and, at a height of about 7 m in absolute height, the layer merged and mixed with other layers. The surface of the rampart, during the time Horizon 3 existed at this locale, was almost horizontal.

Finds

G-317 - G - 350. Ceramics

G-351. Head of an iron rivet

Hearth

G-352 - G - 357. Ceramics

Research Area VII

The distinct surface of a brownish earth layer outcropped at a depth of 1.5 m - 1.6 m (5.9 m - 6.2 m. in absolute height), in the northern part of the research area. The thickness of this layer reached 5 cm - 10 cm. A stake hole, which extended from this surface, was noticed at the northern boundary of the research area. A surface, clearly descending north, was noticed at the northern edge of the

research area, in the central part that is considered the continuation of a layer, which had been found, at a depth of 1 m - 1.5 m (5.8 m in absolute height). In the middle of the trench, it was elevated the most, rising up to 6.5 m in absolute height. Meanwhile, on the southern side, this surface merged with a layer of Horizon 2, which was descending in this direction. The sand and brownish earth under these layers had undoubtedly been poured.

Finds

- 42 - 50. Ceramics made on a rotating wheel and shaped by hand
- 51. A brass rod bent into a coil (raw material), weighing 19.66 g
- 52. Iron hook
- 53. Iron rivet

Research Area VIII (rampart)

Only the layers of an earthpile of black earth and sand with charcoal pieces could be ascribed to Horizons 3 and 4. These lay in the supplementary trench, towards the east of the research area, at a depth of 0.7 m - 1.2 m (about 5.5 m - 6 m in absolute height). The layers in the central part of the research area were very mixed. Already by the middle of the research area and further south, all these layers had elevated to the present surface and been blown away. The surviving surface in the northern part descended sharply to the north, at an angle of some 60°. The layer was up to 20 cm thick, and sand lay beneath it. Isolated ceramics pieces were found in the earthpile.

Horizons 3 A - 4

Research Area VII

A rather distinct surface of brown earth lay in the central part of this research area, at a depth of about 1.5 m (5.9 m - 6.1 m in absolute height). It declined towards the southern side, repeating the incline of the external surface of the rampart's slope (Figure 29). The layer also had a distinct incline in a northerly direction. Clay was found in the brown earth, at the northern edge of the research area. Its surface lay at a depth of 1.8 m - 2 m (about 5.6 m in absolute height). The surface of this layer marked something like some sort of a small, primary rampart. Among the other finds on this surface, there were also fragments of a ceramics pot made on a rotating wheel (No. 54 [1 - 7]). Other shards of this same pot were also found in the lower part of this rampart's earthpile.

Finds

54 - 56. Ceramics made on a rotating wheel

57. Preformation of an amber artifact (?)

58. Preformation of an amber pendant

Horizon 5

Trench 1 (1982)

Under a poured layer of leveled sand at the northern edge of the trench, at a depth of about 1.9 m (6.4 m in absolute height), a very distinct black surface appeared, which consisted of charred wood particles, clay and decayed wood. In the course of preparing this layer, it was established that it is 10 cm - 15 cm thick. The surface of the layer was horizontal in a southward direction. Meanwhile, from the middle of the trench, it rose upwards and, at a height of about 6.8 m in absolute height, it disappeared—at that point, the layers were mixed.

Finds

G-358 - 365. Ceramics

Research Area VII (Horizons 5 - 6)

A small layer of dark brown earth with charcoal bits outcropped under the earthpile soil at the southern end of the research area, at a depth of 1 m (5.7 m in absolute height) and, at the northern end, about 2 m in depth, some 5.8 m above sea level. The surface of this small layer descended in northerly and southerly directions. This surface, only 5 cm in thickness, was more pronounced in the northern part of the research area. The bottom of the layer lay on sand that was already sterile, brownish and ringed. This sand marked the primary surface (Figure 29). While shaving the layer, there were found very fine fragments of ceramics made on a rotating wheel and pots shaped by hand.

Research Area VIII

A surface of cracked and charred stones was uncovered in the western side of the main research area, at a depth of 0.9 m - 1.0 m. Elsewhere this layer had been disturbed by the most recent repairs of the rampart. A hearth, sized 0.7 m x 0.6 m, which had not been sunk into the soil, was found among the burnt through stones, almost in the middle of the research area (Figure 30). Small charcoal pieces and ashes—the remains of the former erection—lay alongside the hearth. Natural and split stones lay one next to the other, over a 2.5 m - 3.0 m wide partition, stretching in a direction from west to east. On the southern edge of the partition, at the highest point of the rampart, a row of five postholes outcropped, oriented

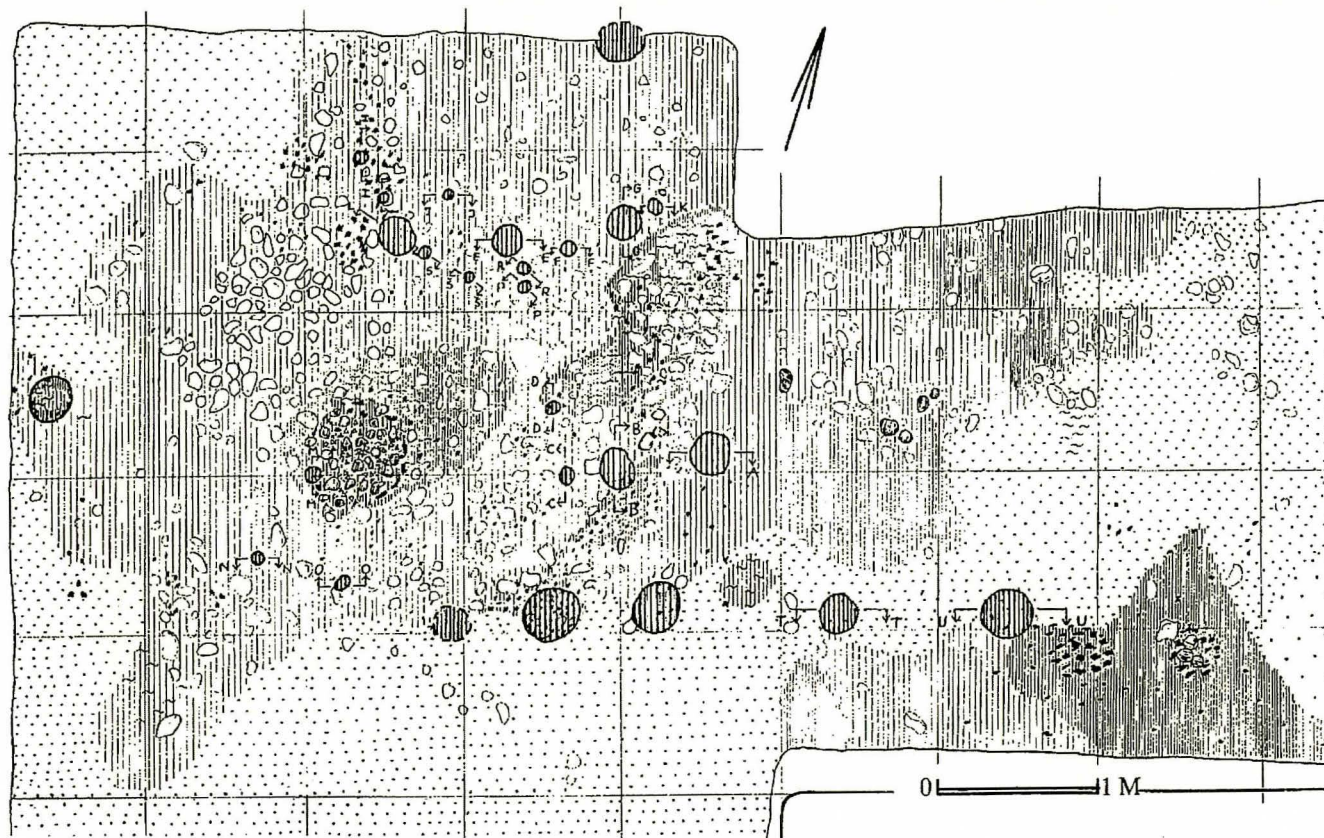


Figure 30. Rampart of the settlement at the foot of Birutė Hill—remains of Defense Erection No. 3 in Horizon 5

in a westerly to easterly direction. The postholes were circular or oval, with diameters from 20 cm - 35 cm and one as many as 40 cm. Some had been sunk into the ground by more than 30 cm whereas others—only up to 10 cm. The intervals between the postholes were disproportionate, ranging from 35 cm to 85 cm. Two small stake holes were discovered, over 0.6 m west of this row of posts. Another row of postholes and stake holes, parallel to the first one, was located, over 2.0 m - 2.2 m to the north. It contained three postholes, 18 cm - 24 cm in diameter, sunk in the ground by up to 20 cm and, between them and alongside, stake holes of 10 cm - 12 cm in diameter. Between these two parallel rows of postholes, there were two more postholes, 24 cm and 30 cm in diameter, with a distance of over 0.4 m between them. Yet a third row with four postholes, perpendicular to these parallel rows of posts, became pronounced. Only one surviving, large posthole and darker stains of charcoal marked the western edge of the former erection. Chunks of charcoal, traces of a large burnt up beam and stains of black earth with charcoal and ashes lay at the northern edge of the research area.

The postholes, traces of paving and marks of a burnt up tree would indicate that an erection, 4.0 m - 3.8 m in length (in a west to east direction) and 2.7 m - 2.5 m in width, had stood on the rampart. From here a row of large posts stretched towards the east. There was a clay floor in this structure and a hearth in its center. Within the boundaries of this **Defense Erection No. 3**, (Figure 31) two pieces of the same person's skull were found under the stones in different places. Burnt through small stones with charcoal lay in a layer, with a thickness of up to 10 cm.

Finds within the boundaries of Erection No. 3

- 84 – 95. Ceramics made on a rotating wheel, shaped by hand and miniature
- 96 and 97. Iron rivets
- 98 and 99. Iron nails
- 100. Fragment of a slate whetstone
- 101. Fragment of the left side of a human skull, which could have belonged to an individual, 20-30 years in age, of an indeterminate gender
- 102. Amber flake

Research Area XI

There are two postholes, one next to the other, 16 cm and 20 cm in diameter, which were sunk by 10 cm and 12 cm. These could be related to the fortifications found in Research Area VIII. These became pronounced in the grey earth, over 1 m south of the oven hearth located in **Structure No. 20**.

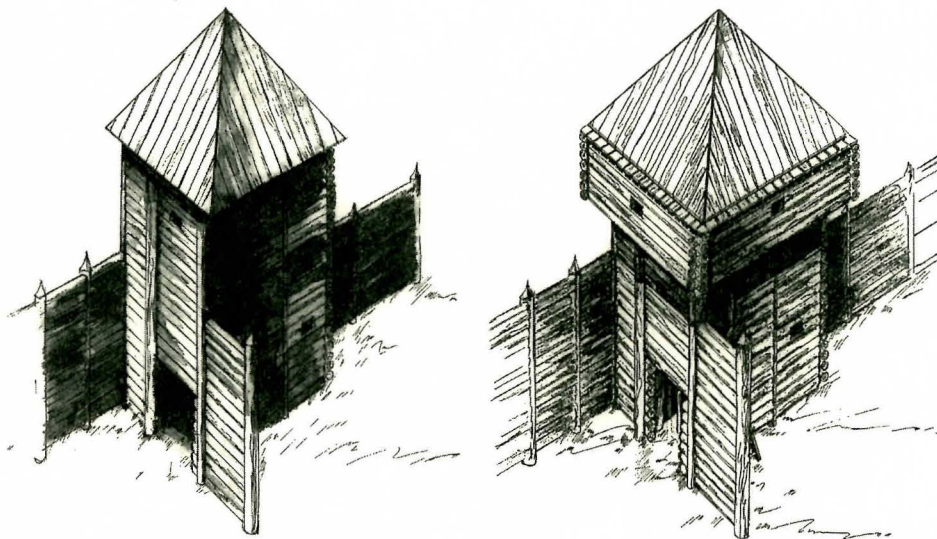


Figure 31. Tower of defense fortifications in the settlement at the foot of Birutė Hill (hypothetical reconstructions)



Figure 32. Site of the settlement at the foot of Birutė Hill from the western side

Horizon 6

Trench 1 (1982)

Only fine, charred particles of wood marked the oldest, barely distinct Cultural Layer 6, which formed on the primary surface of the ground. This flat surface, with traces of Horizon 6, was unearthed at a depth of 2.5 m - 2.6 m (5.7 m - 5.9 m in absolute height).

Research Area VIII

A layer of sand mixed with grey earth, up to 30 cm in thickness, lay under a layer of Horizon 5 and the remains of the erection. Deeper down, throughout the entire research area, there was clean sand with thin darker strips. The deposit of clean sand under the cultural layer was 0.3 m - 1.4 m in thickness. The surface was found within it, at a depth of 1.6 m - 2.4 m, marked by sparse charcoal pieces.

In the central part of the research area and the supplementary trench towards the east, a barely distinct, somewhat darker surface was found, at a depth of 2.2 m - 2.4 m (4.5 m - 4.7 m in absolute height), under the sand. The surface contained sparse small stones and pot fragments and fine bones, which constituted the primary surface. It noticeably descended southward, by up to 2.8 m in absolute height; afterwards it leveled out and ascended again, by up to 4.2 m in absolute height.

Finds

103 and 104. Ceramics made on a rotating wheel and shaped by hand.

LAYERS OF THE SETTLEMENT

Horizon 1 (Figure 36)

Research Area IX

The surface horizon of the cultural layer in this research area is ascribed to the development of Horizon 2 (Figure 33).

Research Area X

A surface of the cultural layer appeared, at a depth of 1.5 m - 1.6 m and some 5.1 m - 5.5 m in absolute height. Light grey earth with sand lay at the southwestern corner of this research area. Meanwhile, along the eastern edge and in the northeastern part, the layer was darker (Figure 34). There were burnt through

small stones and animal bones, ceramics made on a rotating wheel as well as a happenstance of clay patches. There were no particularly obvious traces of development noticed.

Research Area XI

In the middle of the research area, at a depth of 1.5 m, the first find was discovered—a silver ingot in the shape of a stick (No. 357). Nonetheless, there was no cultural layer. Horizon I was at a depth of 1.8 m - 1.9 m (Figure 35). In the middle of a supplementary trench, there was a clay ridge, about 2 m in diameter, which constituted the remains of **Structure No. 18** (Figure 37). The ridge had the form of a flat hemisphere, about 2.1 m - 2.2 m in diameter, elevated about 25 cm above the surface of brownish earth mixed with charcoal. Charred and burnt through stones, from 10 cm x 10 cm to 23 cm x 20 cm in size, protruded from its edges, forming an irregular circle, with a diameter of about 1.4 m. A small layer of ashes and a surface, 1.1 m in diameter, of burnt through clay—an oven hearth—were found under a layer of clay, 4 cm - 15 cm in thickness. Along its edges the border edging, of up to 6 cm in height, had survived; it broke off at the western side. The marks of the construction of oven lining—small clay cylinders—had survived on the eastern edge. Traces of the three such small cylinders were distinguished—their cross-sections were in the form of an egg. The oven had been shaped by hand and coil-built by placing the small cylinders one atop another on the wider side. The cross-sections of the small cylinders were 7 cm x 3 cm, 8 cm x 5 cm and 8 cm x 7 cm.

Ashes lay in a layer, 3 cm - 5 cm in thickness, under the oven hearth at the western edge. On the southwestern edge, however, large pieces of charcoal were found where there were no stones. Stones laying in a perimeter outcropped under the ashes; inside these formed a circle, about 1.2 m in diameter. Still deeper, under grey sand, a fire place outcropped, the contour of which approximately corresponded to the circle of stones. The fire place was oval, 2.5 m x 1.45 m in size, elongated in a northwest and southeast direction. A small ditch, up to 18 cm - 20 cm by width and about 10 cm by depth, delineated the edges of the fire place. This ditch contained one or another burnt through stone. The fire place also contained one or another burnt through stone and burnt through clay in addition to charcoal and ashes. An ornamented sandstone spindle and a small whetstone were found on its southeastern edge, alongside the small ditch. There were no ceramics in the fire place.

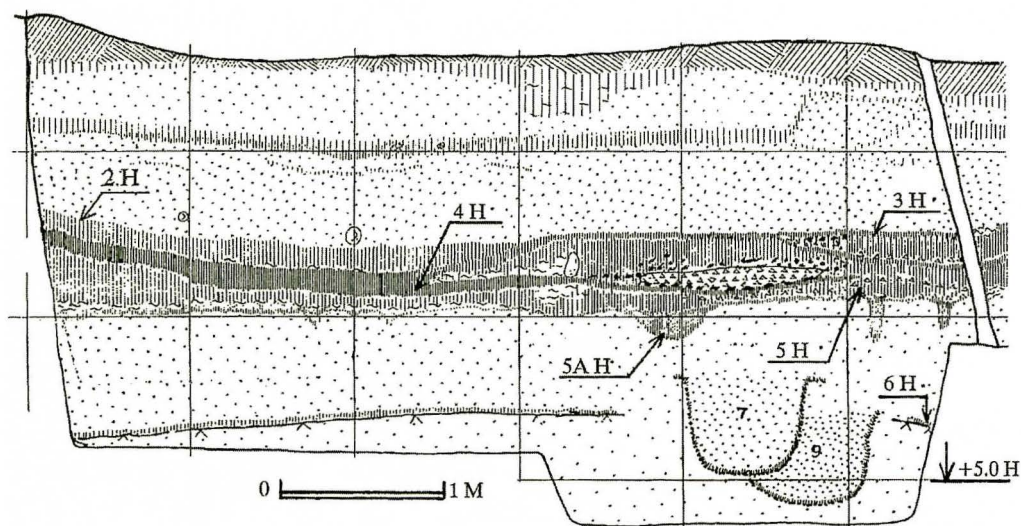


Figure 33. Cultural layers of the settlement at the foot of Birutė Hill in Research Area X —remains of Structure BK-12 in Horizon 4 (4H)

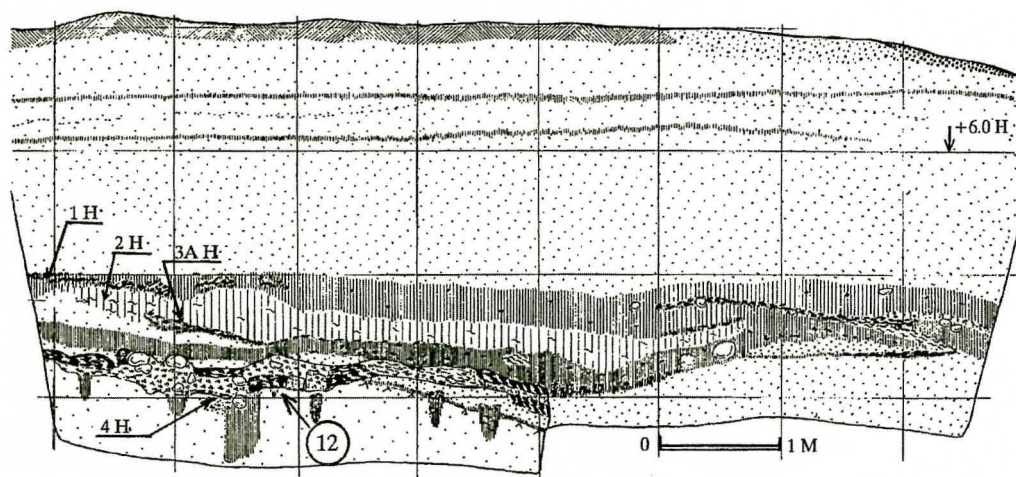


Figure 34. Horizons (H) in the cultural layer of the settlement at the foot of Birutė Hill at the eastern boundary of Research Area IX

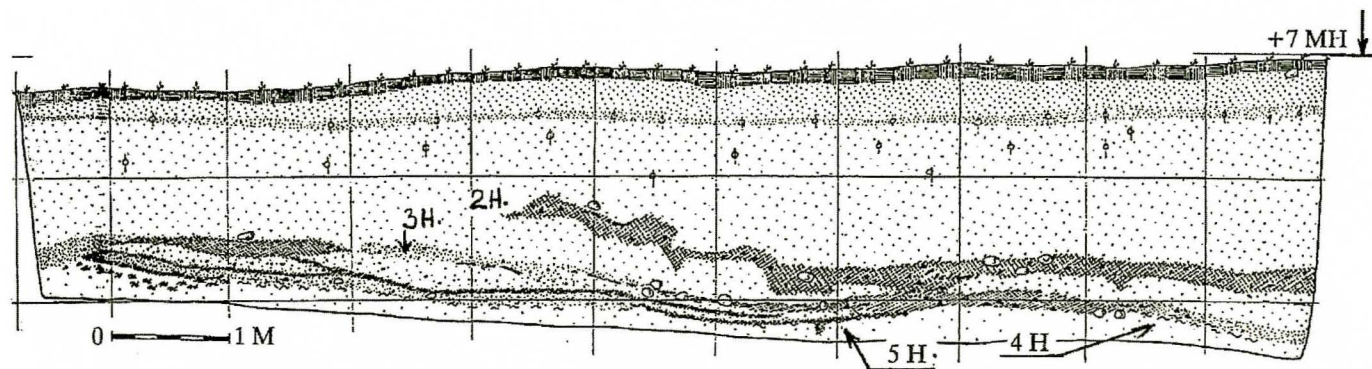


Figure 35. Horizons (H) in the cultural layer of the settlement at the foot of Birutė Hill at the western edge of Research Area XI

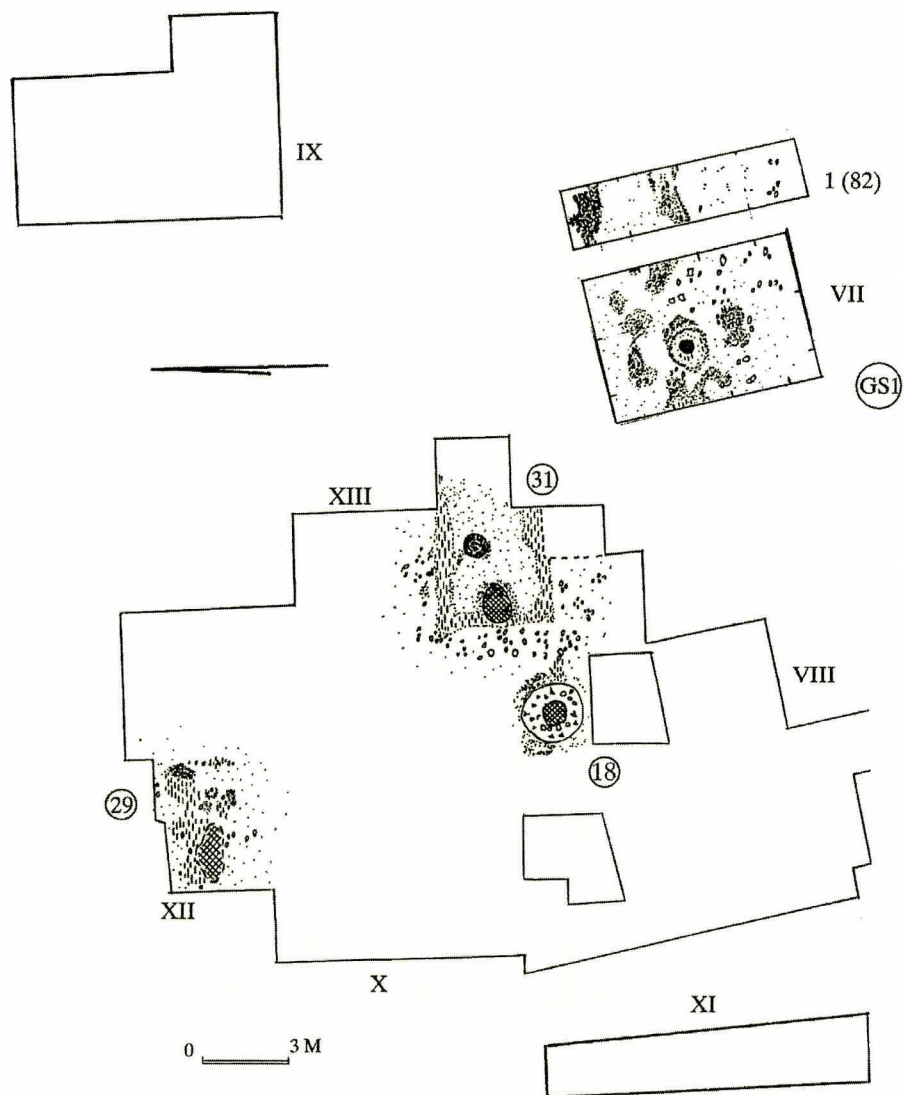


Figure 36. Remains of the development in the cultural layer of the settlement at the foot of Birutė Hill in Horizon 1. Legend: 1(82), VII – numbers of trenches and research areas; 18 – numbers of structures

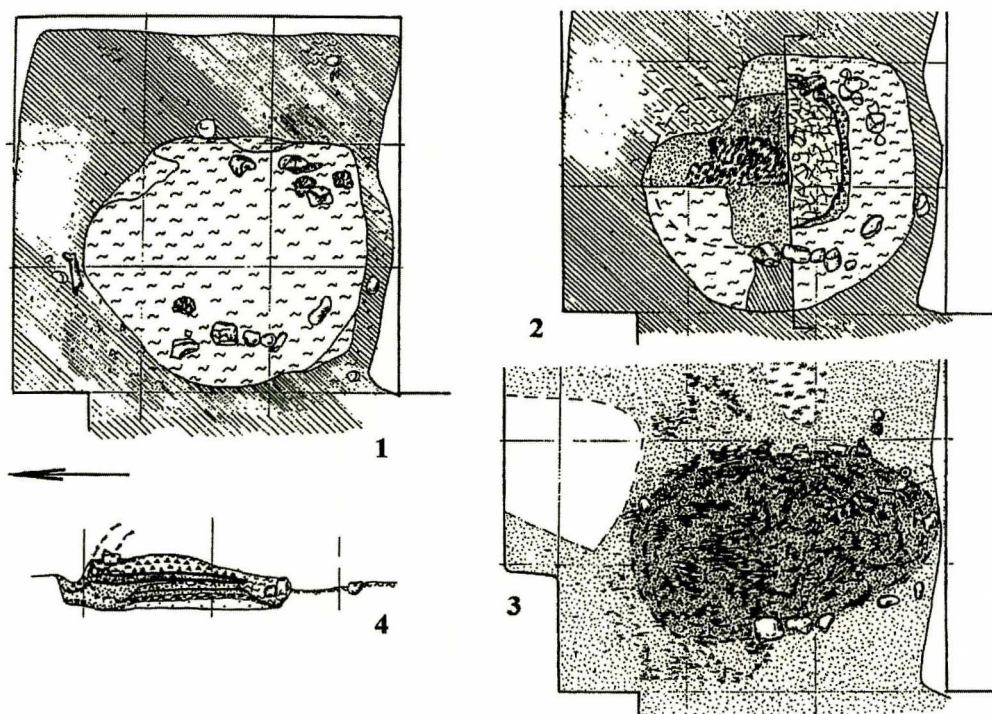


Figure 37. Layouts of a cupolaed clay oven in Structure No. 18 at different depths

- | | |
|------------------------------|-----------------------------|
| 1. surface of the oven | 2. an oven hearth |
| 3. a fire place under a oven | 4. cross-section of an oven |

Finds

357. Silver ingot in the shape of a stick with five slashes, weighing 114 g

Finds around the oven remains

358 - 363. Ceramics made on a rotating wheel, shaped by hand and miniature

364. Fragment of a sandstone spindle

365. Whetstone made of grayish rock

366 - 369. Fragments of charred bones

370 - 371. Fragments of the lining from a clay oven

Research Area XII

The surfaces of Horizon 1 were discovered beneath layers of wind blown sand, at a depth of 1.6 m - 2.2 m (4.45 m - 4.95 m in absolute height). Patches of packed

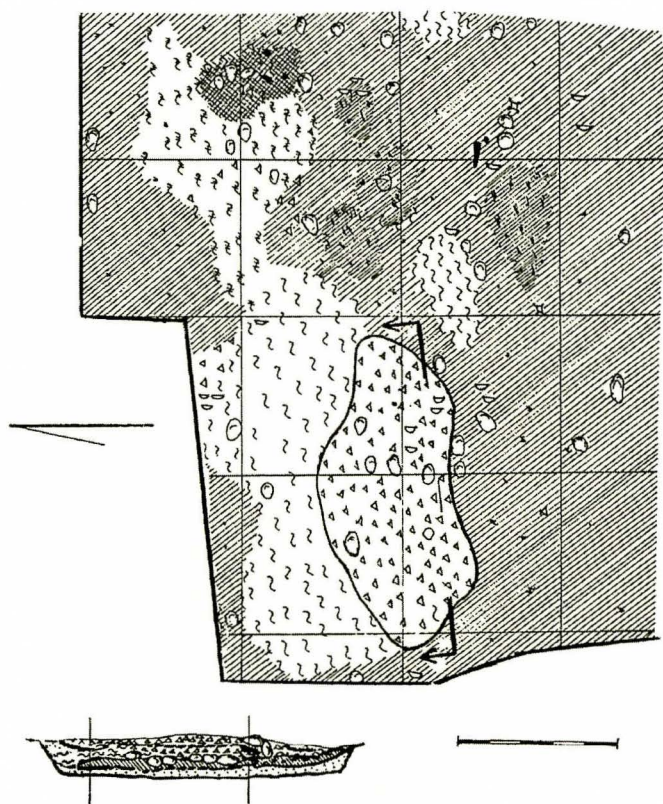


Figure 38. Layout of Birutė Hill's Structure BK-29 and a cross-section of an oven hearth

clay marked the cultural layer in the central part of the research area. On the southeastern side of the research area, there were nearly indistinct stains with sparse charcoal bits in grey earth. The remains of **Structure No. 29** and its disturbed clay oven were found on the western edge of the research area (Figure 38). This was a small research area, 1.8 m x 0.9 m in size, of burnt through clay and charred stones. The layer reached 20 cm in thickness.

Finds

Structure No. 29

458 - 460. Ceramics made on a rotating wheel and shaped by hand

Research Area XIII

Here, at a depth of 1 m - 1.5 m, there was a happenchance of some separate, small burnt through stones, crumbs of burnt through clay and bits of charcoal; still deeper there were also small areas of clay. Clay partitions, some 0.5 m in width, were unearthed across this research area, which were oriented in an easterly - westerly direction; the space between them was about 2.6 m. A clay partition, which enjoined the first two partitions, was found across the western side. The width of the small area, bordering the clay partitions, was about 4 m. The clay ridges marked the layout of **Structure No. 31** (Figure 39). There was no clay partition in the supplementary trench on the eastern side and, on the sides, the clay ridges broke off, over 4.5 m from the western terminal of the structure. There was only dark earth, bits of charcoal and small burnt through stones at the location of the eastern border. A small, oval research area of charred clay and clay crumbs, about 1.3 m x 1.1 m in size, lay along the middle of the structure, partly on the terminal of the western border. These were the remains of an oven hearth. This hearth was 1.2 m x 1.0 m in size, and the thickness of the burnt through clay reached 5 cm. Sand and ashes lay beneath the hearth and, on the western side, there were also charcoal bits. Over 0.8 m east from the oven, there was a small area of clay, about 0.8 m in size, with charcoal and ashes, seemingly the remains of an open hearth.

There were many loosely scattered, burnt through stones, up to 15 cm x 15 cm x 15 cm in size, on both sides and outside of the structure. These lay more densely, where they were closer to the clay partitions that marked the structure. Darker stains of soot and ashes were distinguished in grey sand—quite many fragments of pots were discovered here, lying in scattered deposits, along with fine pieces of amber and a few small stone weights (Nos. 521 - 531).

Finds

Structure No. 31

493 - 520. Ceramics made on a rotating wheel and shaped by hand

521. A treated stone

522 - 525. Stone weights

526 - 529. Pieces of natural amber

530. Fragment of a finished or semi-finished amber artifact

531. Fragment of Iron nail (?)

Structure No. 32

532 - 546. Ceramics made on a rotating wheel and shaped by hand

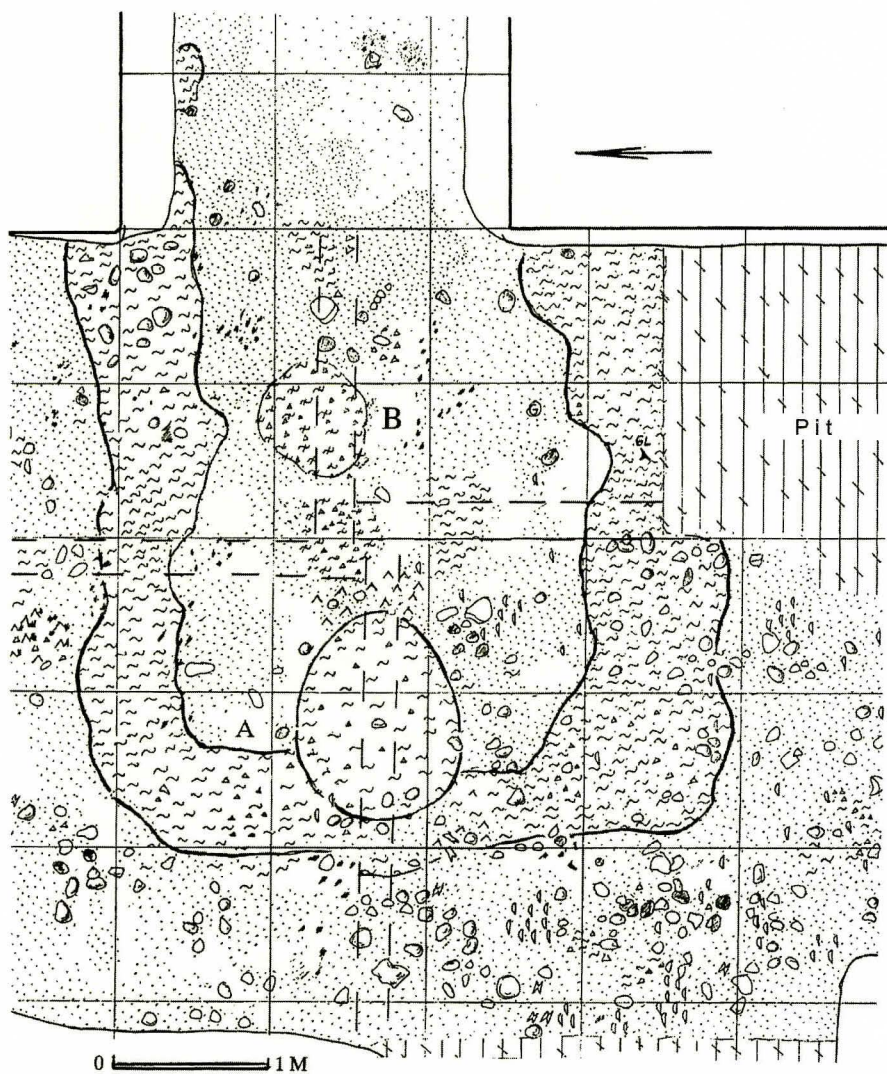


Figure 39. Layout of the remains of Birutė Hill's Structure BK-31 in Horizon 1. A – hearth of a cupolaed oven; B – hearth

- 547. Blade of a small knife with a bent back
- 548. Flint flake
- 549. Iron rivet
- 550. Iron nail

Horizon 2 (Figure 40)

Research Area IX

The surface of Horizon 2 - 3 became distinguishable under wind blown sand and surface layers of humus. At a depth of 1.25 m - 1.5 m, traces of **Structure No. 1** appeared (Figure 41). Darker stains, which comprised partitions that headed in a west - east direction, became distinguishable in the northern and southern parts of the research area. There were charcoal bits, clay patches and burnt through clay crumbs in small areas of brown earth. Here were many stones; some were burnt through. Stains of brownish earth stretched in a 1.0 m - 1.5 m wide partition. A bright red partition of burnt through clay, surrounded by bits of charcoal, appeared at the eastern edge of the research area. A lot of black earth, 0.1 m - 0.5 m wide, marked the location of the southern wall of the former structure. The southeastern corner of this structure was tracked by stains of brown earth with charcoal and stones. It was more difficult to track the location of the structure's western wall. A stain of Structure No. 1 was within the research area. Its size was 5.2 m - 5.4 m, directed north - south, and about 5.0 m - 5.3 m directed west - east. An oven hearth of an irregular form was found, over 1.0 m - 1.2 m from the boundary of the eastern wall. Its size was 0.9 m x 0.9 m. The surface on its top, which had been painstakingly glazed and charred, had partially survived. That hearth was towards the center of the structure. Its thickness appeared to reach up to 15 cm after cutting through the clay mass. There were some random small stones in the clay that was thoroughly burnt through. A fire place outcropped beneath the hearth of the oven. It was 1.4 m x 1.3 m in size and sunk into the sand by up to 20 cm. Large pieces of charcoal lay in the middle of the fire place whereas, at the edges, there were ashes and crumbs of burnt through clay. No artifacts were found in the fire place.

On the southern edge of the research area, which had been closer to a rampart, the surface of the layer noticeably elevated in a southeastern direction. Many small stones (5 cm x 5 cm and 10 cm x 20 cm), including burnt through ones, lay on the surface of the horizon.

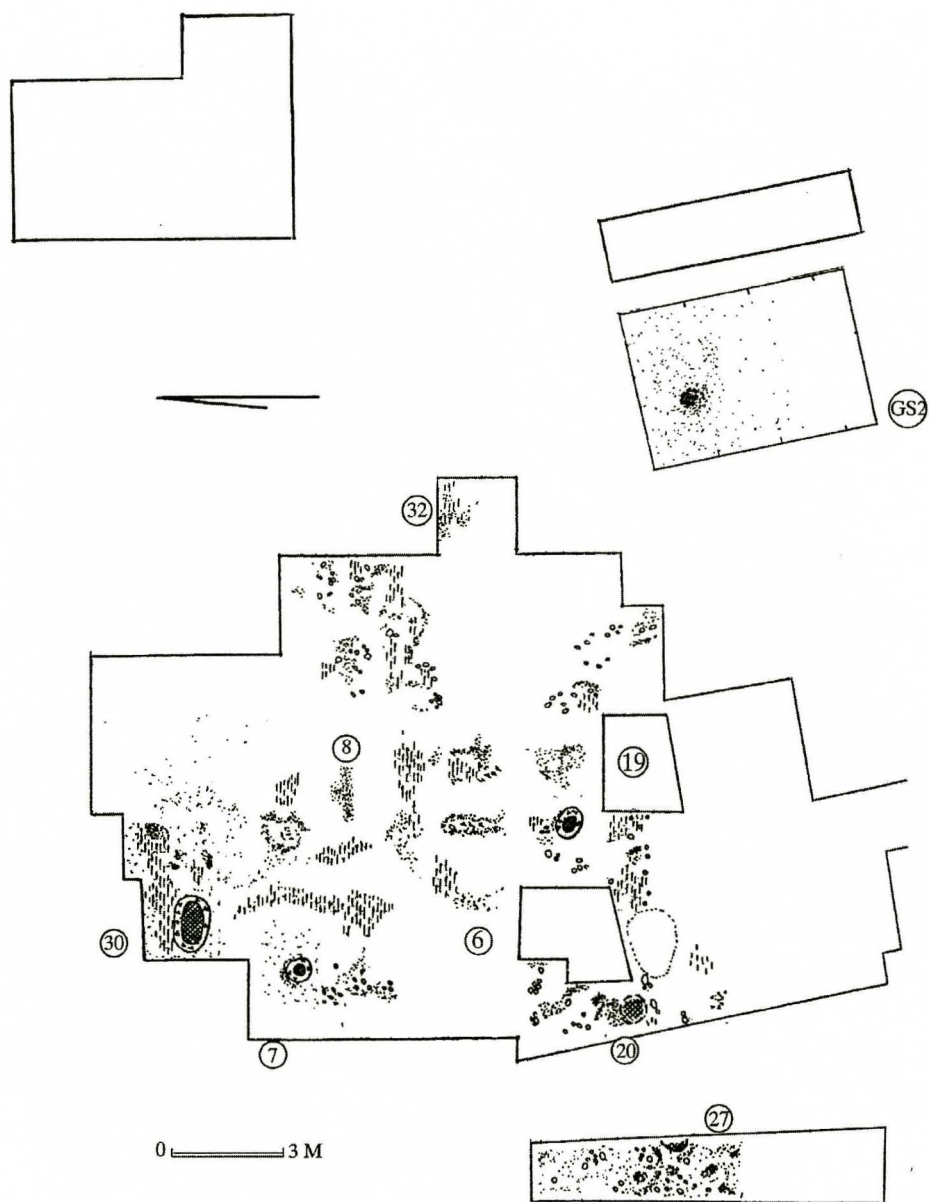


Figure 40. Remains of the development in the cultural layer of the settlement at the foot of Birutė Hill in Horizon 2

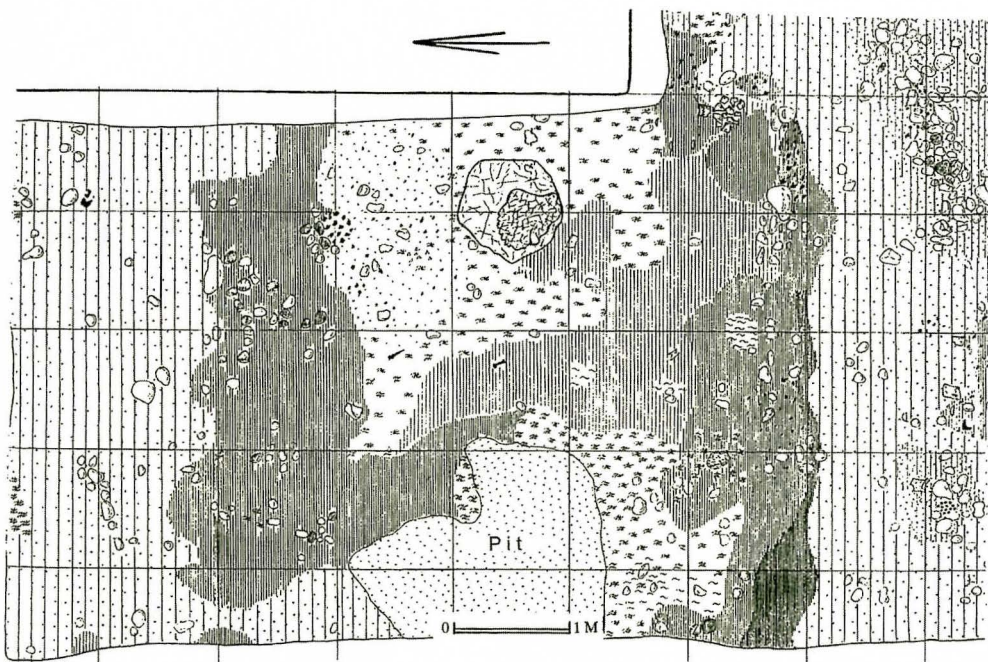


Figure 41. Layout of Birutė Hill's Structure BK-1 in Horizons 2 and 3

Finds

Structure No. 1

- 105. Pot made on a rotating wheel (restored)
- 106. Stone weight
- 107. Iron rivet

Finds by Structure No. 1

- 109 - 112. Ceramics made on a rotating wheel and miniature
- 113. Fragment of a cylindrical clay weight
- 114. Stone weight
- 115. Sandstone whetstone
- 116. Slate whetstone
- 117 (1 - 7). A "hoard" of amber—seven small pieces of natural amber

Research Area X

The top of the cultural layer was discovered in the southern part of the research area, ascribed to Horizon 2, at a depth of 1.8 m - 2.3 m (5.0 m - 4.3 m in absolute

height). The remains of Structure No. 6 became pronounced immediately at the surface of the layer—a clay strip, 0.4 m - 0.8 m in width, stretched from east to west (Figure 42). Only one corner of this structure was found in this research area. Grey earth with ashes and fine charcoal bits lay on both sides of the clay. Most of the ashes were found alongside the corner of this former building. A partition of charred, packed clay with ashes and charcoal bits, some 0.6 m in width, oriented in a north - south direction, outcropped 2 m beyond the traces of this structure's western wall. These were the traces of the former cross-wall of the structure. In the most southeastern corner of this research area, there was a rectangular stain, about 1.5 m x 1.5 m in size, of black earth with soot and charcoal pieces, ashes and crumbs of burnt through clay, probably constituting the stain of a hearth (?). It lay over 1 m from the partition, which marked the northern wall of this structure. In consideration of the remains that had been uncovered, **Structure No. 6** could have contained two accommodation facilities.

In the northwestern part of the research area, a stain of brown earth with charcoal bits, up to 2.5 m in size, became pronounced against a background of grey sand. It was oriented in an easterly - westerly direction. Small field stones lay in the partition of brown earth. Among these stones there were burnt through stones, as though they were the traces of some sort of paving. From this point a partition, comprised of burnt through clay crumbs and charcoal bits, some 0.5 m in width, ran northward at a perpendicular angle (Figure 43). This constituted the traces of **Structure No. 7**. Approximately 1.5 m beyond the middle of the partition of this structure's eastern wall and 2 m beyond the middle of the former southern wall, an oven hearth of packed clay, 0.8 m x 0.75 m in size, was discovered. It stretched in a westerly - easterly direction. The clay at its edges was burnt through and crumbled. Meanwhile, in the center, a nearly perfect, circular surface of slipped and charred clay, having a diameter of some 0.4 m, was found. A small, 2 cm - 3 cm high cylinder encircled the central part of the northern side of this hearth. Darker earth with bits of charcoal lay around the clay hearth. In the process of making a cross-section, it was established that the hearth had been packed to a thickness that reached 15 cm. The small, 2 cm - 3 cm layer in the central part was considerably burnt through. A fire place, sized 1 m x 0.9 m, was found under the mass of packed clay. It had been installed in a shallow pit, at a depth of up to 12 cm. A small layer of charcoal, 1 cm - 3 cm in thickness, had formed in the base of this pit. There were no artifacts in the fire place. Clean sand lay under it; a tiny piece of raw amber was found in it.

In the central part of the research area, closer to its eastern edge, there were also stains that marked the locale of **Structure No. 8** (Figure 40). A stain that

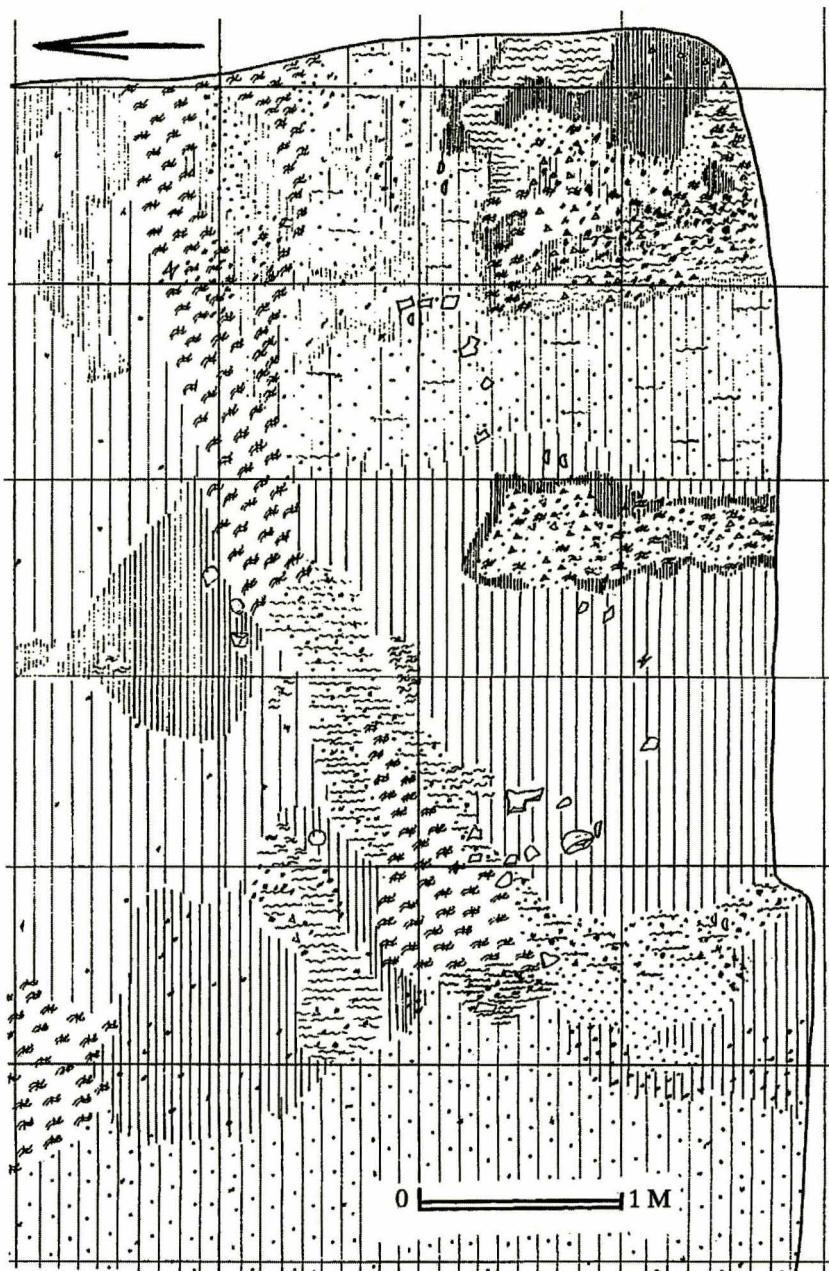


Figure 42. Partial layout of Birutė Hill's Structure BK-6 in Horizon 2

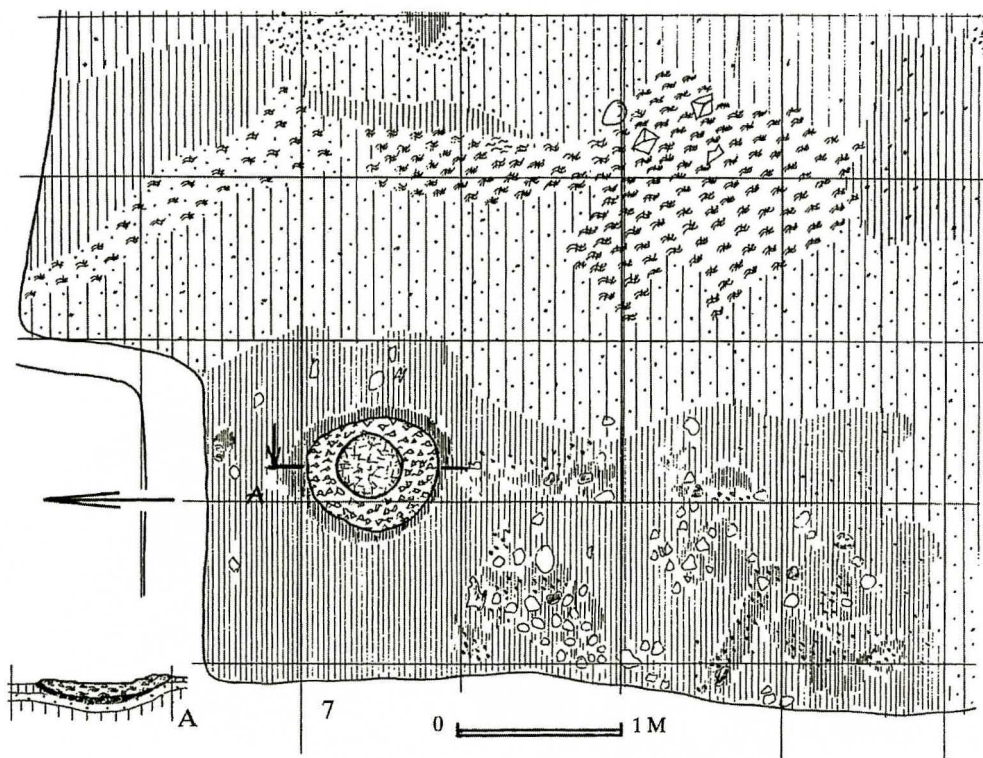


Figure 43. Remains of Birutė Hill's Structure BK-7 in Horizon 2

marked the western wall, consisting of burnt through clay patches and bits of charcoal, was 1 m beyond the location of the eastern wall of Structure No. 7. A 1 m wide partition of dark grey earth could have marked the southern edge of Structure No. 8. At the northern edge of this partition, over 1 m from the presumed western wall, there lay a small, oval area of burnt through clay, 1.25 m x 0.85 m in size, oriented in an easterly - westerly direction. Strangely enough, there no finds were found in the stain of Structure No. 8.

Finds

Structure No. 6

177 - 179. Ceramics made on a rotating wheel

180. A brass penannular brooch with rolled ends

181 - 185. Iron nails

Finds by Structure No. 6

186 - 187. Miniature ceramics made on a rotating wheel and shaped by hand

Structure No. 7

188 - 189. Ceramics made on a rotating wheel

190. A brass penannular brooch with an animal head

191. Iron rivet

Research Area XI

A layer of Horizon 2 alongside Research Area VIII was entirely disturbed. The layer found at the southeastern edge of this research area lay, at a depth of 1.65 m - 2.0 m (about 5.2 m in absolute height). Traces of Structure No. 19 were found in this part of the research area. Initially there appeared an oval oven hearth, made of packed clay. Its size was 1.0 m x 0.95 m, and its orientation was in a westerly - easterly direction (Figure 40). Its central part, sized 0.75 m x 0.65 m, was slipped and burnt through; it became distinguishable at the top of this hearth. A ridge of packed clay in the cross-section had a thickness of up to 8 cm. There were no traces of a fire place underneath the clay hearth. Clay, stones and dark earth with charcoal bits lay, over 0.7 m south of the oven, in an approximately 1.3 m wide partition. This partition was oriented from east to west. Apparently, it constituted the traces of the southern wall of **Structure No. 19**.

The layer in the western part of the research area was brighter. Remains of a disturbed clay oven were uncovered in a separate stain of black earth with charcoal pieces. The size of the oven hearth could only be established after making a cross-section—its diameter was approximately 1 m. Further, under the clay, traces of a fire place became distinguishable. These were the remains of **Structure No. 20** (Figure 40).

Finds

Structure No. 19

372 - 374. Ceramics made on a rotating wheel and shaped by hand

375 - 378. Clay weights of a loom for weaving and their fragments

Around the oven of Structure No. 20

379 - 381. Ceramics made on a rotating wheel and shaped by hand

382 (1 and 2). Fragments of a sandstone whetstone

383. Limestone whetstone

384. Stone weight

- 385. Amber with signs of processing
- 386. Fragment of a large animal bone

Research Area XI western part

Horizon 2 was at the surface. The layer lay at a depth of 1 m - 1.7 m and descended in a northerly direction. The layer was disturbed in certain areas (Figure 35). Stains with charcoal, with clay and with small stones became distinguished in the brownish earth. The crumbs of burnt through clay of the oven hearth from **Structure No. 27** lay along the eastern boundary of this research area (Figure 40).

Finds

- 435 - 442. Ceramics shaped by hand
- 443. Fragment of a brass band bracelet
- 444. Fragment of a small brass plate
- 445. Iron nail
- 446. Natural amber piece
- 447. An animal tooth

Research Area XII

A surface ascribed to Horizon 2 outcropped, at a depth of 1.9 m - 2.35 m (4.6 m - 4.2 m in absolute height). There were animal bones and ceramics at the surface of grey earth with sand. An oven hearth of packed clay from **Structure No. 30** was found by the western boundary, nearly at the same location where the higher (and later) layer was. The clay ridge was oblong, 1.9 m x 1.3 m in size (Figure 40). After removing the clay that was charred by heat, an oven hearth outcropped. It was slipped and charred. This oven hearth was 70 cm in diameter and up to 8 cm in thickness. Its border edging was made of clay with small stones. The oven hearth lay on brown earth mixed with charred wood particles and a somewhat disturbed stone paving, about 2 m in diameter. The stones were up to 15 cm in size and, included among them, there were fragments of pottery, bones, a small piece of amber and a charred nutshell. Beneath these stones lay a layer of charred wood particles (a fire place ?) and, beneath it, there was already grey sand. The thickness of the entire structure of the oven, from the mouth for kindling to the sand with the fire place, reached 20 cm. Two stake holes, about 4 cm in diameter, were found, at a depth of 5 cm - 6 cm, in the grey sand under the paving for the oven, at its northern side. The space between these stake holes was about 10 cm.

Fragments of pots made on a rotating wheel and those shaped by hand were seen over the entire research area. A piece of limestone was found by the northern edge of the oven; whereas, at the eastern edge, there lay a massive cast ring. Grey sand with ceramics, iron rivets and animals bones lay everywhere under the development of Horizon 2.

Finds

Structure No. 30

- 461 - 466. Ceramics made on a rotating wheel and shaped by hand
- 467. A brass, cast ring, flared in the middle, with a concave cross-section
- 468. A "brick" of limestone - raw material for whetstones (?)
- 469. Fragment of a stone weight
- 470. Piece of natural amber
- 471. Iron nail
- 838. Brass fastening loop, an isolated find

Research Area XIII

The horizon was greatly disturbed. Its traces were tracked at a depth of 1.1 m - 1.7 m (about 5.8 m - 5.3 m in absolute height). Structure No. 32 formerly stood in approximately the middle of the research area. A clay oven hearth and isolated clay patches, which might have marked the northern wall of **Structure No. 32** (Figure 40), are ascribed to this erection. The oven hearth had a rather regular, oblong form, stretched out in an easterly - westerly direction. The size of this hearth was 1.0 m x 0.9 m. The clay surface was bright red, and it contained a great deal of soot at its southern edge. The clay hearth reached a thickness of 10 cm in a cross-section. Beneath it, towards the middle, there was a lens of ashes, which was about 45 cm in width and up to 5 cm in thickness—apparently this was a fire place. Within it there were only crumbs of burnt through clay found. Still deeper there lay sand with bits of charcoal.

There were sand with bits of charcoal, stains of soot, clay patches, burnt through stones, animal bones and fragments of pots in the environment around the oven.

Horizon 3 (Figure 44)

Research Area IX

The layer that was described above is ascribed to Horizons 2 and 3 (see Horizon 2).

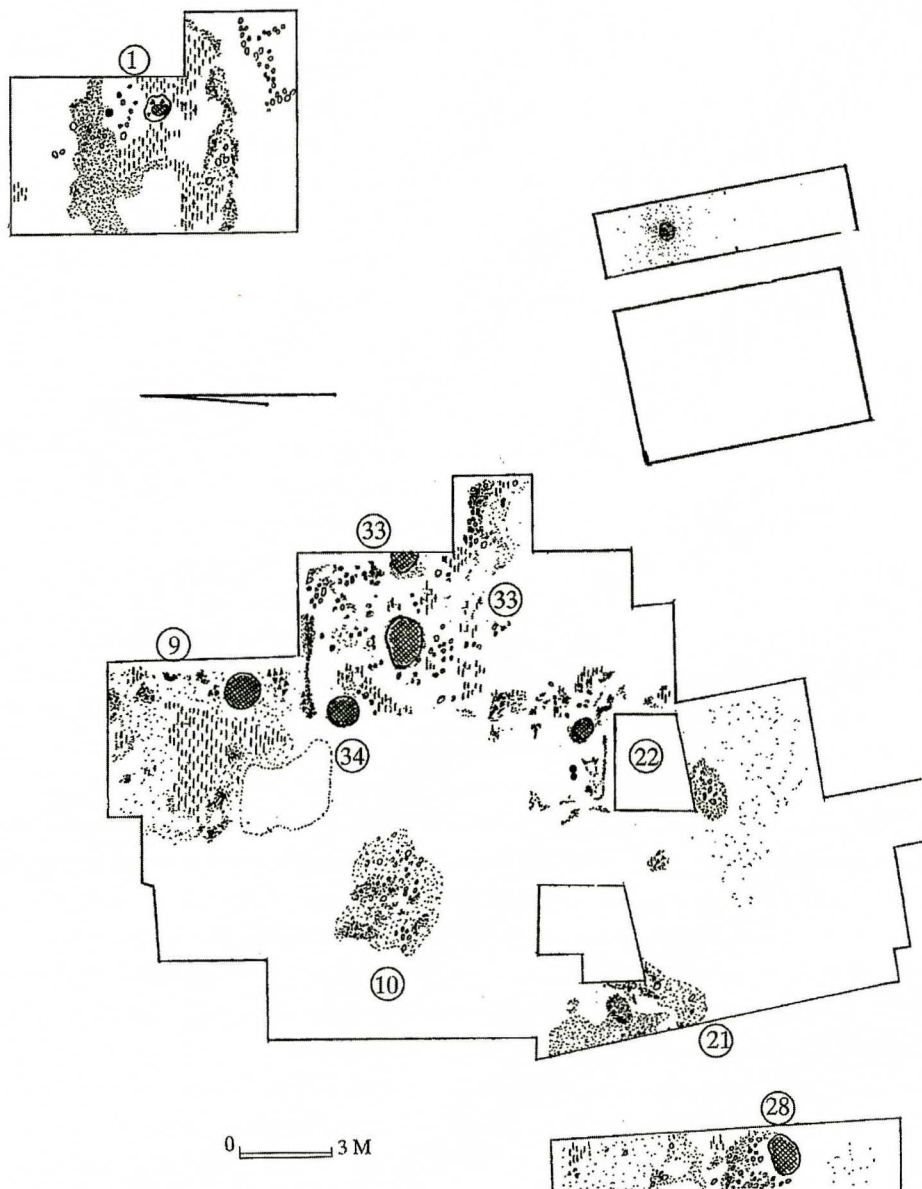


Figure 44. Remains of the development in the cultural layer of the settlement at the foot of Birutė Hill in Horizon 3

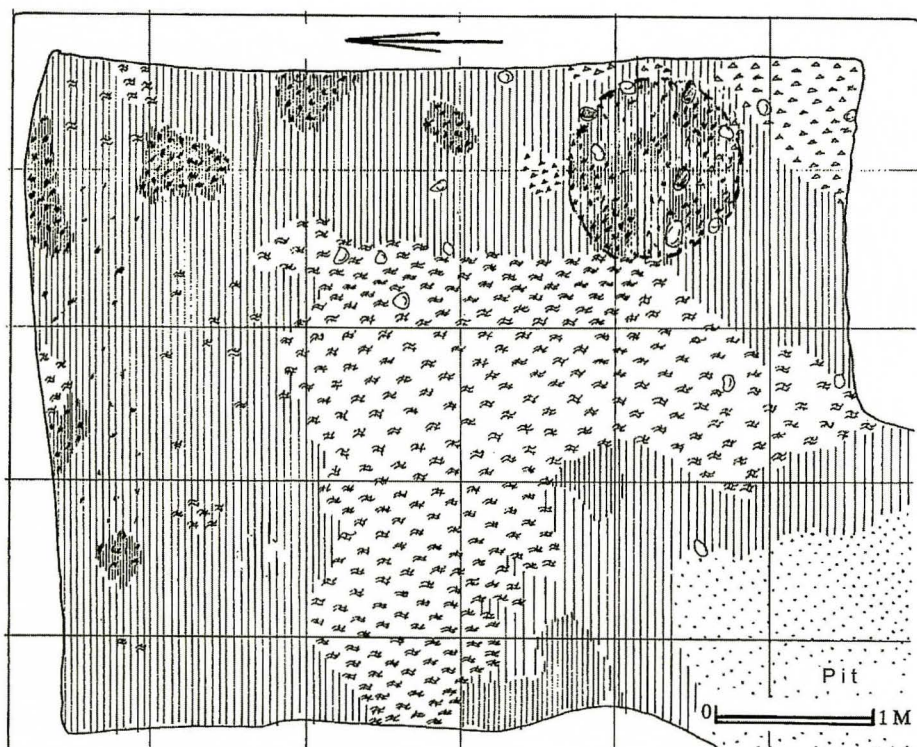


Figure 45. Layout of the remains of Birutė Hill's Structure BK-9 in Horizon 3

Research Area X

Marks of **Structure No. 9** (Figure 45) were buried under a small surface layer, 3 cm - 5 cm in thickness, at a depth of 1.8 m - 2.1 m. These were a mass of hard clay, about 4 m x 3 m in size, with stains of dark grey sand and black earth with charcoal around it. At the eastern edge of the clay, along the boundary of this research area, there was a dark stain of black earth, with a diameter of about 1.3 m. Stones were found in this stain. Also found among these stones were charred and burnt through crumbs of clay and stains of black earth with bits of charcoal. Stones lay at the edges of this stain, measuring approximately 18 cm x 10 cm and 10 cm x 10 cm in size. In the cross-section, it was clear that this stain was lying in a pit, up to 1.3 m in diameter, in a depth that reached up to 5 cm. This was the remains of a hearth, which had stood in Structure No. 9. The trench, which had disturbed the southwestern corner of this structure, was 2 m x 2 m in size, square, narrowing towards the bottom and 0.8 m in depth up to the sterile soil.

Grey earth lay in the southern part of the research area, at a depth of 2.2 m - 2.4 m (4.3 m - 4.6 m in absolute height). Within this earth, stains of charcoal bits, ashes and burnt through stones comprised a stain, which was approximately 4.0 m x 3.5 m in size (Figure 46); this was **Structure No. 10**. In the dark earth there were stones, sized from 15 cm x 15 cm to 5 cm x 5 cm, animal bones and crumbs of burnt through clay. In the eastern part of the stain, the burnt through stones comprised a semi-arc, with a diameter of 1.0 m - 1.2 m. More charcoal was around it. Seemingly, this is the lower part of a disturbed hearth, which had not been sunk into sterile sand.

Finds

Structure No. 9

192 - 198. Ceramics made on a rotating wheel

199 - 200. Stone weights

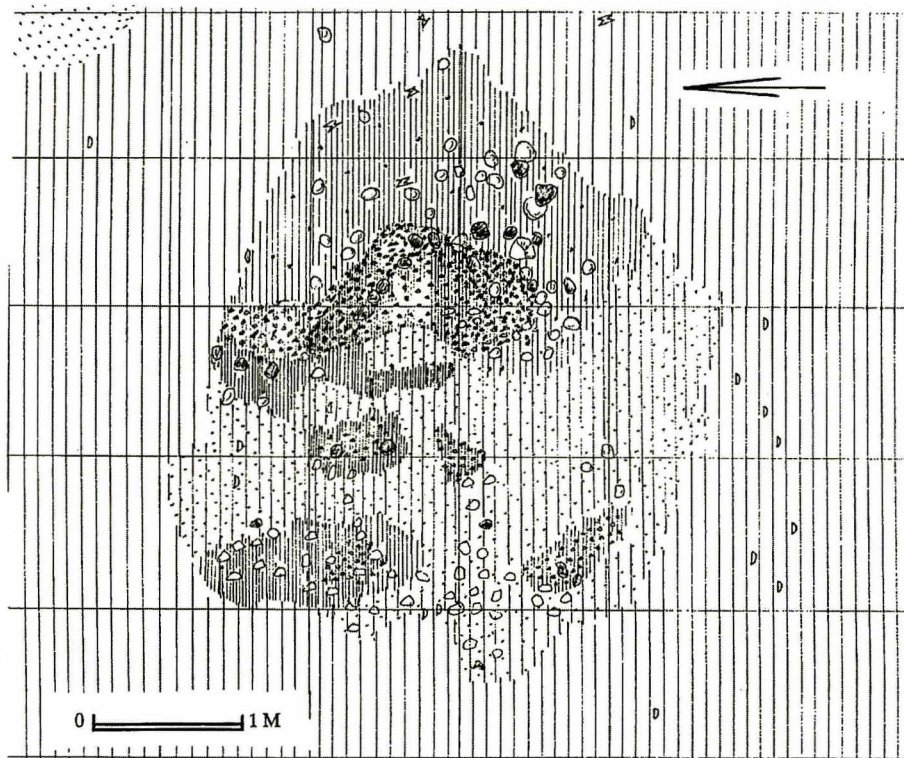


Figure 46. Traces of Birutė Hill's Structure BK-10 in Horizon y

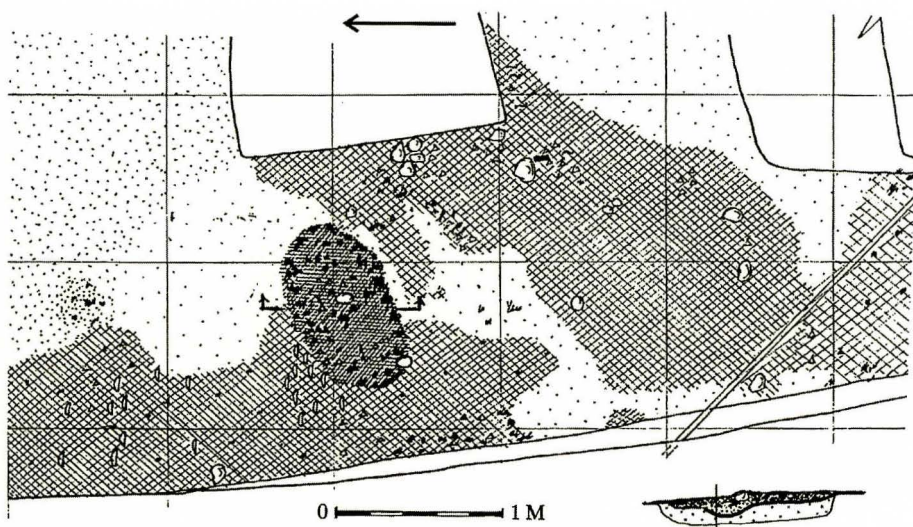


Figure 47. Layout of Birutė Hill's Structure BK-21 in Horizon 3

201. Piece of natural amber

202. Iron nail

Finds in the trench

203 and 204. Ceramics made on a rotating wheel

Structure No. 10

205 - 207. Ceramics made on a rotating wheel and shaped by hand

208. A stone weight

209 - 212. Iron rivets

Finds by Structure No. 10

213 - 228. Ceramics made on a rotating wheel and shaped by hand

229 - 231. Stone weights

232 - 234. Bits of natural amber

Research Area XI

A layer of Horizon 3 was buried immediately beneath the grey earth of Horizon 2, at a depth of 1.5 m - 2.0 m. It descended towards the east and the north. At the western edge of this research area, an oval stain of a hearth, 1.0 m - 0.6 m in size, became distinguishable (Figure 47). It was apparent that this was the lower part of a pit for a hearth - its depth in the cross-section only reached

10 cm - 12 cm. Around this hearth there were black earth with stones and charcoal bits. The small areas of black earth lay in a strip of about 5 m—these were the marks of **Structure No. 21**.

The hearth of a disturbed clay oven from **Structure No. 22** outcropped in the eastern part of the research area, at a depth of 1.9 m (5.1 m in absolute height). The corpus of the hearth had a width that reached 0.85 m. Composing the foundation of this oven hearth were stones with clay packed onto them. There was no fire place under the oven hearth. Postholes, 16 cm - 18 cm in diameter, were paired, at a depth of 10 cm - 12 cm, over 0.9 m west of the oven hearth (Figure 48). Most of the finds were alongside the oven.

Finds

Structure No. 21

391. Stone weight

392 - 401. Animals' bones

402 and 425 - 429. Ceramics shaped by hand and miniature

430 and 431. Iron rivets

432 - 434. Animal bones

Structure No. 22

387 and 388. Ceramics shaped by hand

389. Clay weight of a weaving loom, decorated in stamped ornamentation

390. Natural amber

Research Area XI western part

The surface of this layer was discovered under Horizon 2 and a layer of wind blown sand in the middle of the trench, at a depth of 1.3 m - 1.8 m (5.5 m - 5.0 m in absolute height). The layer of Horizon 3, with a thickness of 3 cm - 10 cm, which was at the southern edge, was wind blown. However, in the northern part, it merged in with the horizon that lay beneath it.

In the southern part of the trench, there lay a ridge, about 1.1 m in diameter, with crumbs of clay, charcoal and small stones—the hearth of **Structure No. 28**. South of it there were isolated stones in black earth with soot (Figure 39). In the process of preparing the hearth, burnt through stones and charcoal were found under a clay layer, of 1 cm - 3 cm in thickness. The stones comprised a somewhat disturbed ring, about 1 m in diameter. Only one row of stones survived. A cross-section showed that the stones had been laid out on a horizontal surface—the hearth had not been sunk in. Only a small bone of a bird was found within it.

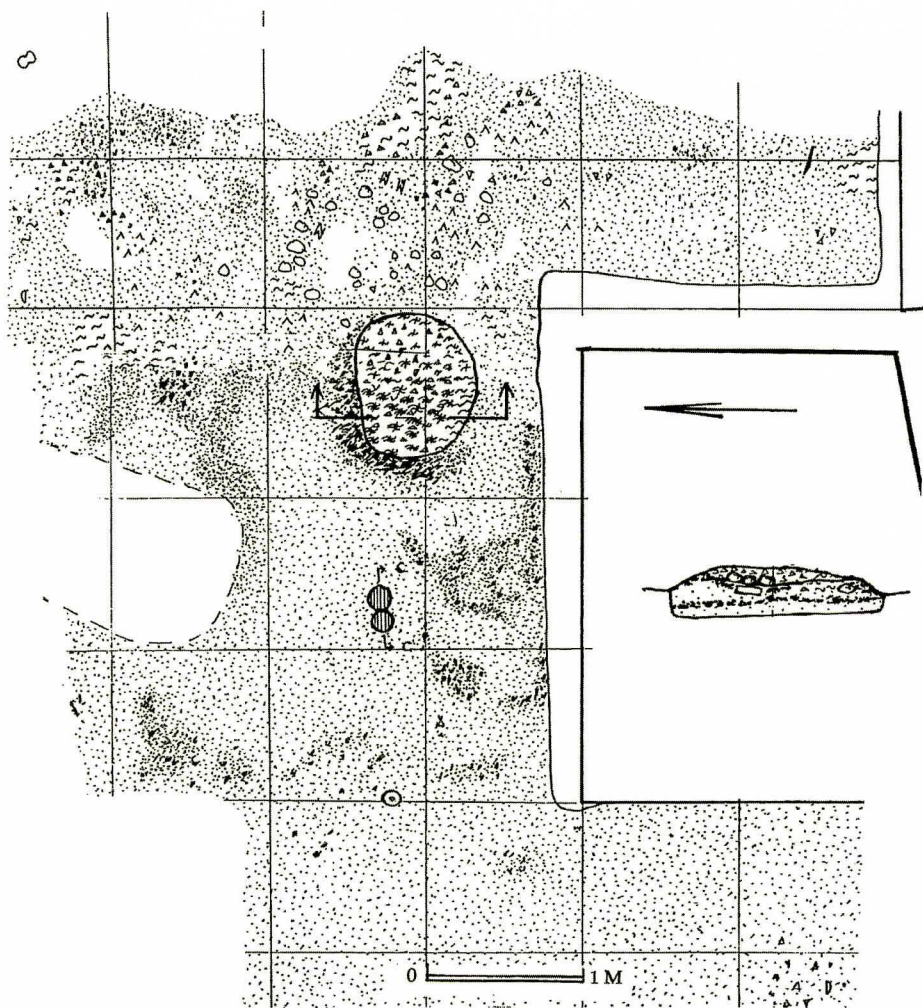


Figure 48. Layout of Birutė Hill's Structure BK-22 in Horizon 3

Finds

448 and 449. Ceramics shaped by hand

450 - 452. Bits of untreated amber

Research Area XII

Horizon 3 was not differentiated.

Research Area XIII

Grey sand with bits of charcoal clearly differentiated the layer of Horizon 3 from the one above it. This horizon of a cultural layer was uncovered, at a depth 1.36 m - 1.9 m. Coaly stains and quite many ashes there covered the brown earth with charcoal in the northern part. In the center of the research area, a ridge of burnt through clay, 1.7 m x 1.3 m in size, arose—the remains of **Structure No. 33**. The thickness of an oven hearth reached 20 cm. There was a fire place with an irregular circular form, 1.7 m x 1.7 m in size, under the clay. One or another larger, burnt through stone, bones, fragments of hand-shaped pots, bits of amber and a sandstone spindle lay in the fire place. The contours of the dwelling were not clearly drawn. Approximately 1 m to the north of the oven, there were darker stains, more stones, ashes and animals bones; whereas, along the western boundary of the research area, there was a great deal of clay. The dark stains comprised a barely distinct partition, about 1 m in width, which continued to stretch in a westerly - easterly direction (Figure 49). This could have possibly been the northern wall of the former Structure No. 33. Meanwhile the patches of clay and crumbs of burnt through clay, over 2 m south of the oven, could have marked the other wall of this structure. Hence the structure could have been 3.5 m - 4.0 m in width. There were many finds within the boundaries of this structure.

Another oven hearth from **Structure No. 34** was discovered in the northwestern corner of this research area (Figure 44). It was very distinct, though it had a slightly charred surface, which was circular, about 1.2 m in diameter and about 5 cm in thickness. The hearth had been packed on a small layer of clean sand.

A stain of a third structure was in the western part of the research area. It was marked by charred wood particles, ashes and patches of clay. Half of an oven hearth of packed clay was found. The other half had been uncovered in Structure No. 22 during an earlier excavation in 1990. The eastern wall of this structure had been about 1 m from the oven. Patches of clay and charred wood particles marked this wall.

Along the northern boundary of this research area, there was very dark earth, containing burnt through stones, charcoal and a partition of burnt through clay—the traces of yet another structure that had stood outside the boundaries of this research area.

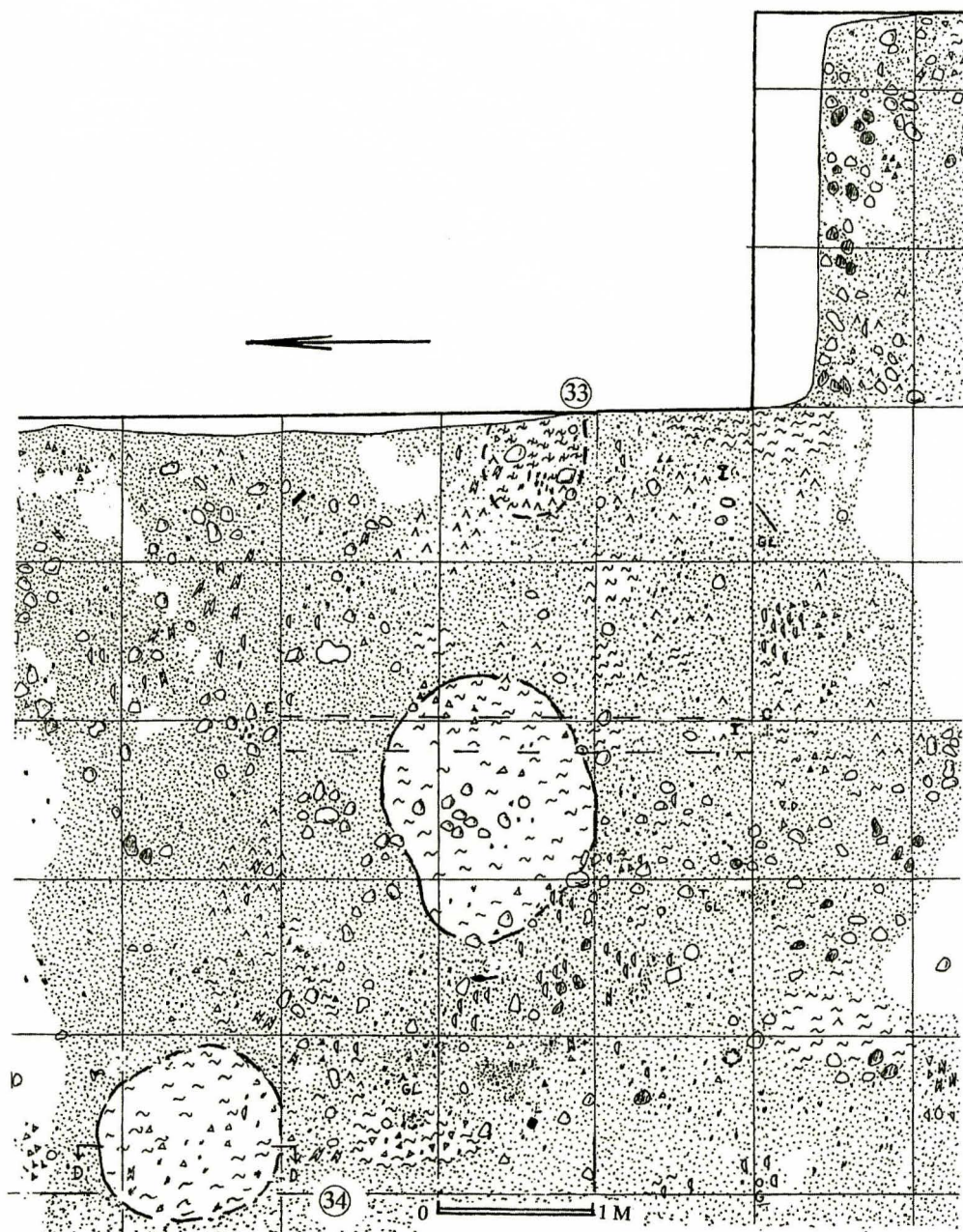


Figure 49. Remains of Structure Nos. BK-33 and BK-34 in Horizon 3

Finds

Structure No. 33 and alongside

551 - 554, 578 and 628 - 647. Ceramics made on a rotating wheel and shaped by hand

555. Flint flake

556. Amber bit

557. Shell of a forest nut

558 - 560. Small pieces of processed amber

561. Natural amber

562. Sandstone spindle

563. Fragment of a whetstone

564-570. Stone weights

573. Iron artifact

574. Arrowhead

575. Blade of a small knife with a straight back and hafted handle

576. Iron nail

577. Iron rivet

579. Iron bore

580. Fragment of a small brass plate

581. Blade of a small knife with a bent back

582. Iron nail

583. Iron plate

584, 586 - 612, 626, 627 and 648 - 657. Pieces of untreated amber

585. Rectangular piece of semi-processed amber

613. Fragment of a bone artifact

614. Fragment of a nail

615 - 617, 624 and 625. Iron nails (found under an oven hearth)

618 - 621. Pieces of clay daub

622. Sandstone spindle

623. Iron rivet

658 and 659. Large stone weights of nets (?)

661. Brass, flat brooch in the form of a four-leaf clover

662. Sandstone spindle with ornamentation

Structure No. 22

571. Piece of flint rock

572. Semi-processed amber

Horizon 3 A (Figure 50)

Research Areas XI - XIII

This horizon of development in Research Area XI was difficult to differentiate from the others. The surface of Horizon 3A was uncovered, at a depth of 2.1 m - 2.2 m (about 5 m in absolute height). In the eastern part of the research area, a regular rectangle of burnt through wood and a contour of charcoal outcropped. The northern and eastern peripheries of the rectangle remained beyond the bounds of the research area (later this part was uncovered in Research Area XIII). These are the remains of **Structure No. 23** (Figure 51).

The lines of the structure's wall were distinct, framed with burnt small beams. Around the structure there were a great deal of charcoal but few stones and not much burnt through clay. The burnt through small beams of the wall in the south-eastern corner of the structure had been 16 cm - 20 cm in diameter. The north-eastern corner was somewhat disturbed; nevertheless, charcoal and a partition of burnt through clay well-marked the northern wall. Only traces of the eastern wall remained that were marked by charcoal. Once the data from Research Areas XI and XIII had been pulled together, it was established that the length of Structure No. 23 had been 6.5 m (in a westerly - easterly direction) and the width, 4 m. Inside the structure there had been small, burnt-up hewn beams - the traces of roof constructions. The cross-sections of the small charred beams were the following: 11 cm x 8 cm, 10 cm x 9 cm, 10 cm x 7 cm, 8 cm x 8 cm and 9 cm x 7 cm. Burnt up planks squarely covered the small beams in certain places. Either the structure had been sunk into the sand or the sand had been wind blown by up to 40 cm.

The rectangular hearth of a packed clay oven lay over 1.3 m from the eastern wall towards the middle of the structure, over 4 m from the remains of the western wall of this structure and 2 m from the southern wall. The hearth is oriented in a westerly - easterly direction. The length of the rectangular oven hearth was 85 cm (and 92 cm including the protruding eastern part) and the width was 73 cm. Small beams, 3.4, 4.5 and 5 cm in diameter, framed this hearth, which had been sunk into the sand by 8 cm - 9 cm. There was, at the eastern end of the hearth, a small border edging, about 10 cm in width and 7 cm - 8 cm in height, made of a clay cylinder. This border edging had terminals bent back in the form of "[". The surface of the oven hearth had been leveled; it was found cracked by heat. On its surface, towards the middle, there lay two burnt through and crumbed stones, in sizes of 15 cm x 10 cm and 15 cm x 12 cm. The thickness of the hearth reached 10 cm. It was quite burnt through and packed directly on the sand, using no more than one or another small stone.

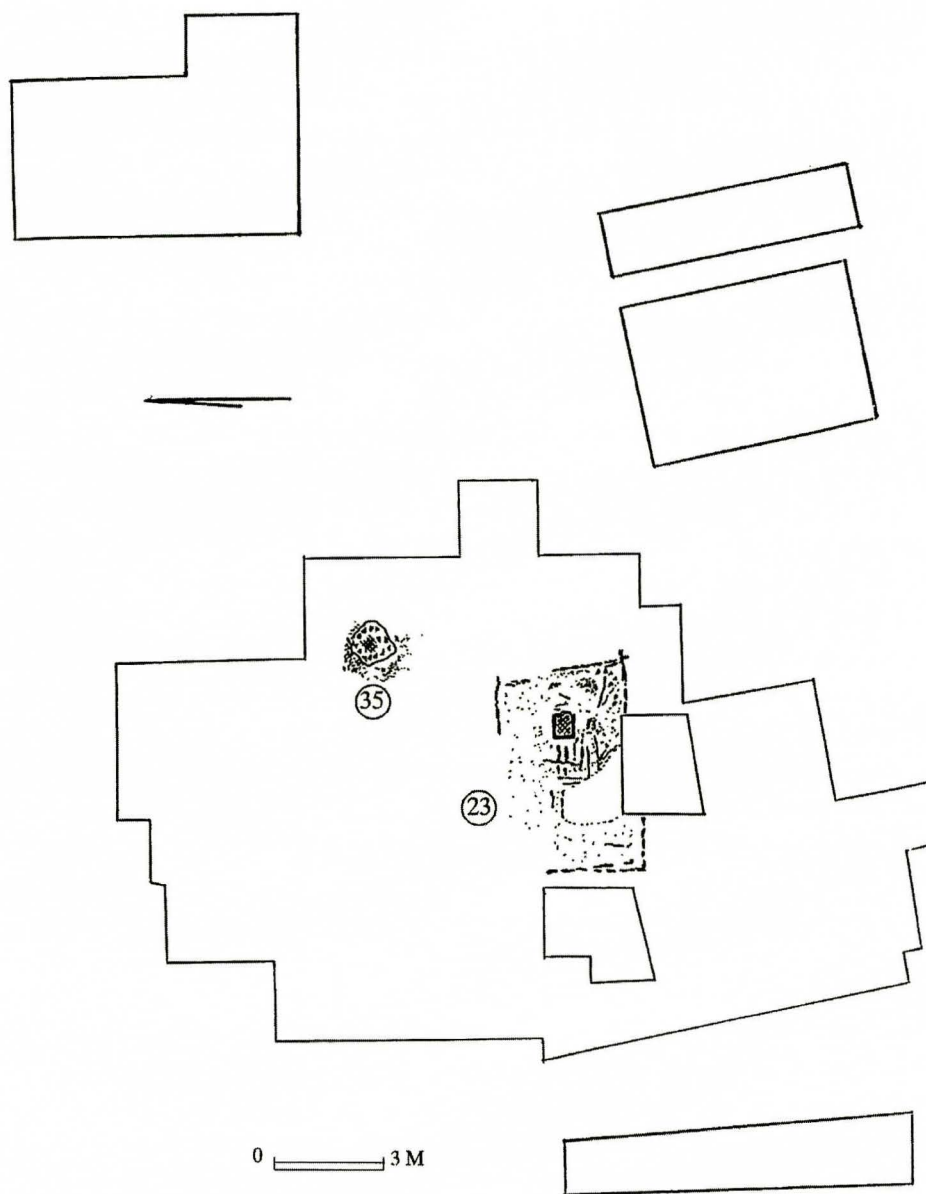


Figure 50. Remains of development in the cultural layer of the settlement at the foot of Birutė Hill in Horizon 3A

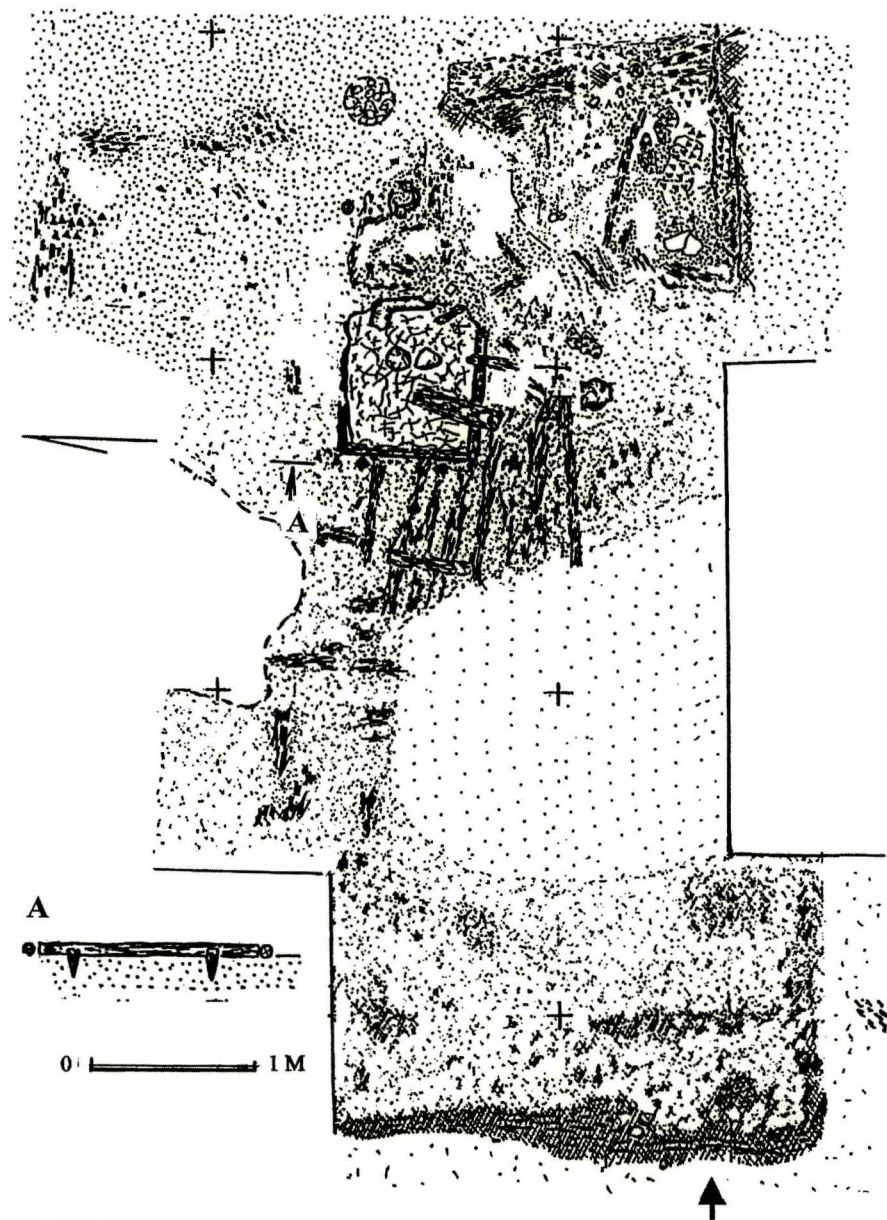


Figure 51. Layout of Birutè Hill's Structure BK-23 in Horizon 3A

At the southern edge of the oven hearth, some 3 cm - 4 cm below its top, there were marks of a clay floor or another kind of floor, constituting a surface of hard sand with charcoal. There were finds in the surroundings of the hearth. Found over 50 cm eastward of it was the bottom of a pot was found, filled with the red crumbs of burnt through stone and, over 60 cm south of the hearth, there was a small, crushed cup that had been shaped by hand, lying on its side. Found by the hearth were a whetstone, brass spiral, small artifact of limestone and a leaden plate. There were twelve small stones found (the largest were up to 7 cm x 7 cm and 10 cm x 5 cm) in a small pit, about 30 cm in diameter and about 15 cm in depth, at the location of the eastern wall, approximately 1 m from the hearth.

Finds

Structure No. 23

- 403 - 409. Ceramics shaped by hand
- 410. Preformation of an amber pendant
- 411 - 415. Iron nails and rivets
- 416 - 418. Fragments of animals bones
- 419 - 422. Ceramics shaped by hand
- 423. Stone weight
- 424. Iron rivet

Structure No. 23 at Research Area XIII

- 660. Brass spiral
- 718. Flake of a grayish rock whetstone
- 719. Flake of rock, cf. No. 676
- 720. Sandstone amulet (?) in the shape of a duck-head
- 721. Natural limestone
- 722. Leaden plate
- 723-728. Ceramics
- 729 and 730. Natural stones found on the hearth of a clay oven

Research Area XIII

The surface of Horizon 3A lay at a depth of 2 m - 2.2 m in the northern part of the research area. The clay ridge, sized approximately 1.5 cm x 1.5 cm, of an oven hearth was discovered at the bottom of the layer. It was quite well disturbed and had an indeterminate form (Figure 50). The cross-section indicated that the hearth was about 17 cm in thickness and its bottom was not sunk in sand very far. The oven stood in **Structure No. 35**.

Finds

Structure No. 35 and its surroundings

- 663 - 668. Fragments of the weaving weights of which Nos. 663 and 664 had ornamentation with a cruciform stamp
669 and 670. Whetstones of grayish rock
671. Flint flake
672. Iron band
673, 694, 695 and 715. Fragments of iron rivets
674 - 676, 696 and 716. Fragments of iron nails
677. Fragment of an amber preformation or artifact
678. Piece of semi-processed (?) amber
679 - 691. Small pieces of untreated amber
692. Blade of a small iron knife with a straight back and hafted handle
693. A brass band
697 and 698. Fragments of amber preformations
699 - 701. Natural amber
702 - 713. Ceramics
714. A stone weight
717. Amulet from the tusk of a wild-boar

Horizon 4 (Figure 52)

Research Area IX

Grey sand lay above a Horizon 4 layer. A nearly horizontal surface, marked by small areas of packed clay, was covered at a depth of 1.25 m - 1.5 m (6.0 m - 6.3 m in absolute height) in the central part of the research area, marked by plates of packed clay. Across this area, in a west - east direction, a partition of dark brown earth, about 0.2 m - 0.8 m in width, became distinguishable. Within this partition there was a clay stain, about 1.2 m x 1.0 m in size, with ashes and charcoal bits at the edges. In the middle of this stain, a posthole, of 18 cm in diameter, was found; southward of it, there were another two postholes found, 24 cm x 20 cm and 16 cm x 14 cm in size. The distance between centers of these postholes was 1.4 m and 2.1 m. All three postholes were found in one row, heading in a north - south direction, squared to the aforementioned partition of brown earth, which had marked the northern wall of **Structure No. 2**. The southern wall of the structure did not so become as well distinguished (Figure 53).

A ridge of packed and charred clay—the remains of an oven—lay at the eastern edge of the research area, between the stains that marked the northern and

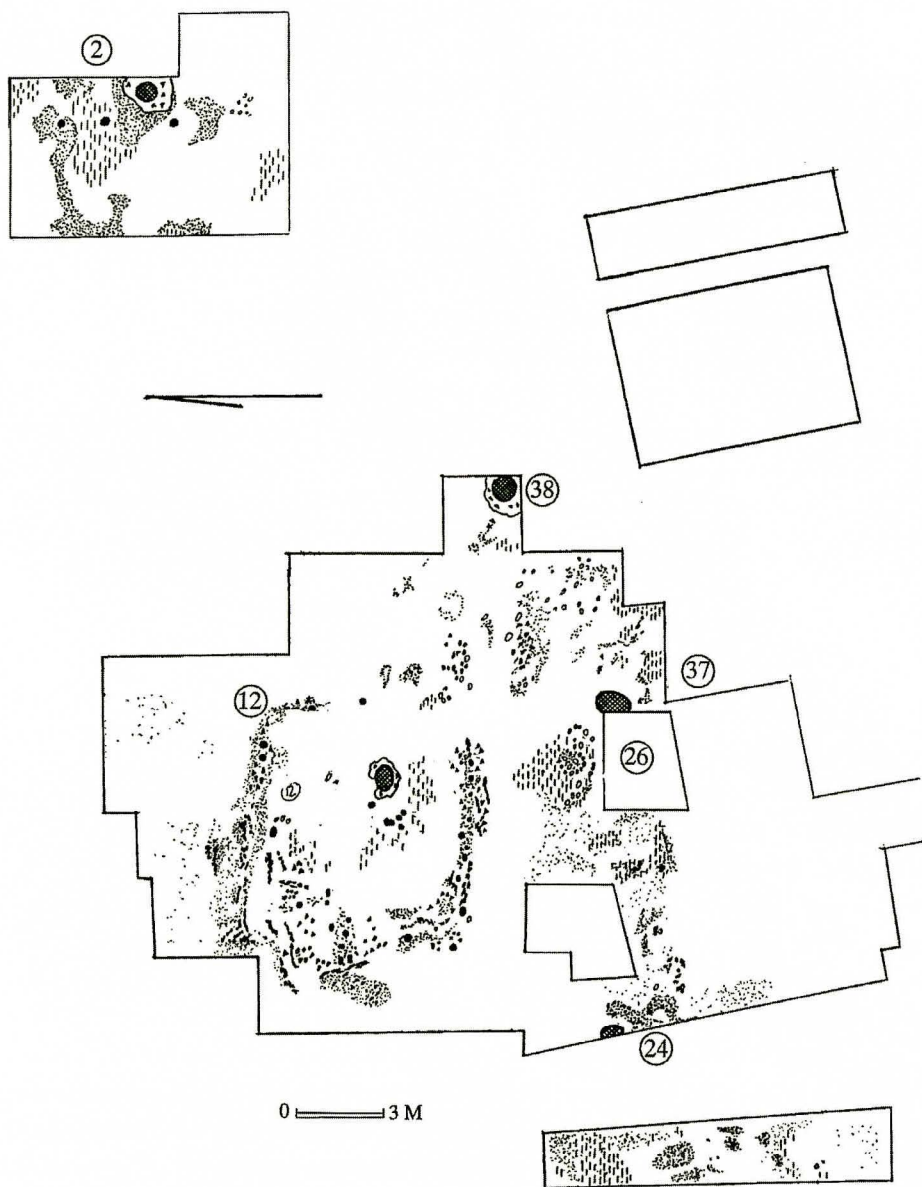


Figure 52. Remains of development in the cultural layer of the settlement at the foot of Birutė Hill in Horizon 4

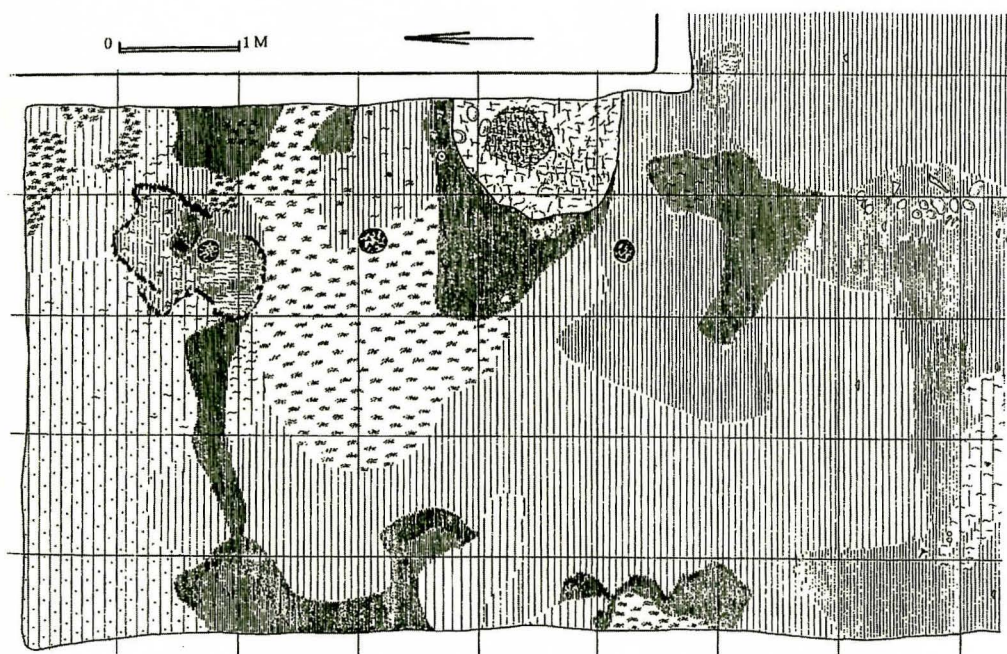


Figure 53. Layout of Birutė Hill's Structure BK-2 in Horizon 4

southern walls. The clay ridge was 1.4 m x 1.0 m in size. In its center a surface of slipped and burnt through clay, about 0.5 m x 0.5 m in size—a hearth—became distinguishable. This clay hearth was elevated about 15 cm - 20 cm above the clay floor of the former structure. The hearth's surface distinctly inclined towards the west. The entire clay mass of 15 cm in thickness was burnt through; small stones were discovered inside it. A sand layer, about 3 cm in thickness, lay underneath the clay ridge and, under it, there were the remains of an egg-shaped fire place, 1.1 m x 0.8 m in size. There were a great deal of charcoal and ashes along its edges and burnt through clay in the middle of it. The fire place was found sunk into the sand by 7 cm. There were no finds in it.

A partition of brown and black earth stretched along the western edge of the research area. It had been disturbed towards its middle by a trench. Various items were found in the stain of the structure and alongside it. However, there were no finds at the northern edge of this research area.

Finds

Structure No. 2

- 118 - 123. Ceramics made on a rotating wheel and on a slowly rotating wheel and shaped by hand
- 124. Sandstone spindle
- 125 and 126. Stone weights
- 127. Fragment of a knife with traces of a wooden handle
- 128. Small iron band of an uncertain designation
- 129 - 131. Iron rivets
- 132. Iron nail
- 133 (1 - 11). A "hoard" of amber of eleven small pieces of natural amber

Finds by Structure No. 2

- 134 - 138 and 142. Ceramics made on a rotating wheel, shaped by hand and miniature
- 139. Fragment of a whetstone
- 140 and 141. Fragments of small whetstones of dark schist
- 141 a. Stone weight

Research Area X

Traces of **Structure No. 12** were discovered in the southwestern corner of Erection No. 11 (Figure 54). There, at a depth of 2.3 m - 2.7 m, a 10 cm - 15 cm wide clay partition delineated a rectangular contour of an irregular form, sized approximately 7.0 m x 6.5 m, with a protrusion in the northwestern corner, sized 3.5 m x 1.5 m. The location of the structure's eastern wall was beyond the boundaries of the structure; however, the location of the northeastern corner of the structure was clear. Traces from the edge of the eastern wall were uncovered later, in Research Area XIII. Beneath the clay partition marking the contour of the structure, which had a width that reached 1 m and a thickness of 2 cm to 5 cm, there was a thin layer of grey sand in certain places clearly showing that the clay had slunk on top of the sand after the structure had collapsed. Under the clay, at a depth of 2.6 m - 2.7 m, pieces of burnt through clay daub and charcoal marked the contour of the erection. Rather large remains of charcoal and even burnt up small beams were found alongside the southern wall of the former structure. Later it was established that the burnt through clay lay in a small ditch, which was 1 m in width and up to 40 cm in depth. A small rampart formed at the exterior of this little ditch after the structure had burnt down. Cross-sections showed that the structure had not been

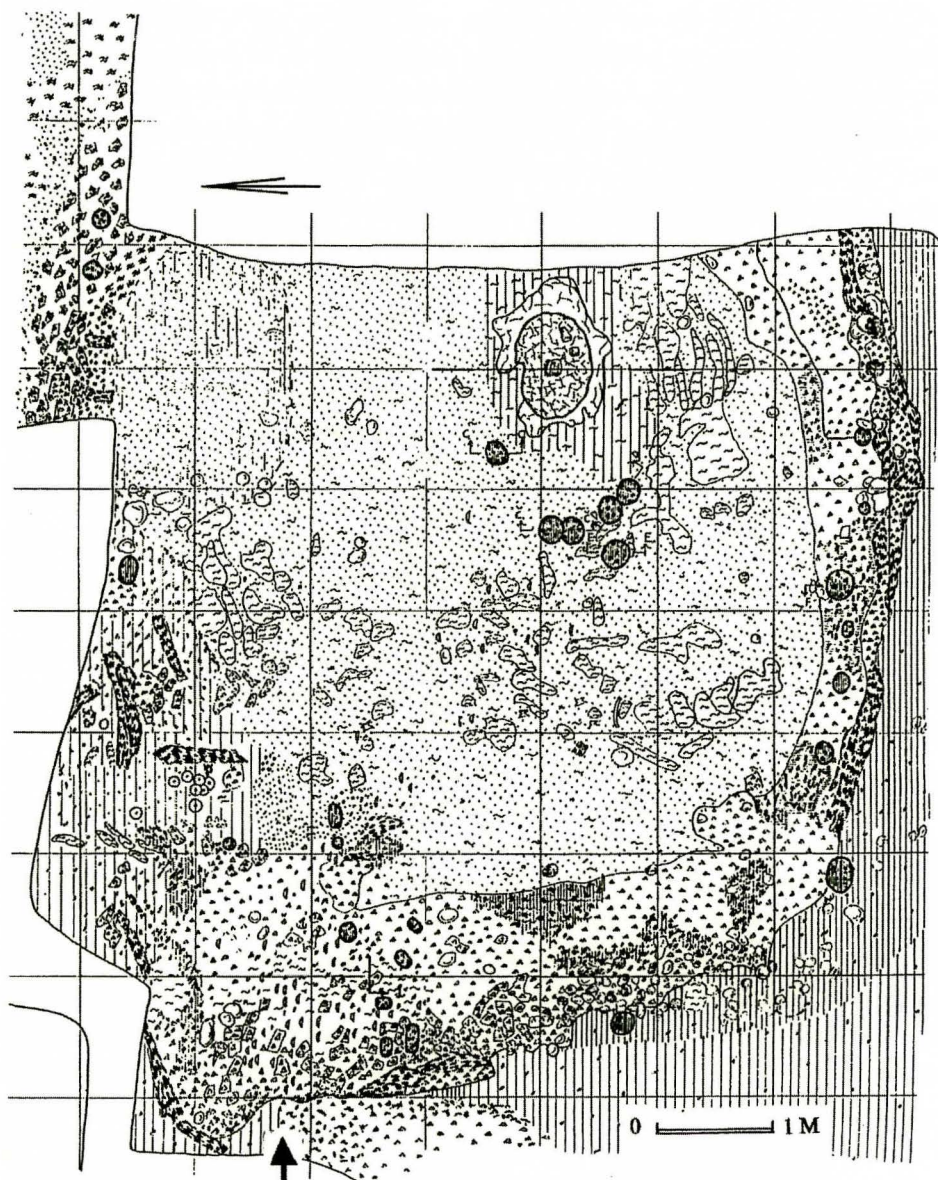


Figure 54. Layout of Birutė Hill's Structure BK-12 in Horizon 4

sunk into the sand by much. In the course of preparing the locations of the former exterior walls, pieces of burnt through clay daub with various impresses of wood were found. Much of the clay daub had distinct impresses of hewn beams or even planks in the location of the southern wall. In other places there were very few such impresses except for several in the locale of the northern wall. At the locale of the western wall of the structure, about 90% of all the impresses in burnt through clay were cylindrical. Remains of longitudinal beams outcropped under burnt up clay at the edges of the small ditch that marked the walls of the structure. These delineated the contour of the structure quite distinctly. The charcoal from the beams had survived the best in the locations of the southern and western walls and the northwestern corner. A row of seven postholes with charcoal outcropped in the location of the southern wall along the burnt up small beams. These were 18 cm - 15 cm in diameter and one, alongside the middle of the wall, was bigger, with a diameter of 24 cm. The largest, oval posthole, 34 cm x 26 cm, was found in the southwestern corner of the structure. There were also smaller stake holes, 10 cm - 6 cm in diameter between the postholes, which digressed somewhat from the axis of the wall to one side or another. The postholes and stake holes were found at 0.6 m - 0.2 m intervals at the location of the southern wall. There were no stains of posts or stakes that were more distinct at the locale of the structure's western wall. A great deal of burnt up wood was also in a location of the structure's northern wall. The remains of a large burnt up beam, which had lain lengthwise along the northern wall, were uncovered 2.5 m beyond the western wall. Four distinct postholes (22 cm x 16 cm and 18 cm as well as 16 cm in diameter) that were filled with charcoal marked the direction of the wall. The cross-section revealed the marks of the eastern wall very well. Between the postholes, found in the middle of the northern and southern walls, there was a distance of 6.1 m (between their centers). The distance between the outside postholes in an easterly - westerly direction was 6.6 m.

Inside the structure there were small patches of clay in sand. Brownish earth with soot and pieces of clay, up to 25 cm in thickness, was covered under the sand. Some of the clay pieces were charred and contained wood impresses. Lumps of clay lay on the side where there were wood impresses, below which were distinct traces of the structure's roof. There were many finds within the boundaries of the structure—ceramics, stone weights, the blade of a knife and nails. Further, not far from the former oven, the fragments of three clay weights were found.

The clay flooring of the structure was found at a depth of 2.7 m - 2.8 m (3.9 m - 4.1 m in absolute height). This floor was composed of a layer of packed, loamy sand over the entire area of the structure. A great many fragments of pottery

were found above the clay floor. Shards lay in entire deposits at the locale of a building annex, in the northeastern part of the dwelling. In the northwestern corner, alongside a small annex, there were fragments of as many as eleven clay weights, cylindrical in form, at a level of the clay flooring. A sandstone spindle with ornamentation was found alongside the weights as well as a flat cylindrical stone, a game piece. Another sandstone spindle was also discovered alongside the building annex, by the western wall of the dwelling.

Postholes were also found inside the structure—these marked the internal walls. Seven postholes were found in the northwestern corner of the structure, perpendicular to the western wall. A pair of rectangular, distinctly hewn postholes, 24 cm x 10 cm and 16 cm x 10 cm in size, was the closest to the wall. There was another rectangular posthole, 13 cm x 10 cm in size, 20 cm east of the pair of postholes and, beyond this one, there were stains of two hewn posts again, standing alongside. Somewhat further north, there was yet another one and, once again, in an eastward direction, there were two more postholes. Between the row of these postholes and the northern wall, there was a distance of 1.7 m - 1.8 m. The accurate layout of these posts shows that there had been a small building annex in this part of the structure.

One more group of postholes was found inside the structure, in its central part, somewhere near the hearth of the oven. Over 0.8 m southwest of the hearth, there were five postholes—four were paired and one more was farther away from them. The sixth posthole was found off to the side from the others, at the northwestern edge of the oven. These postholes showed that large posts, 24 cm - 20 cm in diameter, had stood here, but the posts had been barely sunk in the sand (only by 14 cm - 8 cm). The cross-sections showed that the posts had had rounded or upright terminals, and the stakes had been tapered.

The oven hearth of packed clay was found nearly in the middle of the structure, 2.2 m beyond the southern wall and approximately 1.5 m beyond the eastern wall. An oval of burnt through clay, about 1.2 m x 1.0 m in size, which had risen over the clay by up to 10 cm, constituted the oven hearth. A base of the oven's chamber had a size of 85 cm x 70 cm, stretched out in an east - west direction. The oven hearth was made of clay with small stones, up to 10 cm in thickness. The clay was completely burnt through. A brass neck chain on a small leather holder was found by the oven. An oval fire place, 1.2 m in width and 1.5 m in length, was found under the oven hearth and a small layer of sand. Meanwhile, in the fire place among charcoal and ashes, there were charred bones of large fish, remains of fins, fragments of pots produced on a rotating wheel, a brass penannular brooch and other items.

Finds

Structure No. 12

- 246 - 257, 260 - 262, 269 - 281 and 284 - 296. Ceramics made on a rotating wheel and shaped by hand
- 258, 266, 267 and 282. Stone weights
- 259. Small iron knife with a straight back and hafted handle
- 263 - 265. Weights of encaustic clay—No. 265 has ornamentation
- 268. Iron nail
- 283. Natural amber

Finds on the clay flooring of Structure No. 12

- 294. Iron rivet
- 298. Iron plate
- 299. Preformation for an amber artifact
- 300. Fragment of an animal bone with incision marks
- 301 - 311. Clay weights of a cylindrical form and their fragments
- 312. Stone game piece of sandstone
- 313 - 319. Pieces of clay daub with wood impresses

Finds in the northwestern corner of Structure No. 12

- 318 - 322. Ceramics made on a rotating wheel and shaped by hand
- 323. Iron knife with a straight back and hafted handle
- 324. A small brass plate
- 325 - 326. Spindle whorls of sandstone
- 326 a. Remains of a brass neck chain

Finds in the fire place under the oven hearth

- 327 - 329. Ceramics made on a rotating wheel (fragment of a pot)
- 330. Fragment of a small iron knife
- 331. Brass penannular brooch with flared ends
- 332. Bit of natural amber

Research Area XI

Horizon 4 was differentiated in the western part of the research area, under Horizon 3 and a layer of sand. A 75 cm wide ridge of the oven hearth from **Structure No. 24** outcropped by the western wall, at a depth of 1.52 m (about 5.5 m in absolute height). The thickness of the oven hearth was up to 10 cm (Figure 52).

Traces of **Structure No. 26** were found in the eastern part of the research area. In the supplementary trench, traces of a scattered fire place—burnt through stones and ashes—were found at a depth of 2.2 m - 2.25 m (about 4.85 m in absolute height) in a clay stain, with an area of about 4 m² (Figure 52). Fine fragments of pots and animals bones were found.

Western part of the research area

Horizon 4 of the cultural layer in the southern part was covered at a depth of 1.1 m - 2.2 m (about 5.7 m - 4.9 m in absolute height). The layer was more intensive in the middle of the trench (Figure 35), but there were almost no finds in it except for a few shards. Deeper down a layer of grey earth, up to 15 cm in thickness, was found and, immediately under it, Horizon 5 stretched forth. Elsewhere the layers of Horizons 4 and 5 merged.

Research Area XII

Horizon 4 was found at a depth of 2.1 - 2.5 m (about 4.1 m in absolute height). Here an irregular partition, up to 1 m in width, of black and brown earth and with charcoal stains lay in grey sand. Large pieces of charcoal and burnt through clay were the traces of the southern wall of Structure No. 12 found in the horizon of Research Area X.

Finds

- 472 - 474. Ceramics shaped by hand and made on a slowly rotating wheel
- 475. Iron rivet
- 476. Iron nail
- 477. Natural amber
- 478 - 492. Animals' bones

Research Area XIII

Horizon 4 was uncovered over the entire research area, at a depth of 1.6 m - 2.27 m (5.3 m - 5.4 m in absolute height). The surface of this horizon consisted of grey sand mixed with earth, fine charcoal bits, small stones, fragments of pots and clay stains. In the lower part of the horizon, many stones and charred wood particles were found, comprising a partition of more than 1 m in width, oriented westward - eastward. Ceramics actually lay in deposits—the remains of **Structure No. 37** were found (Figure 52). Fragments of a greatly decayed child's jawbone and cranial vault were found among the pot shards. Half of the hearth of an oven outcropped by the western wall of the research area. The diameter of the disturbed oven hearth was about 1 m, and the thickness up to 8 cm.

The remains of Structure No. 38 were discovered in the supplementary trench towards the east - about three-quarters of the hearth of a clay oven, about 1.2 m x 1 m in size, had survived rather well (Figure 52). The mouth of this oven had been in the western end. Burnt through clay well delineated the internal part of the oven. At the northeastern edge, traces of the oven walls had survived—a small clay cylinder of 10 cm - 15 cm in width and up to 5 cm in height. A hollow was towards the middle of the hearth, as though it was separating the chamber of the hearth, having a diameter of some 45 cm, from its mouth at the western edge. There were many finds around the remains of the structures.

Finds

Finds between layers of Horizons 3A and 4

- 731. Ceramics
- 732. Fragment of a clay weaving weight
- 733. Natural amber

Horizon 4

- 734-738, 740-761, 782-790 and 793-797. Ceramics made on a rotating wheel and shaped by hand
- 739 and 765. Iron rivets
- 762. Sandstone whetstone
- 763. A very regularly formed natural stone
- 764. Piece of slag
- 766. Iron nail
- 767. Iron band
- 768. Fragment of a knife blade
- 769. Iron rod
- 770. Very large iron nail
- 771. Brass band bracelet
- 772 (1-2). Brass bands
- 773. Brass, penannular brooch with thickened ends
- 774. Fragment of a brass, spiral bracelet with a triangular cross-section
- 775. Notched bead of blue glass in a cylindrical form
- 776. Preformation (?) of amber
- 777 - 780 and 803 - 806. Natural amber
- 781. Flint flake
- 791. Fragment of clay daub or an artifact

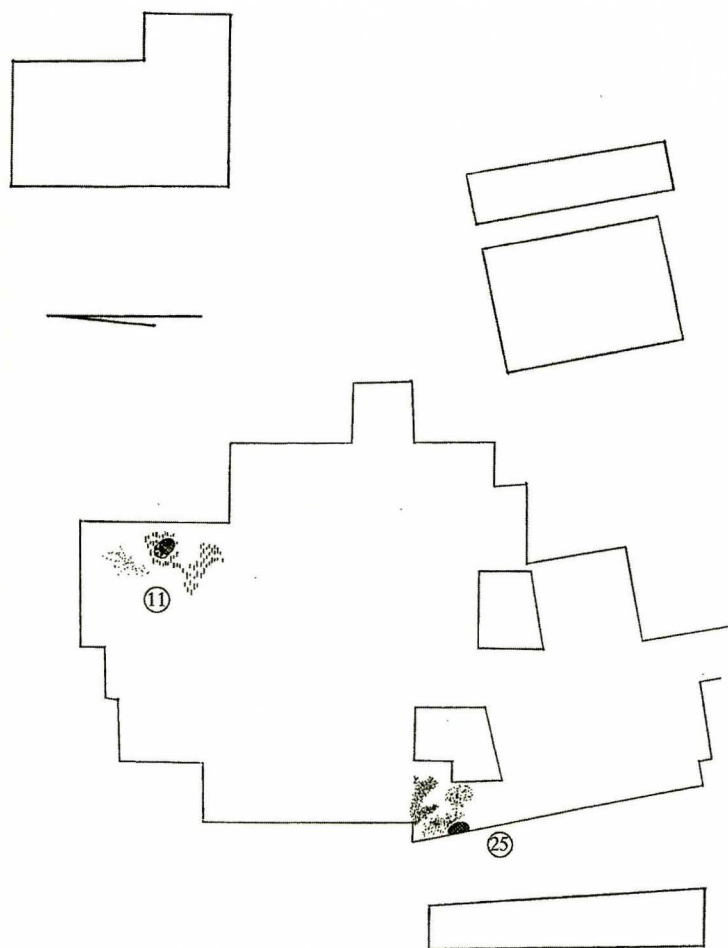


Figure 55. Remains of development in the cultural layer of the settlement at the foot of Birutė Hill in Horizon 4A

792. Piece of clay daub, 41 x 33 x 25 mm in size, with an impress of a small beam

798 and 809. Stone weights

799. Flint flake

800-802. Fragments of iron rivets

807. Fragment of an amber preformation for a pendant

808. Amber preformation for a pendant

810. Piece of sandstone with marks of processing (?)

Horizon 4 A (Figure 55)

Research Area X

The remains of **Structure No. 11** were covered in the northern part of the research area, at a depth of 2 m - 2.2 m (about 4.7 m in absolute height) and 15 cm - 20 cm deeper than the horizon of Structure No. 9 (Figure 55). In the southeastern corner of the research area, there lay the hearth of a packed clay oven, 0.9 m x 0.6 m in size, stretching in a southeastern - northwestern direction. In its center there was an oval, flat plane, 60 cm x 57 cm in size, with a surface cracked from heat—the base of the oven's chamber. A cross-section showed that, under the packed and burnt through clay of 5 cm - 6 cm in thickness, there was a small layer of ashes of up to 6 cm in thickness. There was a stake hole, 10 cm in diameter, found under the hearth, at its centre. The oven had been packed above the sand; under it a fire place of about 1 m in diameter was discovered. It was installed in a little pit of some 12 cm in depth, which had actually been dug lower than the clay layer was lying. Patches of packed clay—the remains of the clay flooring—lay at the level of the oven's hearth, or up to 7 cm beneath it. This structure had seemingly been sunk into sand by up to 20 cm.

Finds

Structure No. 11

235 - 239. Ceramics made on a rotating wheel and shaped by hand

240. Iron nail

241. A sandstone whetstone

242-245. Bits of natural amber

Research Area XI

Two clay ridges outcropped at a depth of 1.52 m (about 5.5 m in absolute height). One belonged to **Structure No. 24** of Horizon 4 and the other to Horizon 4A and Structure No. 25 (Figure 55).

Research Area XIII

About 10 cm below the bottom of Horizon 4, at a depth of 1.7 m - 2.6 m (5.3 m - 4.4 m in absolute height), one more, Horizon 4A, was discovered. It did not differentiate from Horizon 4 in many places. This horizon consisted of grey sand mixed with bits of charcoal and small areas of clay patches, among which two oval stains with charcoal bits, 0.7 m x 0.6 m and 0.6 m x 0.45 m in

size, became distinguishable. These stains marked the former development, **Structure No. 17**. There were a many bones and ceramics in the layer, and some slag was found.

Finds

811 - 829. Ceramics made on a rotating wheel and shaped by hand

830. A knife blade with a bent back

831. Iron artifact

Horizon 5 (Figure 56)

Research Area IX

Horizon 5 lay directly under the clay of the clay flooring of **Structure No. 2**. At a depth of 1.55 m (about 6.2 m in absolute height), the pear-shaped hearth of **Structure No. 3** outcropped (Figure 57). At the west, this hearth was an accompanying pit, which was oriented towards a west - east direction. The length of the hearth was 1.46 m, and the width was 1 m. The size of the accompanying pit was 0.5 m x 0.3 m. This pit with the hearth was at a depth of 26 cm, narrowing towards the bottom; its base was half rounded. A clay partition, up to 20 cm in width, lay at the eastern end of the hearth semi-arched. It was elevated above the pit; additionally, stones were laid out at the edges of the pit in certain places. The accompanying pit had a pointed base and was only 15 cm deep. At the edge of this pit, there were pieces of charcoal but, in its middle, grey earth lay mixed with sand and ashes; this layer was up to 11 cm in thick. Covered by the hearth were small stake holes, measuring 8 cm - 10 cm in diameter. However, larger posts, sized 13 cm x 12 cm to 20 cm x 18 cm, had once stood east of the hearth. The postholes and stake holes formed a partition, oriented in a southeastern - northwestern direction. Another, not particularly regular, line of postholes and stake holes outcropped parallel to the first one, over 1.4 m - 1.8 m from the southwestern part of its research area. There were small stake holes between these lines as well. Then, over 0.5 m south of the hearth, a black stain of an irregular form outcropped. The size of it was about 1.5 m x 1.5 m, and it consisted of charcoal and fine stones, some which were burnt through and some not burnt at all. The thickness of this layer reached 5 cm. Several more stake holes were found underneath this layer. There were no finds in the stain.

A stain of a regular rectangular form marked **Structure No. 5**; its orientation was by cardinal points (Figure 52). Only the southwestern corner of the former



Figure 56. Remains of development in the cultural layer of the settlement at the foot of Birutė Hill in Horizons 5 and 5A

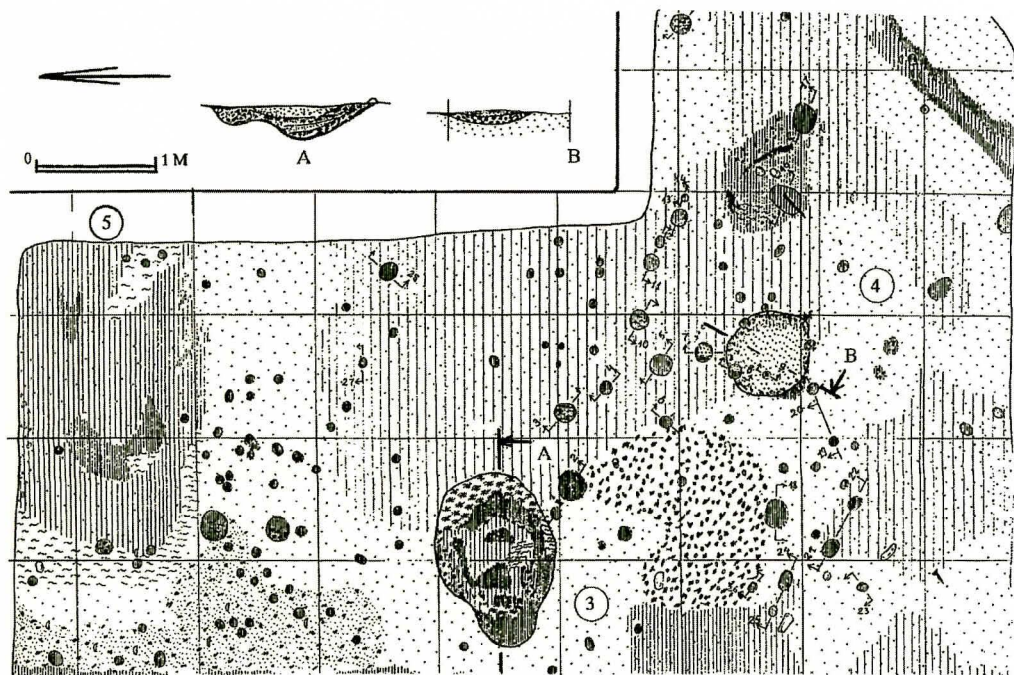


Figure 57. Remains of Birutė Hill's Structures BK-3.4.5 in Research Area IX, BK-3.5 in Horizon 5 and BK-4 in Horizon 5A

structure was uncovered. A clay partition extended across a corner of its stain. Meanwhile, around this stain on the southern and western sides, there were two postholes (in the southwestern corner) and many stake holes. Deeper down clay patches were found and, at a depth of 1.6 m, there lay burnt up stones. This stain was a pit, excavated to a depth of up to 20 cm. Five stake holes were at the base of the pit, at a depth of 1.75 m (5.95 m in absolute height).

Finds

Structure No. 3

143 - 151. Ceramics made on a rotating wheel and a slowly rotating wheel

152. Small knife with a straight back and hafted handle

153. Iron nail

154. Fragment of a small knife

155. Whetstone of schist, grayish blue in color

Finds in the hearth

156 - 158. Ceramics made on a rotating wheel and shaped by hand

159. Animal bone with semi-processing marks

Structure No. 5

164-166. Ceramics made on a rotating wheel

168. Uncut amber

Research Area X

The postholes of **Structure No. 13** were uncovered at a depth of 2.7 m - 2.9 m (4.3 m - 4.6 m in absolute height). About 20 cm in diameter, these postholes (one measuring 24 cm x 32 cm in diameter) lay over 2.2 m from each other. Between them six stake holes were found (Figure 58) in a row at 0.2 m - 0.6 m intervals along the western wall. The system of postholes and stake holes formed a closed, 2.7 m x 2.4 m wide contour, a structure in which the northeast corner had been cut off at a slant. This structure was oriented in a westward - eastward direction.

This western to eastern directed, described system of postholes cut across a 1.8 m long clay partition, distinguishable by darker sand of some 0.5 m in width. There were three postholes within this system. This partition was not very deep, only by 5 cm. It belongs to another structure; however, it is difficult to determine whether it is earlier or later in time than is Structure No. 13.

One more system of postholes outcropped in the southern part of the research area, at a depth of 2.7 m - 2.9 m, which marked the contour of **Structure No. 14** (Figure 59). In the middle of the research area, an oval stain with bits of charcoal, 0.9 m x 0.6 m in size, was found. This had been a pear-shaped hearth with an accompanying pit. Beside it was a row of nine postholes and stake holes, oriented eastward - westward. The postholes were 20 cm - 30 cm in diameter, excavated at uneven intervals, at distances of 0.2 m to 1 m one from the other. The stakes had been hammered in two rows alongside the former posts, at distances of 0.6 m - 0.7 m. This southern wall was about 5.9 m long. There was a distance of 3.6 m - 3.8 m (the width of the structure) between it and the row of postholes at the northern wall. There were significantly more stake holes at this wall. Meanwhile the postholes were 16 cm - 28 cm in size and in one row, and some were grouped in twos. Several postholes and rather scattered stake holes indicated the eastern wall of the structure. Two large postholes (20 cm x 32 cm with a 28 cm diameter) and twenty-one stake holes toward the middle of the structure seemed to have partitioned it crosswise into two equal parts. The

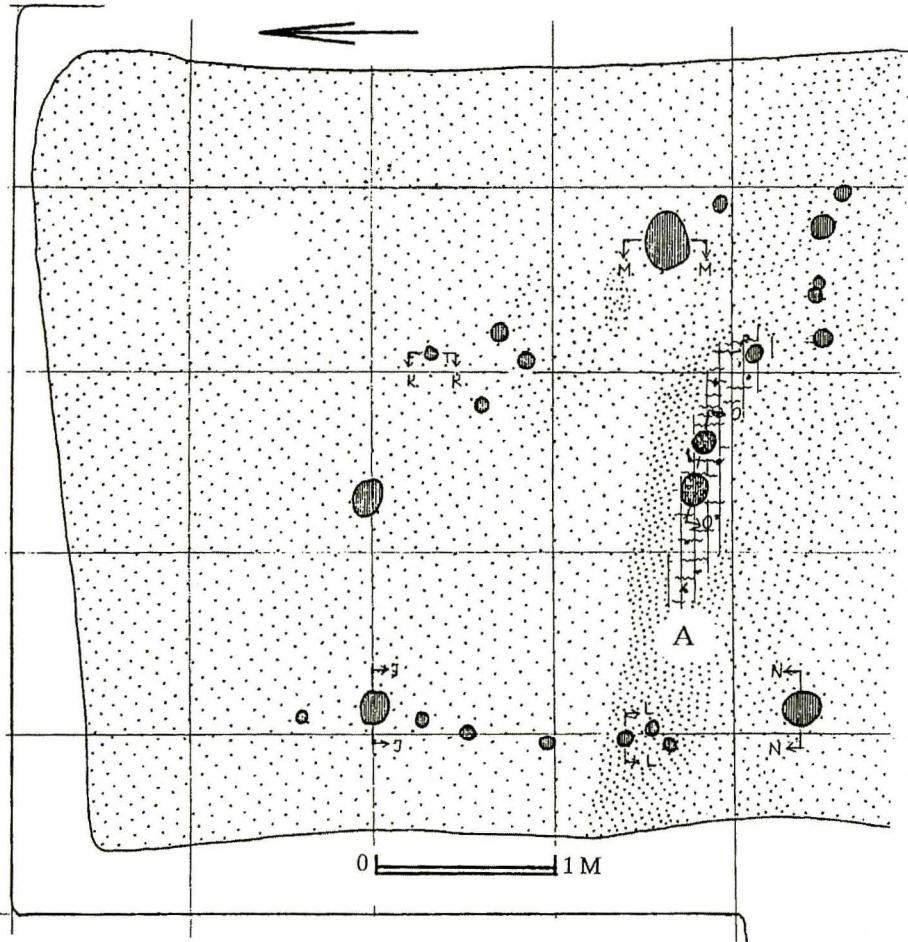


Figure 58. Layout of the remains of Birutė Hill's Structure BK-13 in Horizon 5 - the postholes in Ditch "A" belong to another structure

southwestern corner of the structure was indicated by three postholes and the small stakes formerly between them. There were a posthole and stake holes by the northern row of postholes, where a building annex had once been.

The system of postholes and stake holes showed that this had been structure with two accommodation facilities. A small building annex still adjoined its northern wall. A pear-shaped hearth, 75 cm long (in an east - west direction) and 50 cm wide, was uncovered in the middle of the western facility. It had 45 cm x 50 cm central part, and a 35 cm x 25 cm accompanying pit at the eastern side.

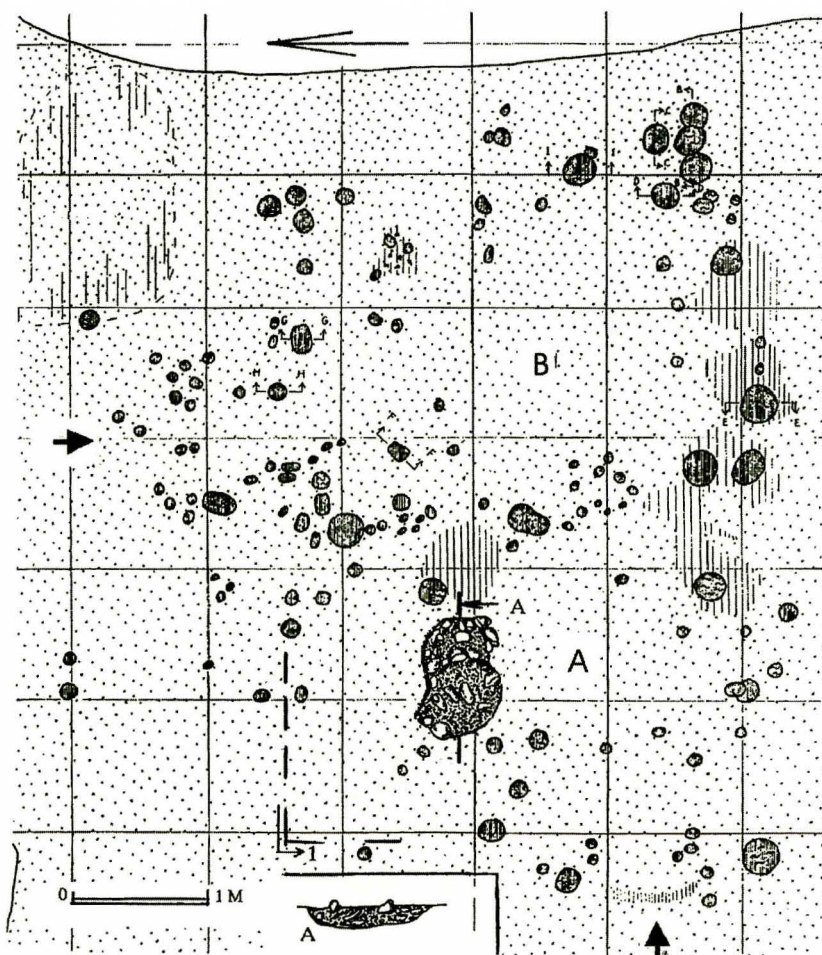


Figure 59. Layout of the remains of Biruté Hill's Structure BK-14 in Horizon 5

There were many pieces of charcoal, ashes and small stones, some crumbled by heat, in this hearth. The stones lay at the edges, which might indicate that they had been used to reinforce the hearth linings. The hearth had been installed in a small pit with a flat bottom, at a depth of 16 cm - 17 cm. Its accompanying pit was up to 13 cm in depth. Around the hearth there were three small postholes and two stake holes at the western side. On the eastern side, a stain of a post, 22 cm in diameter, was found.

Most of the finds were at the western part of the structure, around the hearth.

Finds

Structure No. 13

333 - 336. Ceramics made on a rotating wheel and made by hand (?)

Structure No. 14

337 - 340. Ceramics made on a rotating wheel and shaped by hand

341. A small iron knife with a slightly bent back

342 and 343. Small iron knives with straight backs and hafted handles

344. Fragment of an iron artifact

345. Hafted arrowhead of a bow and arrow

346. Stone weight

Finds by Structure No. 14

347 and 348. Ceramics made on a rotating wheel

Research Area XI

Horizon 5 was at a depth of 1.8 m - 2.5 m (about 5.2 m - 4.5 m in absolute height) in the western part of the research area. A clay layer, which had turned brownish from heat in certain places, lay at the surface of the horizon in the northwestern part. This layer reached up to 25 cm in thickness. Underneath the clay, next to the formerly black and coaly earth, postholes and stake holes appeared which did not comprise a system of any distinction. Small stones had been laid over one posthole that had a diameter of 27 cm.

There were several scattered postholes and stake holes in the eastern part of the research area and eastward in the supplementary trench.

Western Trench of Research Area XI

The horizon was uncovered at a depth of 1.3 m - 2.1 m (5.2 m - 4.8 m in absolute height). Areas of charred clay lay within the research area. There was sand in the trench part, where fourteen loosely scattered postholes and stake holes of various sizes were found (Figure 56).

Finds

453 - 457. Ceramics shaped by hand

Research Area XIII

Horizon 5 was differentiated at a depth of 2.1 m - 2.8 m (about 5 m in absolute height). There traces of **Structure No. 36** were covered - charcoal stains, stones and crumbs of burnt through clay (Figure 56). Five postholes formed a

row, oriented in a westerly - easterly direction. The distances between the postholes measured 0.7 m - 0.3 m, while one stood apart, over 2 m southward. The postholes were 22 cm - 16 cm in diameter, most with rounded bases (one vertical and one tapered), sunk into the ground by up to 35 cm. The stain of Structure No. 36 covered an area of some 16 m².

Postholes and stake holes, which belonged to **Structure No. 39**, were found in the central part of the research area and eastward in the supplementary trench. Although the traces of development were uncovered over a comparatively large research area, a clear system for laying out postholes was not noticed. An oval stain of nine postholes and fourteen stake holes, 1.05 m x 0.56 m in size, was found in a depth of some 26 cm, filled over with sand mixed with bits of charcoal (Figure 56). Horizon 5 in this research area was the earliest one. Sterile sand lay deeper down, devoid of any traces of human activity.

Finds

832. Blade of a small iron knife with a straight (?) back and hafted handle, reinforced by a wire spiral

833. A blade of a small knife with a straight back and hafted handle

834. Fragment of an iron rivet

835 and 836. Pieces of slag

837. Flint fragment

Horizon 5 A (Figure 56)

Research Area IX

Stains of brownish earth lay in the sand at the southwestern corner of this research area. These stains did comprise any distinct system. An oval hearth outcropped at a depth of 1.45 m (about 6.3 m in absolute height), which was 0.8 m x 0.6 m in size; it belonged to **Structure No. 4** (Figure 56). The hearth was installed straight in the sand into a small, flat-based pit that was up to 12 cm in depth. Several stake holes were around the hearth, and an older one was found at the base of the hearth. Over 0.8 m eastward from the hearth, an elongated stain of brown earth, sized 1.1 m x 0.8 m, became distinguishable, along with the postholes under it. There were even more postholes; however, the effort in establishing which one belonged to **Structure No. 4** and which to **Structure No. 3** did not prove fruitful.

A small ditch, about 0.3 m in width, was found in the southeastern corner of this research area. It had a depth of 15 cm - 30 cm. This appeared to be the traces

of a huge rotten beam. This ditch with certain posthole rows formed a straight angle. It possibly could have marked, what had formerly been the southeastern wall of **Structure No. 4**.

Right along the western wall of the research area, at a depth of 1.7 m - 1.8 m, there was a covered strip, about 0.8 m in width, of brown earth with bits of charcoal, which ended in a straight angle turned westward. This surface is ascribed to **Structure No. 5A**. A cross-section revealed that there had been a small, shallow ditch (up to 30 cm), which had been excavated for posts. Three postholes, with diameters of 12 m, 20 m x 17 m and 24 cm, were found here (Figure 56).

Finds

Structure No. 4

160 - 162. Ceramics made on a rotating wheel

163. Iron socketed spearhead, where the blade is not detached from the socket

167. Ceramics made on a rotating wheel

168. Uncut amber

Structure No. 5 A

169 - 171. Ceramics made on a rotating wheel

Finds by Structure No. 5A

172 - 174. Ceramics made on a rotating wheel and shaped by hand

Research Area X

Barely 5 cm below the surface of Horizon 5, at a depth of about 3.0 m (about 3.6 m in absolute height), a patch of packed clay outcropped in a stain of dark earth with charcoal bits, which was approximately 2m x 2 m in size. This was the hearth of a disturbed oven belonging to **Structure No. 15**. It had an irregular form and measured 1.2 m x 0.7 m in size. Black earth with charcoal was found under the oven's hearth, the traces of a fire place. Near the oven there was an entire deposit of shards found. In the middle of the research area, there was a stain of brown earth with charcoal bits found, 1.8 m x 1.8 m in size. Therein small, polished stones of the seashore lay in a small research area of 0.6 m - 0.7 m. Closer to the southern edge of the research area, there was a small oval pit, 42 cm x 40 cm, with a flat base that was 16 cm deep, filled in with small stones, stone crumbs and charcoal bits. It is not clear, whether this was a small hearth or a large posthole. The stain of the structure covered an area of 7m x 6.3 m (in an east - west direction); however, the contour of the former structure was not very distinct.

Finds

- 349 - 353. Ceramics made on a rotating wheel and on a slowly rotating wheel
- 354. Iron rivet
- 355. Fragment of a whetstone made of black rock
- 356. Fragment of a brass penannular brooch with poppyseed-shaped ends

Horizon 6 (Figure 60)

Research Area IX

Under a layer of poured sand, at a depth of 2.1 m - 3.0 m (5.3 m - 4.7 m in absolute height), the contours of eight, regularly circular, oval pits outcropped, along with another at the eastern boundary. The pits were laid out on the primary surface of the ground, which descended towards the south side. The stains of these pits stretched over a partition of about 3 m, headed in a westerly - easterly direction, edging along the slope of a former, ancient terrace. These pits were not uniform in size and, in certain places, covered each other (Figure 61). The pits were filled up with grey or brownish sand with charcoal bits.

Pit No. 1 had an oval form, 1.05 m x 0.92 m in size. A cross-section showed that this pit was in the form of a bucket with a flat base. Its depth was 74 cm, and the diameter at its base was 86 cm.

Pit No. 2 adjoined the first pit at its eastern edge. It was older, and the first one had intruded on it. The pit's diameter was about 87 cm. Its cross-section had a cylindrical form; the base was flat. The pit was somewhat crooked. The only part that had survived was at its depth of 36 cm.

Pit No. 3 was over 25 cm away from Pit No. 2. Pit No. 3 was oval, 1.18 m x 1.11 m in size. Grey sand with charcoal bits was found in this pit. At 0.3 m below its top, there was a strip of brown decayed matter, something akin to traces of a round cover. The pit widened downward. The base of the pit, which was marked by a 2 cm - 4 cm thick strip of decayed matter, was reached at a depth of 1.13 m from the top of the pit. It can be well seen in a cross-section that the base of the pit had been half-round and 10 cm - 12 cm wider than its top was. A small fragment of a pot produced on a rotating wheel was found in the pit (No. 173).

Pit No. 4 was older than Pit No. 3 was and it had intruded on Pit No. 3. This pit was about 85 cm in diameter and 46 cm in depth, narrowing towards the base.

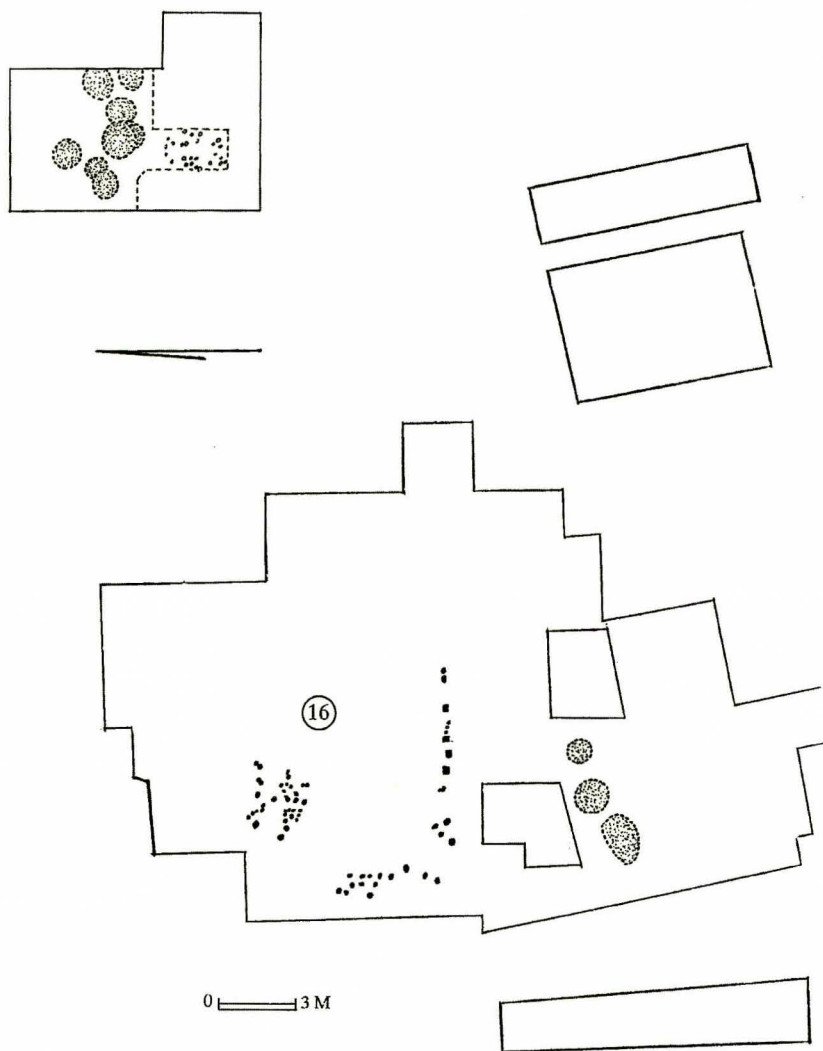


Figure 60. Development remains of the Horizon 6 cultural layer at the settlement at the foot of Birutė Hill

Pit No. 5 adjoined with Pits No. 3 and No. 4 at the eastern side. Its stain was oval, 1.05 m x 0.95 m in size. This pit had a half-round base, which reached a depth of 84 cm. The pit narrowed toward the bottom by 10 cm. In a cross-section, its contour was somewhat deformed. A strip of rotted through wood marked the edges of the pit.

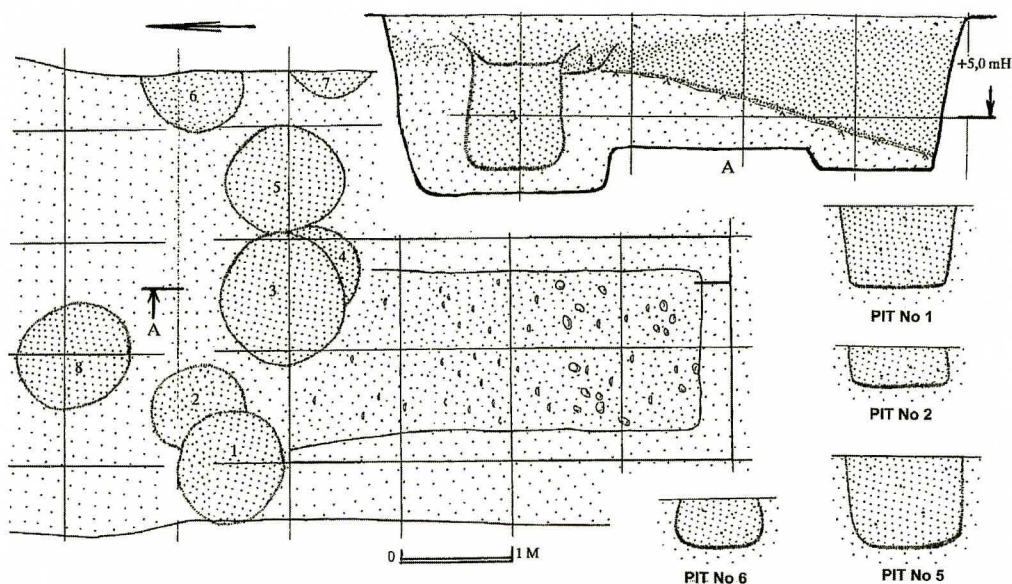


Figure 61. Pits that are traces of wicker at the settlement at the foot of Birutė Hill in Horizon 6 of Research Area IX—cross-section plan

Pit No. 6 was over 25 cm from Pit No. 5. At the top, the diameter of this pit was about 0.98 m. Its sides had a slightly concave cross-section. The base was bent nearly indistinctly and it was wider than its top was - the contour of the pit was 1.05 m in width, at 15 cm above its base. It was 0.6 m deep.

Pit No. 7 was found over 0.4 m from Pit No. 6. Its diameter at a top was 0.85 m - 0.9 m, and its depth was 0.6 m. This pit narrowed toward the bottom, where its base was flat but had rounded corners.

Pit No. 8 was found north of the others. It was oval, sized 1.02 m x 0.94 m at the top, and only had a depth of 45 cm. The pit narrowed down to a base that was half-round.

The contour of **Pit No. 9** was found by the cross-section of Pit No. 7. It was older than the latter pit; therefore, it was disturbed. The pit had been excavated from the surface, which was found 20 cm below Pit No. 7. Pit No. 9 had a diameter of 0.8 m - 0.9 m and a depth of 55 cm, narrowing almost indistinctly towards its half-rounded base. The pit had been filled in with sand that was darker than was the sand of the other pit.

South of the pits, about 0.3 m below the surface where the contours of the pits were established, a layer of darker sand outcropped, containing one or another small stone as well as fragments of pots, polished by sand and wind. This layer descended towards the southern side—a 2.7 m segment of the layer dropped by 75 cm (from 5.4 m to 4.65 m in absolute height). The primary surface in the northern part of the area elevated slightly, rising to a height of 5.3 m - 5.6 m in absolute height. There were finds on the surface (Nos. 174 - 176). Yellowish sterile sand lay deeper below this primary surface.

Finds

Pit No. 3

173. Fragment of a pot produced on a rotating wheel

Finds in the southern part of the Research Area

174 and 176. Ceramics made on a rotating wheel and shaped by hand

175. Fragment of a small, flat, white metal plate (?)

Research Area X

Postholes and stake holes, 14 cm - 10 cm in diameter, were found under a layer of Structure No.15, in the northwestern corner of the research area, at a depth of about 3.2 m (4.5 m in absolute height). Certain postholes had the form of a half-moon. Apparently split beams had been driven into the holes here. These postholes did not comprise a system of any particular distinction. These were ascribed to the destroyed **Structure No. 15A**, the one that had an indefinite size and layout.

Structure No. 16 was also dilapidated (Figure 60). The postholes found along the southern boundary of the research area differentiated by their forms. As many as four had a rectangular form—clearly left by hewn posts. There were two stake holes, 10 cm - 12 cm in diameter, in the southeastern corner of this research area. Over 0.9 m west of these, there was a rectangular posthole found, 30 cm x 12 cm in size. Over 0.7 m in the same direction from this posthole, another one outcropped, which was 20 cm x 20 cm in size. Between them, three stake holes stood in one row. Another rectangular stain, 20 cm x 18 cm in size, was found over 0.4 m westward. Heading over 0.55 m in the same direction from this one, there was another stake hole, which was 25 cm x 20 cm in size. Further west, by over 0.5 m, there lay two stake holes, about 10 cm in diameter, and, over 0.9 m behind them, a posthole of 20 cm in size was found. Nearby there were the

stains of another three posts. The rectangular postholes, which had straight-cut bases, had been driven in the ground by up to 30 cm. Another loosely scattered row of stake holes and small postholes was uncovered along the western boundary of the research area. This row was perpendicular to the first row.

The brownish, primary surface of Horizon 6 with one or another bit of charcoal and crumbs of ceramics lay at a depth of 2.3 m - 3.1 m (about 4.5 m - 3.7 m in absolute height). Deeper down, no signs of the human activity were found.

Research Area XI

In the middle part of this research area, at a depth of 2.2 m - 2.3 m (4.7 m - 4.6 m in absolute height), two nearly circular stains of pits outcropped in the sand; these lay over 0.6 m from each other (Figure 6o). These pits were denoted as Nos. 10 and 11. The first pit had a diameter of about 96 cm, and the second had a diameter of about a 1.1 m. The earth in Pit No. 10 was much darker. In the course of preparing it, stone crumbs, charcoal bits and animal bones were found. Its depth was only 23 cm, and its base was flat. Pit No. 11 was of about 24 cm in depth—its contour was barely distinct, and grey earth filled it. Both pits had been sunk into sterile sand.

VI. ŽEMAIČIŲ HILLOCK

SITUATION

Žemaičių Hillock is a small relict sandhill located at Tiškevičių Park, over 90 m east of Birutė Hill and over 100 m south of Tiškevičių Palace (now the Amber Museum). The hillock has elevated by about 4.5 m and it is 12.5 m - 12.9 m above sea level (Figure 62). The inclines of this hill are quite sloping, and its platform has an irregular form, about 35 m x 25 m in size, stretched in a southerly - northerly direction. The Tiškevičius family had built an arbor facility here during the first half of the 20th century. When its foundation was constructed, a cultural layer was abused and certain graves were disturbed; however, no information about finds from this location has survived. Furthermore, a brick cellar had also stood on the eastern incline of the hill. Its brickwork had been fully demolished during the 1970s. All that still survives at the locale of this former cellar now is a shallow depression. While this cellar was being constructed and while it was demolished, the small layers on the eastern edge of the hill's platform were somewhat disturbed. Since 1988 this hillock became a favorite place of the Palanga Ethnographic Ensemble, and the ensemble began inviting the public there during the Day of St. John's / Holiday of the Dew [summer solstice] and



Figure 62. A view of Žemaičių Hillock from the eastern side—2007 photograph

other calendar holidays. The *Žemaičių Draugija* 'Samogitian Society' also held their meetings there. An ancient type of altar, stones piled atop of each other in a semi-triangular form with a place for lighting a fire at the top, was erected on this hillock for such meetings. Due to these sorts of meetings, the hillock acquired its current name—Žemaičių Hillock.

WRITE-UP OF AREAS RESEARCHED

The excavations of Žemaičių Hillock were done under the assumption that the ancient residents of Palanga had lived on the ridges of the relict sandhills. These sandhills had elevated over the damp and swampy seashore plain during ancient times.

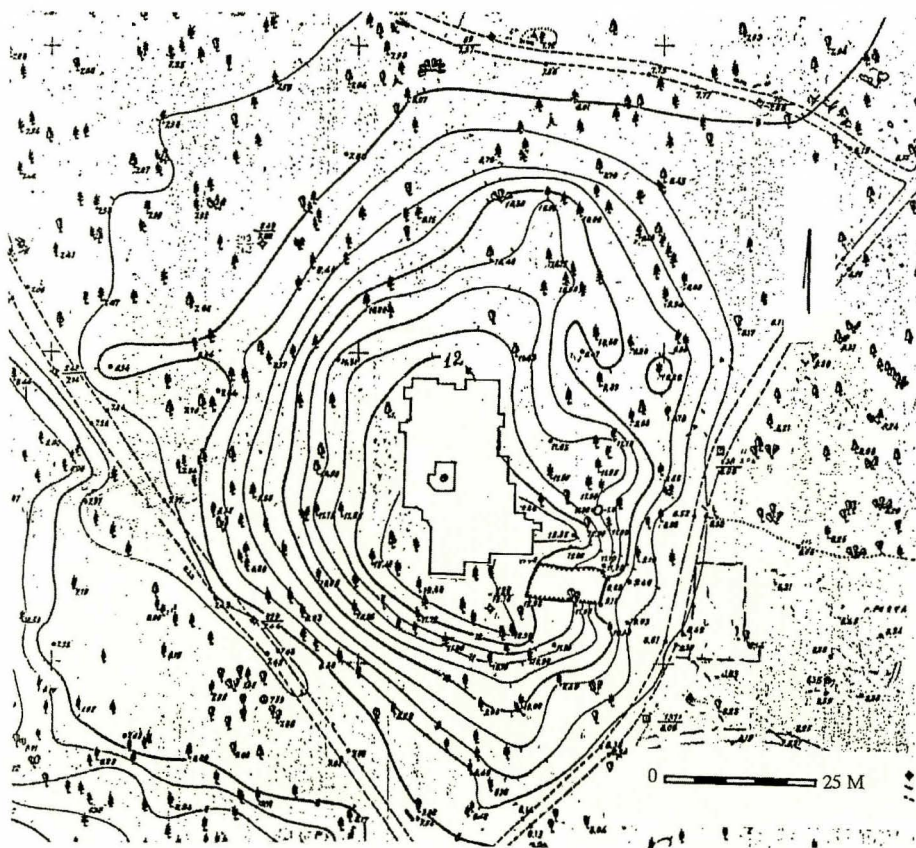


Figure 63. Researched area at Žemaičių Hillock

Žemaičių Hillock was excavated in 1990 and 1991, when a research area was investigated that measured 396 m² overall. Nearly the entire central part of the platform of Žemaičių Hillock was excavated (Figure 63). Only the lots where large trees were growing were not researched.

The ground surface of the hillock's platform is at a height of 12 m - 12.6 m above sea level. A cultural layer was found at uneven depths, ranging from 0.2 m to 0.6 m. Meanwhile the layer at the southern and southeastern corner of the research area had elevated to the current surface. Pits of later graves had disturbed the surface of this layer everywhere. Fifty-eight, 15th - 16th century graves were examined in this research area (Figures 64 and 65).

During the course of the 1990 - 1991 excavations, seven horizons of this cultural layer were distinguished, which contained remains of development. The cultural layer had not survived equally as well in the excavated research areas, and it was not possible to differentiate the boundaries of all the development horizons clearly. Only in the central part of the research area, these layers were not mixed. The cultural layers showed the changes in the ancient surfaces of this hillock, mostly consisting of various parts that had been blown away by the wind. The horizons of the upper layer had formed very compactly. These lie atop one another almost everywhere except in the southeastern part of the research area, where the layers of sand between Horizons 1 and 2 separated them. Thicker deposits of sand already separate the layers of Horizons 4 and 5. Traces of thirteen structures, which had survived in better or worse conditions, were found in various horizons of Žemaičių Hillock.

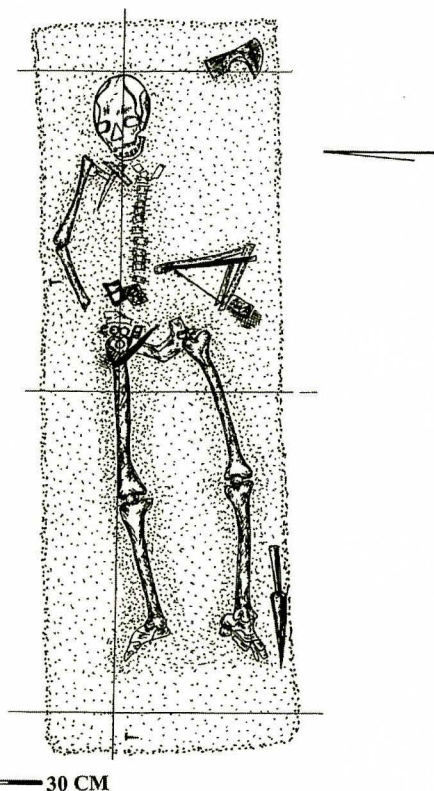


Figure 64. Grave No. 12 of Žemaičių Hillock

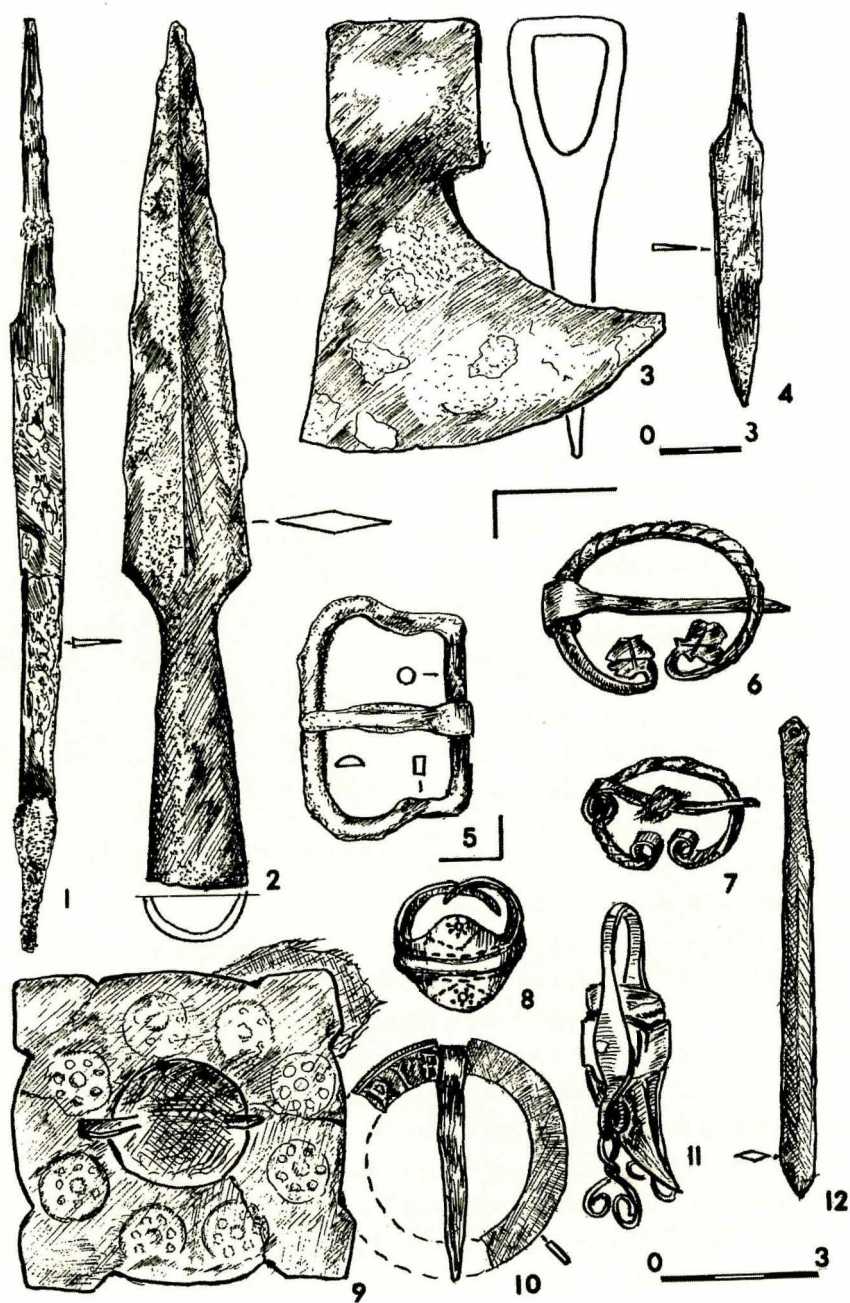


Figure 65. Finds in graves of Žemaičių Hillock

The structures that were distinguished in the horizons of the cultural layer at Žemaičių Hillock are presented in the following stratigraphic table.

Table 3
Stratigraphic Table of the Žemaičių Hillock Settlement

Research area	Numeration of horizons in the 1990 report	Numeration of horizons in the 1991 report	Structures found in the horizon
I - II	1	1	1
	2	2	2, 3, 4, 5, 6 and 7
	2	2A	8 and 9
	3	3	10 and 12
		4	
		5	13
		6	

Horizon I

The surface of this horizon was at an uneven depth in various locations (Figure 66). The layer's surface was only flatter in the central part of the research area, where it stretched about 12.4 m in absolute height. Towards the north the layer elevated, merged with the present surface of the ground and disappeared. Cross-sections show that earlier the surface of Horizon I should have been elevated above the present surface of the ground and formed a small rampart, up to 0.5 m in height, in the northern part of the hillock. The thickness of the cultural layer reached 30 cm in the central part of the research area. Meanwhile Horizons 1 - 3 were difficult to distinguish.

The surface of the cultural layer was covered in grey earth with split stones and fragments of pottery, both made on a rotating wheel and those shaped by hand (Finds Nos. 77 - 89).

Some sort of traces of development survived in the central and southern parts of the research area—crumbs of burnt through clay, scattered burnt through stones and large pieces of charcoal. Possibly these are the remains of a strewn hearth. Several fragments of pots produced on a rotating wheel and those shaped by hand were found around it.

Traces of **Structure No. 1** that were more distinct were found in the southern part (Figure 67). A small lot of clay that had not been burnt outcropped in the small research area, about 3 m x 3 m in size. In the middle of it lay a circular stain,

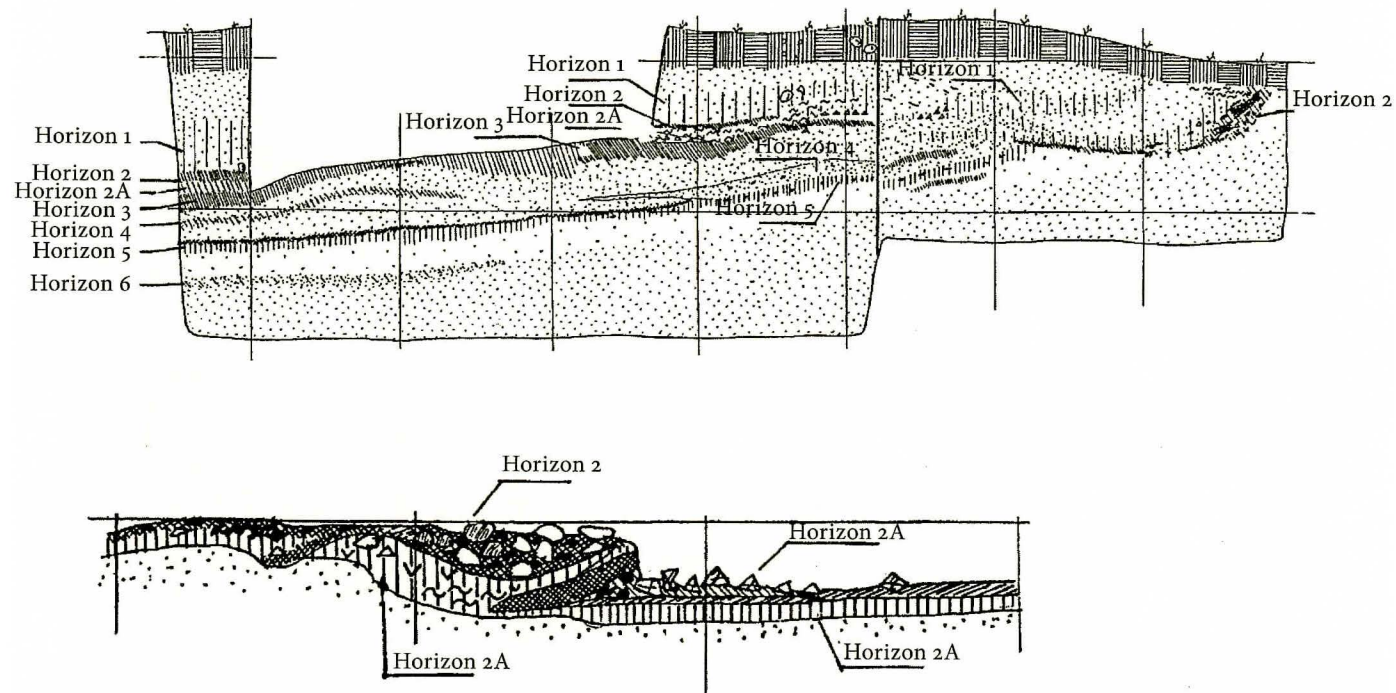


Figure 66. Žemaičių Hillock:

A. partial cross-section of the northern boundary of the development horizon

B. the layers of Structure ŽK-5 (of Horizon 2) and Structure ŽK-9 (of Horizon 2A)

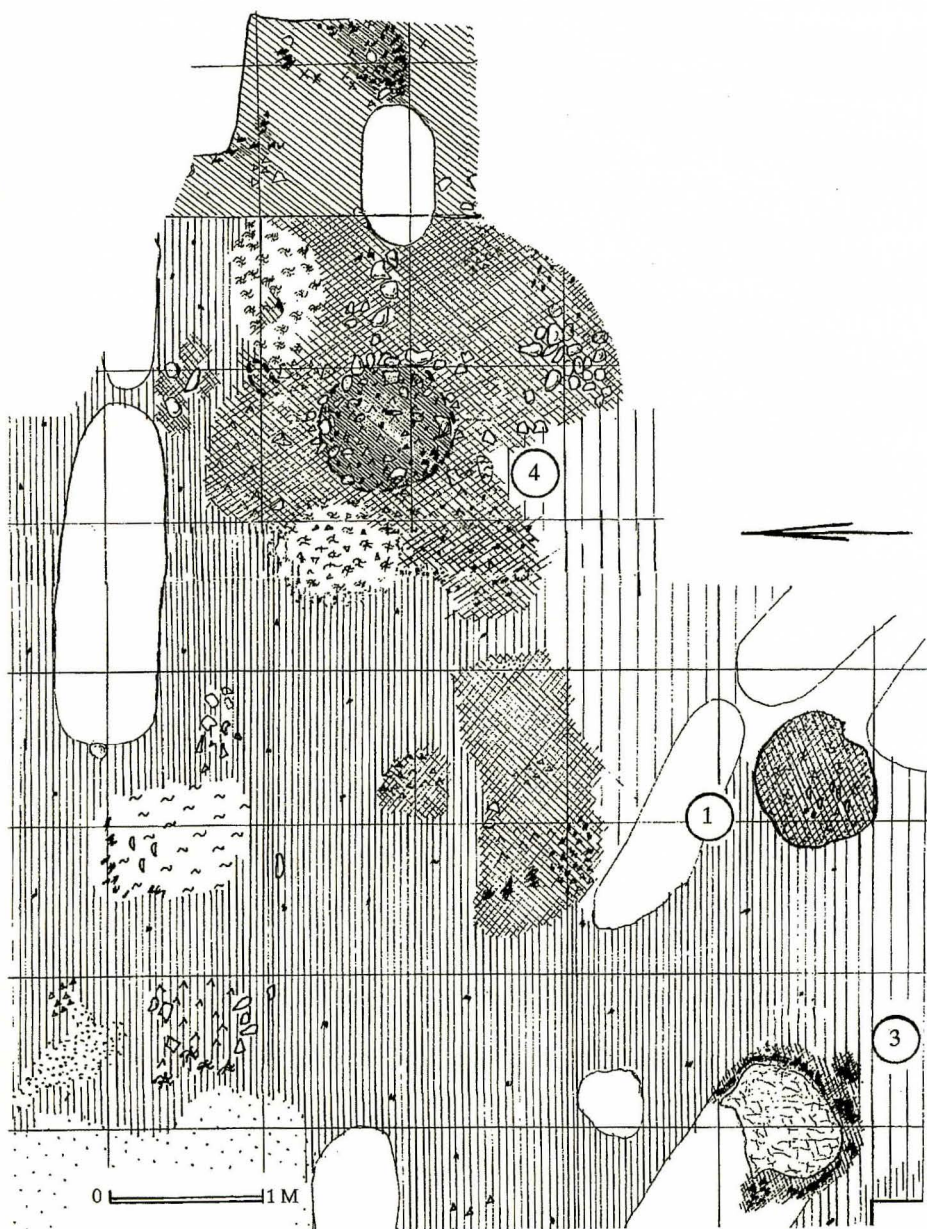


Figure 67. Remains of Structure ŽK-1 (Horizon 1), ŽK-3 and ŽK-4 (Horizon 2) on Žemaičių Hillock

about 0.9 m in diameter, of black earth with bits of charcoal and crumbs of burnt through clay; apparently this was the bottom part of a hearth. Found within this hearth were several fine fragments of pots that had been shaped by hand.

Finds⁴

- 1 - 7, 13 - 23, 29 and 30. Ceramics made on a rotating wheel, shaped by hand and miniature
- 8. Fragment of a brass artifact
- 9. Fragment of a brass hook
- 10 and 12. Iron rivets
- 24 and 25. Cylindrical clay weights used for weaving
- 26 - 28. Pieces of clay daub with impresses of beams and smoothed surfaces
- 31. Fragment of a flint nucleus (?)
- 32. Flake of flint

Eastern part of the Research Area (1991)

- 77 - 88, 91 - 100, 104, 105 and 107 - 112. Ceramics made on a rotating wheel and shaped by hand
- 89 - 102, 103 and 113. Stone weights
- 101. Natural amber piece
- 106. Stone whetstone, imitating the form of a knife

Isolated finds

- 90 (1 - 6) Fragments of a pot shaped by hand with rugged surfaces

Horizon 2

The surface of this horizon was covered at a depth from 0.25 m to 1.25 m. Horizon 2 did not always distinctly differentiate from the layer of Horizon 2A, lying immediately beneath it. The thickness of the layer reached 15 cm. While Horizon 2 was forming, the structures which had stood in the middle of the hill on the northern and southern sides were somewhat shielded by low sand ramparts.

A pear-shaped hearth with an accompanying pit, ascribed to **Structure No. 2**, was found in the sand, at the edge of the southern part of the cultural layer. The length of the hearth was 1.4 m, whereas its width was up to 0.4 m. It was oriented in a northern - southern direction. Its accompanying pit lay on the southern

4. The finds and structures from Žemaičių Hillock are marked with the index Ž, for example, Ž 1 for a find and Ž-1 for a structure.

side. A cross-section showed that the base of the hearth had been round; at its deepest, it reached 26 cm. It had been located in the center of the main pit. The sand, in a layer about 10-15 cm in thickness, which was beneath the hearth, was darker and burnt through. Black earth with bits of charcoal and small burnt through stones lay in the pit for this hearth; there were more of these stones at the edges of the hearth. No artifacts were found here.

In the western part of the cultural layer at a surface of Horizon 2, there were darker stains in regular forms and small lots of burnt through stones and burnt through clay with ashes. These appear to have possibly been traces of disturbed hearths.

Traces of **Structure No. 3** outcropped at the southwestern edge of the research area. Here a disturbed hearth of an oven was found. The hearth was of burnt through clay, oval and about 90 cm x 70 cm in size. Black earth with a concentration of soot was around it (Figure 67). The thickness of the packed and burnt through clay reached 10 cm. Only a few fragments of pots were found at the edge of this research area (Nos. 34 and 35).

A regularly formed stain and numerous burnt through stones were in the east of the research area, at a depth of 0.9 m. The remains of **Structure No. 4** were uncovered here—a hearth with stones placed around it (Figure 67). The stones encircled a small, regularly circular pit, 0.9 m in diameter. The pit was up to 5 cm in depth, with a rounded base. This pit was filled up with ashes and little pieces of charcoal. Stains of ashes and patches of packed clay around the hearth could be the remains of clay flooring. Ceramics shaped by hand and a stone weight were found in the surroundings of this hearth. Found, over 30 cm southeast of the hearth, were fragments of a burnt up iron neck-ring with brass and glass beads; an ice pick was next to it.

The most distinct layer of Horizon 2 was in the eastern part of the research area, towards its center. Here were the traces of **Structure No. 5** (Figure 67). This was an oblong partition, about 0.8 m in width, and oriented in a southwestern to north-eastern direction. This partition consisted of several layers of burnt through stones. It lay in a small ditch with a depth of some 0.4 m. Somewhat higher there lay the remains of burnt up beams and crumbs of clay. The charcoal from the beams was spread out into a strip of about 0.5 m, heading in a western - eastern direction.

Horizon 2 of the cultural layer had elevated to the surface in the southeastern part of the research area. Charcoal and patches of charred clay—the traces of **Structure No. 6**—marked this layer. The remains of burnt up beams lay in a 0.5 m - 0.8 m wide partition, directed from the east towards the west. Alongside these, a clay ridge of an oval form, 0.8 m x 1.0 m in size, was found—the remains of

an oven. It had not been burnt through. Its thickness reached 16 cm. A disorderly row of not-particularly-large stones lay at the bottom of the clay hearth. Under the hearth of this oven, there was a stain of sand with soot, about 1 m in diameter—the remains of a fire place. Inside there were the bottom part of a poorly fired pot, made on a rotating wheel, and a jawbone fragment of an animal. Over 2 m - 3 m to the east of the hearth of this oven, larger pieces of charcoal were found, which indicated that many of the burnt up beams had lain in a northern - southern direction. There were very few finds within the boundaries of this structure, merely a few fragments of pottery. More ceramics (Nos. 124 - 127 and 136 - 139) were found to the southwest from the traces of this structure.

The remains of one more erection, **Structure No. 7**, were found at the western edge of this research area. Only a patch of the cultural layer survived there, at a depth of 0.3 m. Found in it was a slightly disturbed, small hearth, with a diameter of some 60 cm, installed in a pit with stones that had been laid around it. The lining of the hearth was quite vertical, and its rounded base was sunk by up to 40 cm. The sand around the hearth had been overheated.

Finds

Structure No. 3

33 - 35. Ceramics shaped by hand

Structures No. 4 and No. 8

42 - 44, 49 and 50. Ceramics shaped by hand

46. Fragment of a stone weight

47 (1 - 5). Remains of an iron neck-ring with brass and glass beads

48. Iron ice pick

51 - 53. Remains of charred bones

Finds in other places of the research area

36 - 40. Ceramics shaped by hand

41. Fragment of an amber artifact (?)

Structure No. 5

119 - 123, 128 and 136 - 138. Ceramics made on a rotating wheel and shaped by hand

Isolated finds

54 - 57. Ceramics made on a rotating wheel and on a slowly rotating wheel

Findings south of Structure No. 6

114 - 118, 124 - 129 and 139. Ceramics made on a rotating wheel, shaped by hand and made on a slowly rotating wheel

129. Stone weight

Horizon 2A

A small layer of Horizon 2A lay everywhere beneath Horizon 2. Sometimes it merged with the latter, forming on the same sort of surface of the hill that was at the center of the platform. The surface of Horizon 2A was horizontal except in the south and north; there it ascended.

The cultural layer at the east of the research area, where it is the same level as Horizon 2A, was darker and consisted of sand, burnt through clay and stones (Figure 68). It outcropped at a depth of 0.6 m - 1.1 m (11.3 m - 11.8 m in absolute height). A great deal of charcoal, ashes and pieces of burnt through clay daub, some of which had impresses of small beams, delineated a distinct stain of about 4.5 m x 4.5 m in size—**Structure No. 8**. Especially many small, burnt through stones lay at the eastern edge of this stain. In this place, an area of more densely lying, larger stones, about 1.2 m x 1.0 m in size, and larger pieces of charcoal became distinguishable—this had formerly been a hearth. These larger stones framed the stain of the structure at the east. The eastern wall of this dwelling had been deepened into sand, by about 10 cm. Apparently this had occurred because the layer of the structure was in a shallow depression.

The remains of **Structure No. 9** were found at the northern edge of the cultural layer, in the center of the research area (Figure 68). There one more dark layer with charcoal bits, soot and widely scattered pieces of burnt through daub was covered over with stones and grey sand, at a depth of 0.6 m - 0.9 m. Nearly in the same place, where there was the ditch with stones of the later Structure No. 5, a strip of burnt through clay daub pieces, about 60 cm in width, was uncovered. This clay daub had impresses of small beams and roughly squared timber or planks. The external surfaces of the structure's walls had been leveled or wattled and daubed. This ditch with clay daub, which was 3.3 m in length and up to 15 cm in depth, was oriented in an eastern - western direction. There was also burnt through clay daub towards the south—it appeared that the northwestern corner of the structure had been here. A clay ridge lay over 1.8 m southeast of the small ditch with daub whereas, alongside of it, there were the remains of a well-disturbed clay hearth from an oven. The thickness of the oven's hearth reached 16 cm. Traces of a fire place were found under the clay, constituting a layer, 1 cm - 10 cm in thickness, with soot, bits of charcoal and small solitary stones.

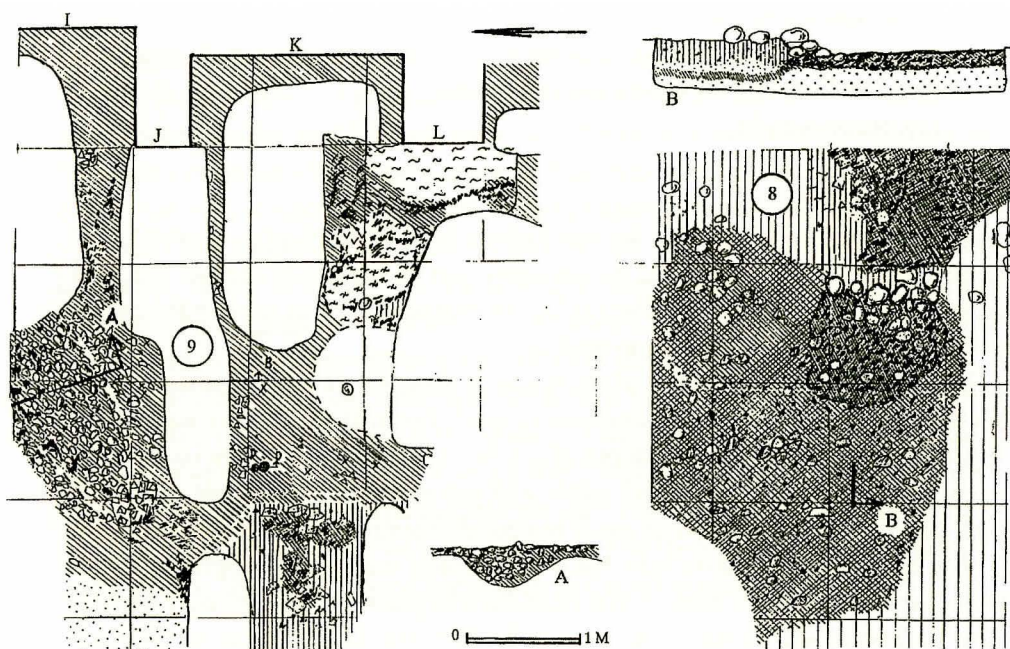


Figure 68. Structures ŽK-8 and ŽK-9 in Horizon 2A on Žemaičių Hill

A layer was found on the southern incline of the hill, at a depth of 1.0 m - 1.3 m. It was well distinguishable in the sand because it consisted of earth with charcoal and small stones. The thickness of this layer reached 5 cm - 15 cm. A patch of packed and burnt through clay, about 70 cm in diameter, lay there—the remains of the hearth of a clay oven, ascribed to **Structure No. 13**. This oven's hearth was sunk into a small pit, which was some 4 cm in depth. There were finds (Nos. 167 - 174) next to the oven's hearth.

Finds

- 167, 168, 171 and 172. Ceramics shaped by hand
- 169. Small piece of natural amber
- 170. Iron nail
- 173. Natural amber
- 174. Large stone weight

Structure No. 8

- 42 - 44, 49 and 50. Ceramics shaped by hand
- 46. Fragment of a stone weight
- 47 (1 - 5). Remains of an iron neck-ring with brass and glass beads

48. Iron ice pick

51 - 53. Remains of charred bones

Structure No. 9 (Horizon 2 - 2A)

130 - 135, 140, 142, 144 and 179 - 181. Ceramics shaped by hand and made on a slowly rotating wheel

141. Fragment of a stone whetstone

145. Small piece of amber

146 - 151. Pieces of clay daub

182. Fragment of a clay weight used in weaving

183. Iron small bore

184. Blade of a small knife with a bent back and hafted handle

Horizon 3

The surface of this horizon in the middle of the research area was found, at a depth of about 1 m (11.1 m in absolute height). Further south it elevated, up to 11.7 m - 11.8 m, in absolute height where, at a depth of 0.2 m, it merged with the later layers. In the southern part, this small layer was only distinguishable in certain places. It could appear that, while Horizon 3 was forming, the hill's platform towards the east was 5 m - 6 m narrower than it is currently. The layer of Horizon 3 was 10 cm - 15 cm in thickness.

Marks of **Structure No. 10**—postholes and stake holes - which were covered with grey earth, of several centimeters in thickness, appeared in the southeastern part of the research area. These were beneath the remains of development in Horizon 2A, at a depth of 0.5 m - 0.8 m (11.7 m - 11.4 m in absolute height). Nineteen postholes and stake holes were found in total (Figure 69). The postholes were 12 cm - 30 cm in diameter, placed at a distance of over 0.1 m - 1.4 m from one another or more sparsely. The stake holes were 8 cm - 10 cm in diameter. Two rows, about 1.5 m in distance from each other, could be discerned by the layout of the posthole and soot stains. These rows were oriented in approximately an eastward - westward direction. The northern row stretched for 3.5 m. Grey earth with fine and sparse bits of charcoal and ashes extended around the remains of a post-bearing structure. The thickness of the Horizon 3 layer was 5 cm - 15 cm. A small hearth, about 50 cm in diameter, was found over 15 cm westward from the posts, driven into sand by up to 10 cm, and filled in with burnt through, small stones along with charcoal. Found alongside were several stake holes and ceramics that had been shaped by hand—these were the remains of **Structure No. 11** (Figure 69).

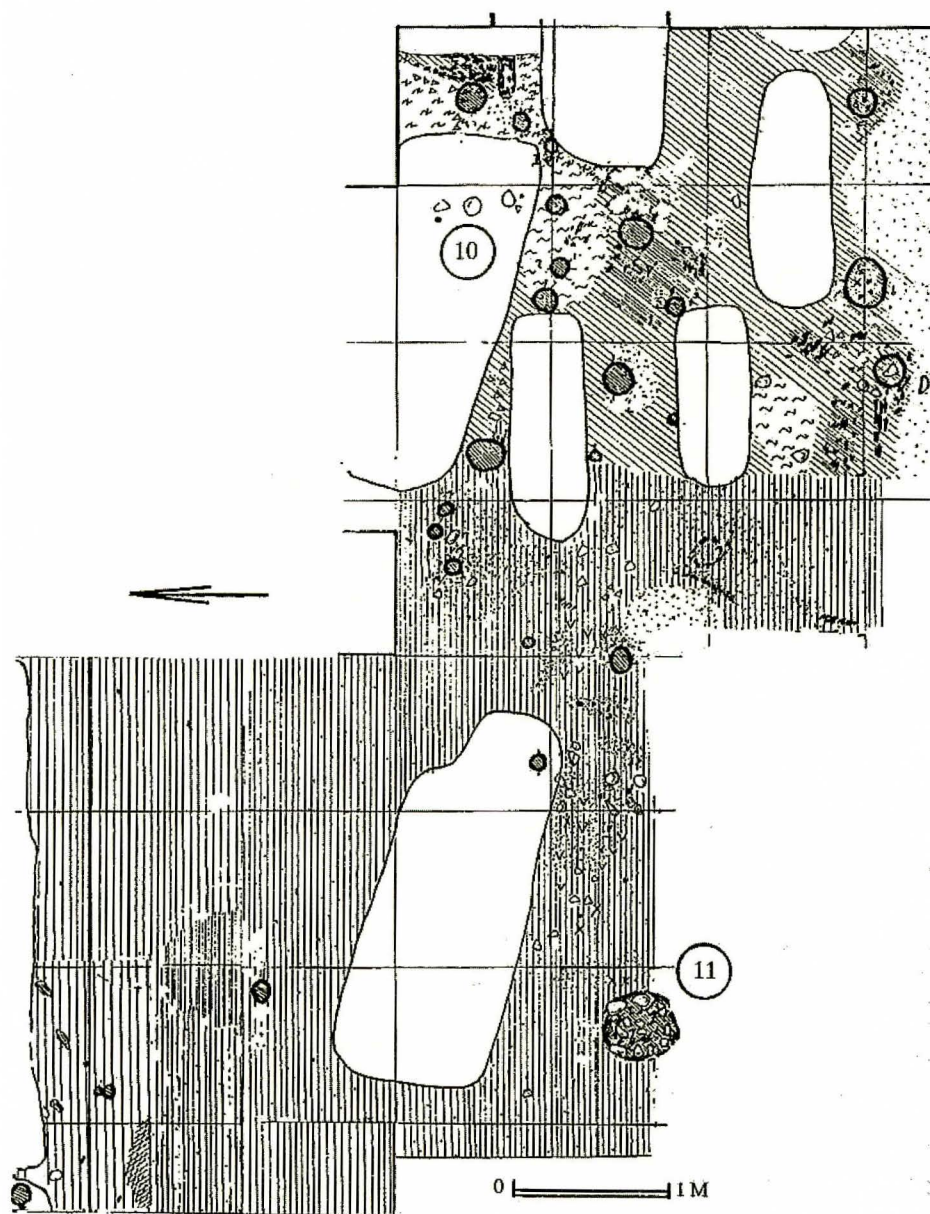


Figure 69. Remains of post-bearing Structures ŽK-10 and ŽK-11 (Horizon 3) of Žemaičių Hillock, in the southeastern part of the research area

Horizon 3 had only survived fragmentarily in the middle of the research area. An oval stain, 0.6 m x 0.45 m in size, was found, at a depth of 0.55 m, in a patch of darker earth. The stain was filled in with black earth, bits of charcoal and crumbs of clay. This was a hearth of **Structure No. 12** (Figure 70). The pit of the disturbed hearth was only 5 cm in depth. In the environment of this hearth, there were the ceramics of several stakes holes and postholes and animal bones (Nos. 58 and 59).

Little patches with stones, crumbs of clay and a posthole, 18 cm in diameter, which were found at the western edge of the research area, were also ascribed to Horizon 3.

A small lot of a cultural layer was also found in the southern corner of the research area, at a depth of 0.8 m. On its surface, there lay bits of charcoal and patches of dark earth (Figure 70). A deposit of shards from a pot that had been hand-shaped, with a mildly rugged surface, was found in sand and, next to this, there was another deposit with several broken pots (Nos. 61 - 70). Here two post-holes with rounded bases, having diameters of 36 cm and 32 cm, outcropped at depths of 15 cm and 10 cm.

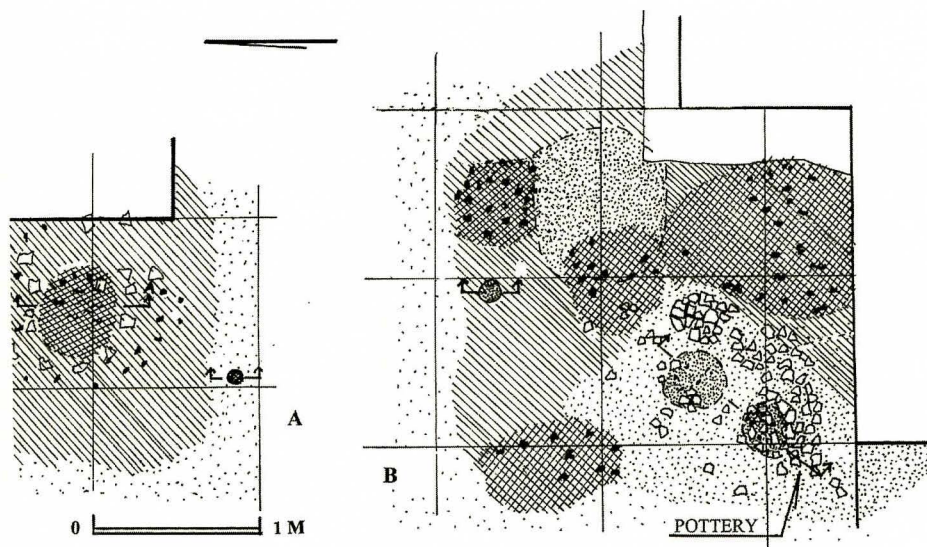


Figure 70. Fragments of development in the cultural layer of Horizon 3 on Žemaičių Hillock
 A. Structure ŽK-12
 B. the southern corner of the research area where the posthole and ceramics were examined

Finds

Structure No. 11

153 - 160 (160 = 131). Ceramics shaped by hand

161 - 164. Small pieces of natural amber

165. Iron rivet

Structure No. 12

58 and 59. Ceramics shaped by hand

60. Raw amber

Finds at the southern edge of the research area

61 - 70. Ceramics shaped by hand with mildly rugged and smooth surfaces

Isolated finds in the disturbed cultural layer

71. Ceramics made on a rotating wheel and shaped by hand

76. Stone weight for a net

Horizon 4

Grey earth, of merely 1 cm - 5 cm in thickness, was found in the central part of the research area. It was at a depth of 0.95 m - 1.2 m, under a layer of sand, which was 10 cm - 17 cm in thickness. Tiny lots of clay, bits of charcoal and ashes lay in this earth. The layer had been wind blown and it was disorderly. Fragments of a pot shaped by hand, No. 166, were found. Marks of this horizon were noticed, at a depth of 1.0 m - 1.2 m, on the eastern side of the research area. There were no finds in this layer.

There is not very much known about the relief of the hill's platform during the time that Horizons 4 - 6 were forming. These small layers in the central part of the research area were also nearly horizontal, located at a height of 10.8 m - 10.9 m above sea level. Meanwhile, on the southern side, they descended rather distinctly towards the south. At that time, there was no sand rampart on this edge yet, and the platform had not been as tall either. The small layers of these horizons rose upwards towards the eastern side and there they merged with the later layers (Figure 66).

Finds

166. Fragments of a pot shaped by hand

Horizon 5

This, the oldest horizon of a cultural layer in this location, lay 20 cm - 35 cm below Horizon 4, under a small layer of sand (Figure 66). This layer was discovered, at a depth of 0.85 m - 1.7 m, in small research areas. It had been blown away by the wind at the edges of the hill. This horizon did not form any particularly distinct, simple layer. Small stones and fragments of pots shaped by hand lay in a deposit of wind blown sand, which was about 10 cm thick.

Finds

175 - 178. Ceramics shaped by hand

VII. ROUŽĚ STREAM SETTLEMENT

At the flat, left shore of Roužě Stream, running along the former swamp of the old riverbed, over 1.2 km from where this stream flows into the sea, there was also an examined cultural layer discovered, in a research area of 251 m² (Figure 71). Examined were the 3rd - 4th century burial grounds, which were 60 m west of the excavated location. Meanwhile there are burial grounds from the 8th - 12th centuries, which were excavated over 150 m towards the south (Figure 2).

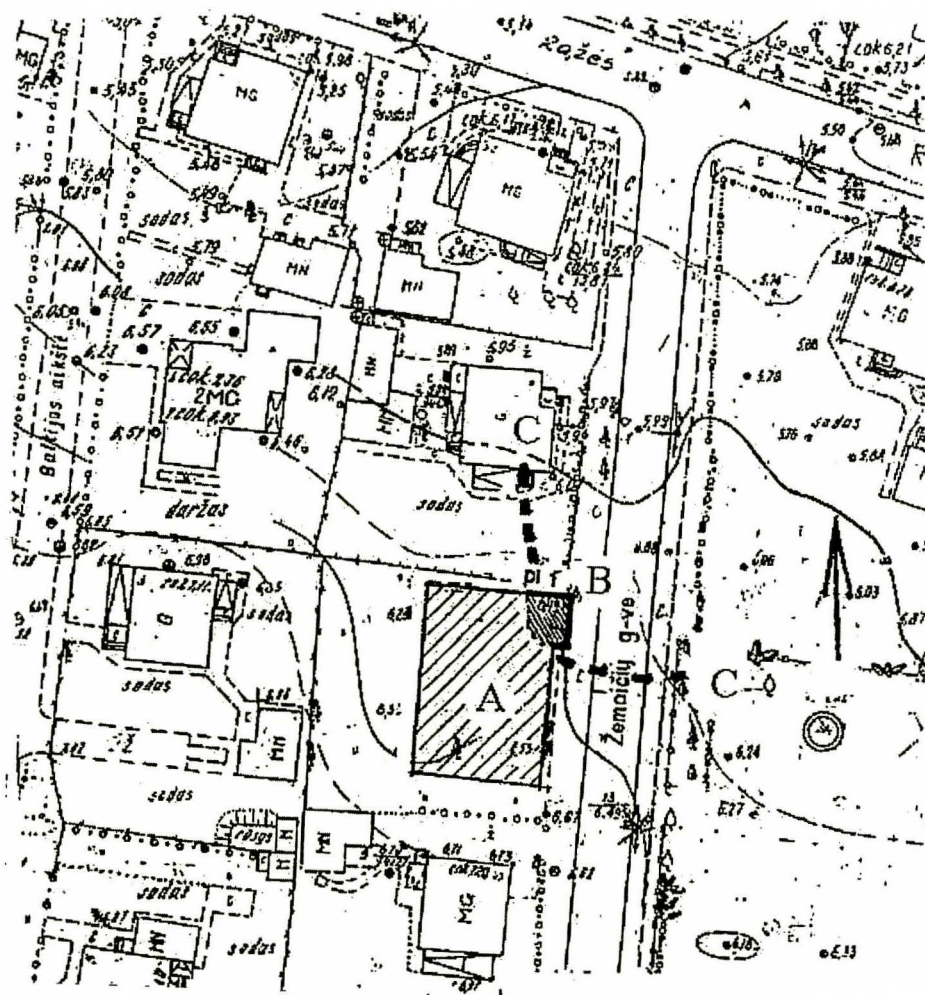


Figure 71. Situation of the Roužě Stream Settlement

The excavations for survey work were accomplished at the locale of a construction dig. A neighboring street and private properties limited the opportunities for excavations. The place under research descends somewhat, from the south-east towards the northwest. It has an absolute height from 6.6 m to 6.28 m.

CULTURAL LAYER HORIZONS

A nearly horizontal layer of humus, consisting of brownish sandy earth, was discovered, at a depth of 55 cm - 65 cm, under the surface layers. At the bottom of this humus layer, once-dug holes that were not very large were found from place to place and randomly contained 17th century ceramics and clay daub. Fine, brownish, sterile gravel lay under the layer of humus. Its deposit reached a thickness of 1.8 m. Only at a depth of 2.3 m - 2.4 m under the gravel, a horizontal layer of greenish moraine loam was found.

At the northeastern part of the excavation, a pronounced, nearly black layer with charcoal along with small holes and marks of postholes became distinguishable at the bottom of the humus layer, which was from 10 cm to 30 cm in thickness—this was a cultural layer with traces of development (Figure 72).

Horizon 1

An intensive, blackish cultural layer demarked this horizon, and a stain of **Structure No. 1** (Figure 73) clearly outcropped, at 0.8 m - 0.85 m under the humus, in a depth of some 0.7 m. Bits of charcoal and patches of ashes marked the stain of this structure. The layer was completely covered with crumbs of clay—the fragments of clay weights used for weaving. There were not many crumbs of clay daub. Some of them contained impresses of small beams. During the course of preparing the layer, ceramics, both made on a slowly rotating wheel and on a rotating wheel, were discovered along with several fragments of iron. Most of these finds were in the lower part of the layer.

Two large stones were found, one next to the other, by the eastern boundary of the research area, at the level of the cultural layer. One was a natural stone, whereas the sides of the other were semi-worked or somewhat cracked. The boundary of a layer, which was darker than the one above, became clearly defined at a depth of some 0.9 m. Right here there were a great deal of charcoal, soot, ashes and numerous clay weights used for weaving looms. The stains at the western edge were the traces of burnt up beams, which demarked the contour of the structure's western wall. There were no noticeable traces of this erection's

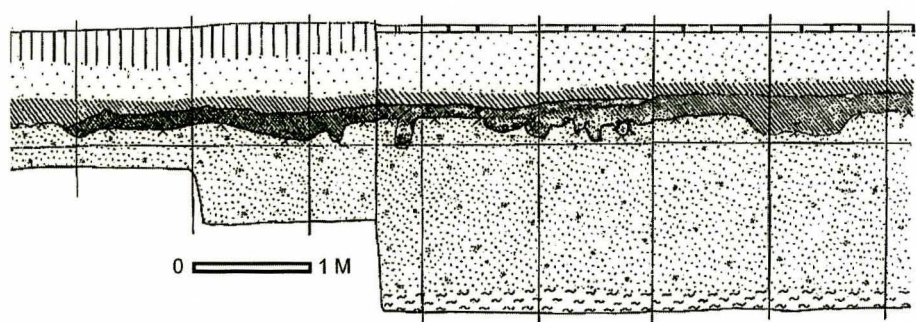


Figure 72. Cultural layers of Roužě Stream Settlement at the eastern boundary of Research Area I

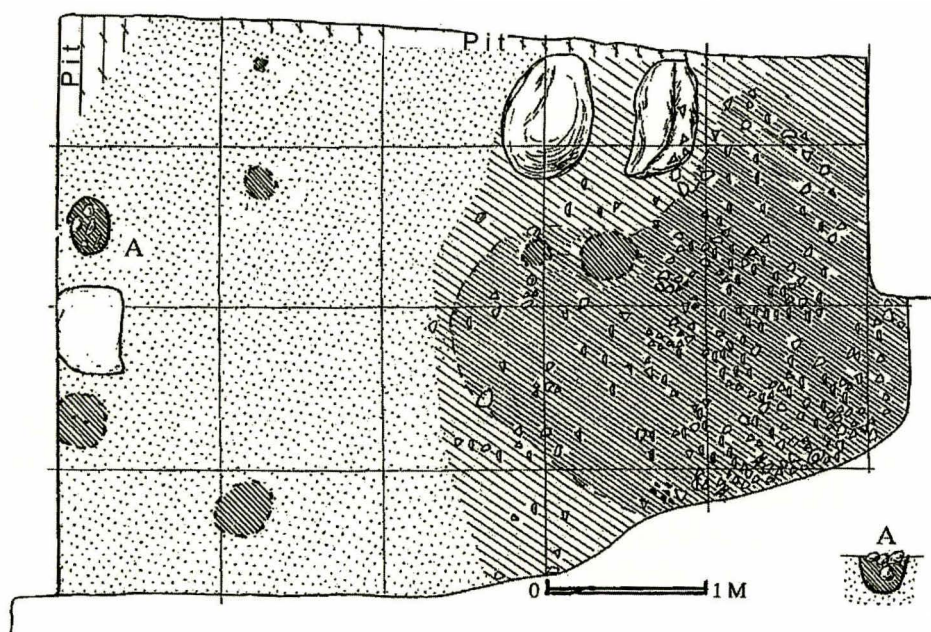


Figure 73. Plan of the remains of a structure at Roužě Settlement.
Posthole A belongs to an older erection.

clay floor. The entire stain of Structure No. 1 was sunk into sterile gravel by about 20 cm. The stains of seven postholes, in sizes of 17 cm to 35 cm, as well as two stake holes were found in this small research area. There were no finds which might have substantiated the existence of two cultural layer horizons in the locale of the excavations.

Finds⁵

16th - 17th century finds from trenched layers

- 1 and 10. Fragment of an oven tile in the form of a pot
- 2 and 11. Fragments of pots made on a rotating wheel

Finds at the northwestern corner of the excavation

- 3 - 8. Pieces of burnt through clay daub
- 9. Fragments of bones

Research Area I

16th - 17th century surface layer

- 12 - 17 and 19. Ceramics made on a rotating wheel
- 18. Fragment of an oven tile in the form of a pot
- 20. Shard of glass
- 21. Brick fragment

Cultural layer

- 22 - 29. Ceramics both made on a rotating wheel and on a slowly rotating wheel as well as shaped by hand
- 30 - 59. Fragments of clay weights for weaving⁶
- 60. Iron artifact similar to a nail
- 61. Fragment of a nail (?)
- 62. Fragment of an indeterminate iron artifact

INTERPRETATION OF THE LAYERS

The boundaries of the Roužě Stream Settlement remain unclear—only its southeastern edge has been discovered. There were no marks of a cultural layer noticed, while observing the engineering excavations, east of the examined research area. The cultural layer should have continued towards the north and northeast from the examined area towards Roužě Stream. Meanwhile, the declivity at the shore of the settlement, once existing at the terrace of this stream, could have also taken up about 1.5 hectares of the research area.

5. The finds from the Roužě Stream Settlement are hereafter denoted by the index, "R", before a number.

6. There were 230 fragments of weights found in various sizes (the larger ones were akin to 1 cm x 1 cm). Their overall weight came to over 3.7 kg. After calculating the total weight of one of the best-surviving weights and determining the approximate average of the diameter of a weight, it was established that the fragments gathered from Research Area I belong to ten different weights.

The western edge of the settlement extended into the old riverbed, or into the swamps that had been in its locale. Another shore of this stream, the one to the right, is quite vertical and high. However, it is not clear for the time being neither what sort of planning there was for this settlement nor how dense its development was.

The nature of the development traces that were uncovered in Research Area 1 also remains unclear. The stains at the bottom of the layer comprise a dual partition, at a width of 1.5 m - 2.0 m, which is similar to the finds found in many hill-forts of Lithuania. These could be ascribed to the remains of defense fortifications. That erection stain, which had been sunk by about 20 cm, also had to belong to that same system, which had been partially excavated, because postholes had been found on both sides of it. This erection had been rectangular, about 3.0 m x 2.5 m, longer in an east - west direction. The traces of the burnt up beams demarked the contour of the western boundary of the structure. The sparse pieces of burnt through clay daub had impresses of small beams. No noticeable traces of the structure's clay floor were discovered nor any traces of a hearth (these might not have survived assuming the hearth had not been deepened into the ground).

The remains of development can be considered as a partial substantiation of a settlement. It would appear that these are the remains of defense fencing and a small-sized tower (similar to the traces of a barrier at the settlement's defensive rampart with a tower, found at the foot of Birutė Hill). This structure, aside from its defensive designation, was also an out-building, since the entire layer of the stain was strewn with fragments of clay weights for weaving looms. There is not a doubt that a weaving loom had stood at this locale, since the fragments of no less than ten weights had been found here. For this reason, this erection could also conditionally be called a weaving house, something similar to what existed in Scandinavian countries as well.⁷

7. At the town of Arhus in Denmark, a weaving house was excavated, dated at about 900 years. It was about 2.6 m x 2.2 m in size and lowered into the ground by more than a half meter. Along its sides, there had stood benches made of earth, and there had been a small hearth and weaving looms leaning against the wall.

VIII. SOUTHERN SETTLEMENT

In 1987 it was learned that "a large ancient cross" had been found at the hippodrome, next to the dance platform, on Vytauto Street in the southern part of Palanga. While excavating trial trenches at the indicated locale, cultural layers of an ancient settlement were discovered. It was named Ancient Palanga Settlement II. Afterwards the territory of the hippodrome was excavated for two more summers in 1988 and 1989. All cultural layers common to this settlement were examined in an area of 438 m² overall. In 1996 the territory of the settlement was supplementally surveyed using prospect holes. Employing these investigations, approximate boundaries of the cultural layer and size of the settlement were ascertained (Figures 74 and 75).

An effort was made to supplement the usual excavation work in the territory of the ancient settlement, applying geophysical methods to observe the cultural layers. This work was performed in the autumn of 1988 by a coworker,

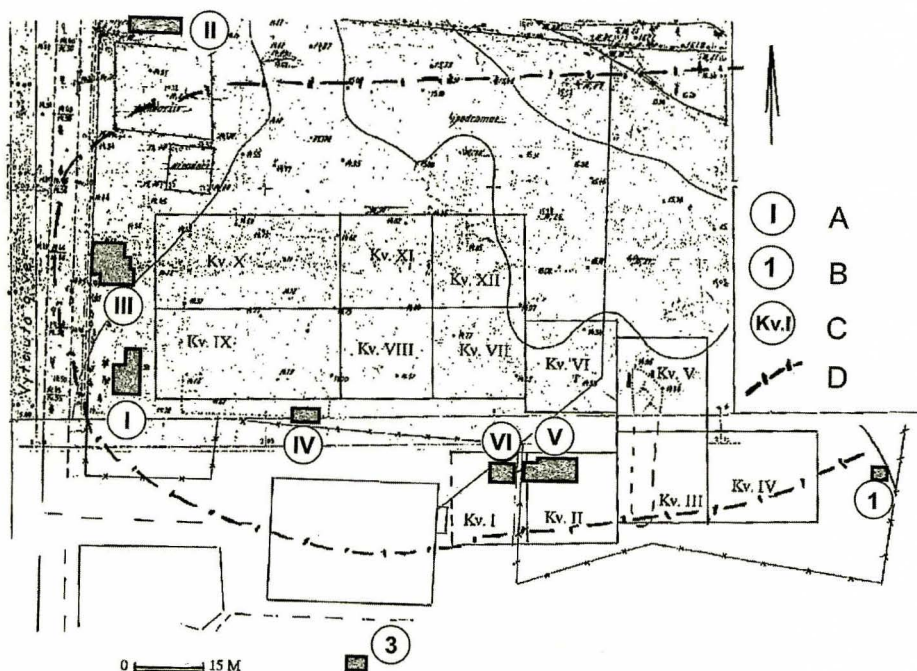


Figure 74. Western part of the Southern Settlement—examined areas and boundaries of the cultural layer
 A. Research areas
 B. Test pits
 C. Areas surveyed by geophysicists
 D. Presumed settlement boundaries

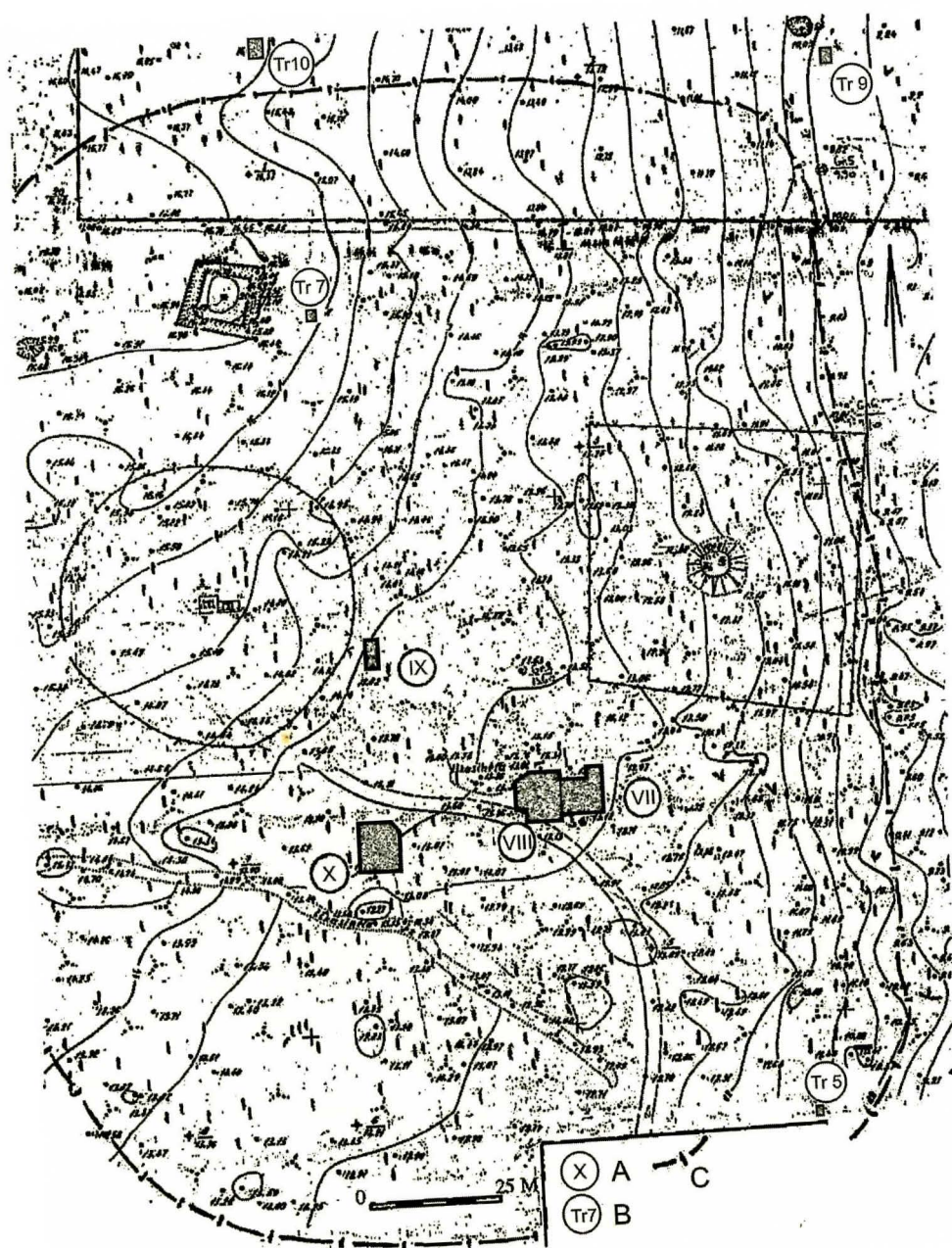


Figure 75. Eastern part of the Southern Settlement—examined areas and boundaries of the cultural layer

A. Research areas and trench
 B. Test pits
 C. Presumed settlement boundaries

A. Levašenko. At that time he was with the USSR's Academy of Science Laboratory of the Diffusion of the Earth's Magnetic Ionosphere and Airwaves and the Dynamics of Atmospheric Electricity. Dr. A. Staniukovič, from that same institute, provided consultation for this work. A 6300 m² research area was surveyed at the southern side of the hippodrome (Figure 74).

The ancient settlement that was researched is on the rampart of the ancient seashore, which the arctic Baltic Glacier Lake left behind, approximately 12,000 years ago. This rampart is traceable today in the terrace, at the western edge of Vytauto Street, towards the greenhouses in Tiškevičių Park. This terrace is 12 m - 15 m above sea level. A strip of swamps extends along the rampart, at its eastern side. The cultural layers of this ancient settlement were excavated in a 400 m long segment at the eastern edge of the aforementioned rampart. At one time, there had been lowlands and swamps to the west of this rampart. The layers were found in a northerly - southerly direction in a 120 m - 400 m strip. Therefore, the territory of the settlement could have been up to some seven hectares. The settlement is about 250 m southwest of the 8th - 13th century burial grounds and about 800 m southeast of Birutė Hill.

WRITE-UP OF THE RESEARCH AREAS

Research Area I

An observational test pit was excavated at the southwestern corner of the hippodrome. Once the cultural layer was discovered, the test pit was expanded into a research area, with a size up to 45 m². There was an even ground surface in this locale, which lies about 14.6 m above sea level.

Research Area II

The search for the cultural layer in this, 10 m x 3 m sized, research area took place in the northwest corner of the hippodrome. The absolute height in the locale of the excavations is 14.1 m - 14.2 m. A layer of peaty humus was found under the surface layers and wind blown sand, at a depth of 1.2 m - 1.4 m. There was no evidence of any human cultural activity therein.

Research Area III

Since no cultural layer had been discovered in Research Area II, the next research area was excavated between Research Areas I (1987) and II. In this place, the absolute height of the ground surface reached 14.5 m. The size of this research area was 64.5 m².

Research Area IV

Further, while surveying the ancient settlement, a small research area, 5 m x 2 m in size, was excavated at the southern edge of the hippodrome. The height of the ground surface in the locale of Research Area IV was about 14.8 m above sea level.

Research Area V

Research Area V was excavated at the southern edge of the hippodrome, eastward from the dance platform. The ground surface in the locale of this research area, which is some 15 m above sea level, elevated nearly indistinctly in an eastern direction. Initially the trench excavated here was small, measuring 7 m x 2 m; later it was expanded into a research area of up to 57 m².

Research Area VI

This research area was excavated as a continuation of Research Area V, only at the opposite side of the fence standing here. The distance between Research Areas V and VI was 2 m. The absolute height of the ground surface here was about 15 m. Research Area VI was sized 5 m x 4 m.

Research Area VII

Over 200 m east of the eastern edge of the hippodrome, Test Pit 6 was excavated at the hillside of the terrace in the woods. Once the cultural layer had been discovered in this locale, 55.5 m² were examined. The ground surface in the locale of this research area has an absolute height of about 13.1 m.

Research Area VIII (1989)

This research area was excavated along Research Area VII, expanding it westward. The overall size of Research Area VIII comprised 68 m². By enjoining Research Areas VII and VIII, an overall 123.5 m² were examined in this location. The absolute height of the environment of Research Area VIII is 13.25 m - 13.5 m.

Trench 9

Continuing the examination of the cultural layer northwest of Research Area VIII, Trench 9 was excavated, at a width of 2 m and a length of 5 m. At the locale of this trench, the ground surface lays at an absolute height of 13.9 m - 14.1 m.

Research Area X

Continuing the survey of the cultural layer over 32 m south of Trench 9, an observation trench was measured for a size of 4 m x 2 m. It was expanded up

to 48 m², once marks of development were discovered in the cultural layer. The orientation of this research area was according to the points of the compass. The absolute height of the terrain in this place was 13.5 m - 13.6 m.

Survey Excavations

The excavated research areas and trench did not show where the boundary of the ancient settlement's cultural layer had been. Therefore, observational test pits were excavated in the presumed territory of the settlement. Certain test pits (Test Pit 6) were expanded into research areas (**Research Area VII**), as soon as a more intensive cultural layer was discovered.

Test Pit 1

This test pit (2 m x 2 m) was excavated at the eastern edge of the hippodrome territory. The test pit was over 81 m in distance, east of Research Area V. No cultural layer was found.

Test Pit 2

This one was excavated over 28 m west of Research Area III, towards the west from Vytauto Street. Initially it measured 2 m x 2 m; later it was widened at the westward side.

Test Pit 3

This one was southeast of the dance platform structure. The size of this test pit was 2 m x 2 m. There was a humus layer, at a depth of 0.5 m - 0.8 m; however, no marks of any human cultural activity were found.

Test Pit 4

This test pit had been excavated considerably southeast of the territory, which had been examined previously, on a hill where the eastern edge descended towards the Klaipėda - Liepoja Circuit Highway. No evidence of any sort of human activity was found.

Test Pit 5

This one lay southeast of Research Area VII, at the edge of the terrace with an eastern edge that descends into the swamps. There was a distance of 67 m from Research Area VII to Test Pit 5. This test pit was 3 m x 1 m in size. Here the surface of the ground descended sharply towards the east. A layer of brown humus with traces of a cultural layer was found, at a depth of 0.5 m.

Test Pit 7

This one was excavated over 62 m north of Trench 9, in the glade by the old, wooden observation tower used by foresters. The size of this test pit was 1 m x 1 m.

The locale of the surroundings of this test pit was at a height of 16.1 m above sea level. There was brown earth underneath a not-very-thick turf layer and wind blown sand, about 50 cm - 53 cm in depth. Found on its surface were crumbs of bricks, bits of charcoal and a fragment of a pot. A weak cultural layer with charcoal bits and small pieces of clay daub outcropped at a depth of about 67 cm. It ended at a depth of about 75 cm. Deeper down there was sterile loam.

Test Pit 8

When traces of the layer were found north of the examined research areas in Test Pit 7, a search was also made for the layer towards the south. Test Pit 8 was excavated over 100 m south of Research Area X, in the woods, at the edge of a pit, which had been excavated for some unknown reason and left without filling it back in. The absolute height of the terrain at the place of the test pit was about 12.55 m. No cultural layer was found here.

Test Pits 9, 10, 11, 12 and 13

Not very large Test Pits 9, 10 and 11, measuring 1 m x 1 m in size, were excavated towards the north and northwest from the place of the examined research areas, within the fenced territory of the waterways.

No cultural layer was discovered in Test Pits 9, 10 or 11. Merely humus layers were found, at a depth of 0.5 m - 0.6 m. In Test Pit 12, under gray earth and wind blown sand, a dark brown layer with fine charcoal bits, very fine crumbs of clay daub and ceramics that had been shaped by hand was discovered, at a depth of 0.3 m (15.1 m in absolute height). The layer was only 15 cm thick - sterile brown earth and sterile loam lay deeper down. A cultural layer in Test Pit 13 was found under turf and sand, at a depth of 0.45 m (15.05 m in absolute height). This was a layer, about 20 cm in thickness, consisting of dark brown earth with clay daub, bits of charcoal and ceramics shaped by hand. Brown earth lay deeper down and, at a depth of 0.9 m (14.6 m in absolute height), there was sterile loam.

CULTURAL LAYERS

During the excavations, an effort was made to link the horizons of the cultural layers found in the different research areas into one system. This was difficult to accomplish without analyzing the finds and the remains of structures, because some of the research areas were at quite a distance from each other. The stratigraphy was corrected and converged into one system during the course of comparing the cultural layers found in different places and their finds. For

this reason, the enumeration of the horizons of certain cultural layers changed, compared to excavation reports. Furthermore, certain remains of erections were ascribed to some other horizon than had been done previously.

Layers of the 16th to 17th century

Research Area I

A brown, humusified cultural layer was discovered, at a depth of 0.5 m (about 14.1 m in absolute height), under turf and sand. Not very large stones lay on the surface of the layer, and there were 16th - 17th century ceramics and nails found.⁸ Deeper down, there were no finds or any sorts of traces of building. Stains of charred wood particles appeared at the northern edge of the research area, at a depth of about 0.6 m. As established later, some of these belonged to an already older horizon. The thickness of the surface layer was 0.2 m - 0.4 m.

Finds

P 1 and P 3. Fragments of pots made on a rotating wheel

P 2. Fragment of a tile in the form of a pot

Research Area III

A dark surface with fine stones appeared underneath the turf, gray earth and wind blown sand, at a depth of 0.7 m - 0.8 m (some 13.7 m in absolute height). Meanwhile a cultural layer of a dark brown color outcropped, at a depth of 0.8 m - 1 m. There were numerous not very large stones, the size of an average fist, as well as sparse charcoal bits scattered on the surface. The remains of a tree, which had once grown on this surface and was later chopped down, were found at the eastern edge of the research area. This tree stump was 20 cm in height and had a diameter of 16 cm. Glazed ceramics, 16th to 17th century and older, were found in the upper part of the layer (Figure 76).

Finds

P 40 - P 45. Glazed and unglazed ceramics made on a rotating wheel

P 46 (1 and 2). Fragments of a flat tile with a hollowed center

P 47. Fragment of the rim of a tile in the form of a pot

8. Finds and structures from the Southern Settlement (in Lithuanian, *Pietinė Gyvenvietė*), noted elsewhere in this book, are marked with the index P, for example P 1 for a find and P-2 for a structure.

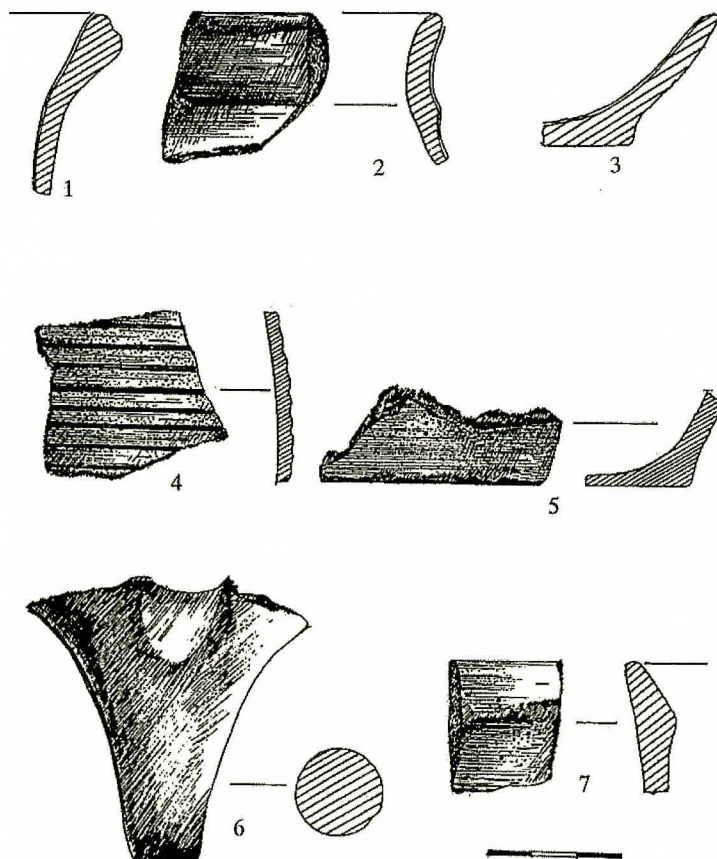


Figure 76.
Ceramics of
the 16th - 17th
century found in
Research Area III
of the Southern
Settlement

1. P 40
2. P 91
3. P 43
4. P 42(1)
5. P 42(2)
6. P 44
7. P 47

Research Area VII

Underneath the turf and wind blown sand of this research area, a surface of brownish earth, containing clay daub and fragments of pots, lay at a depth of about 0.6 m. Further, at a depth of 0.7 m - 0.8 m, an oval stain of the hearth from **Structure No. P-7** became defined; it had a size of 2.3 m x 1.8 m. In it there was a plentitude of charcoal bits, burnt through stones and ashes as well as ceramics. The pit of the hearth had a rounded base, deepened up to 50 cm. Three massive postholes outcropped in a rectangular cross-section over 0.3 m south of the hearth, marked by black earth with charcoal bits. The distances between the postholes were 0.45 m and 1.1 m. This row was oriented in an easterly - westerly direction. The sizes of these postholes were 33 cm x 32 cm, 37 cm x 36 cm and

44 cm x 40 cm. They were deepened into the ground by 40 cm - 45 cm. All of these posts had been hewn vertically at their bottoms. One more posthole with an uneven base, sized 54 cm x 50 cm, filled with black earth containing charcoal and ashes, was found over 65 cm north of the hearth (Figure 77). Entire deposits of fragments from either pots, shaped by hand or those made on a slowly rotating wheel, lay within the hearth. A silver coin was also found there.

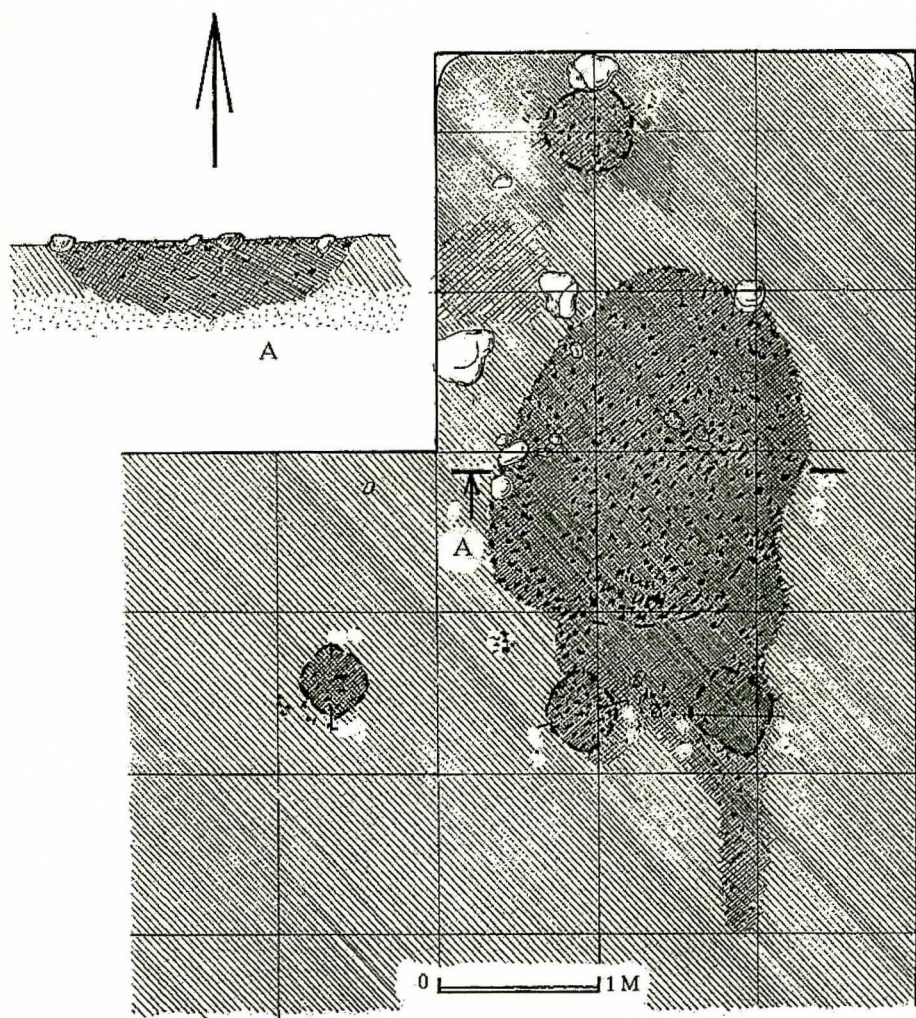


Figure 77. Hearth and postholes of Structure No. P-7, from the 16th century, in the Southern Settlement

Finds

P 215 - P 220 and P 224. Ceramics made on a rotating wheel

P 221. Blade with a hafted handle of an iron knife with a straight back

P 222. Fragment of a stone weight

P 223. Piece of slag

Finds in the hearth pit

P 225 - P 229. Ceramics made on a rotating wheel

P 230. A silver (Sigismundus) shilling, coined in 1533 in the city of Elbing

Trench 9

Sand mixed with earth lay under a turf, at a thickness of 20 cm - 25 cm. Underneath this, at a depth of 0.5 m - 0.6 m (13.6 m - 13.5 m in absolute height), a brownish surface was discovered containing small stones, some of which were charred. There were some random ceramics made on a rotating wheel, from the 16th - 17th centuries and older, on the surface of the layer. A tiny fragment of painted glass, iron nails and amber were also found.

Finds

P 342. Fragments of tiles in the form of a pot

P 343. Ceramics made on a rotating wheel

P 344 and P 345. Pieces of iron slag

P 346 and P 347. Iron nails

P 348. Small iron brooch

P 349. Piece of amber

Research Area X

After removing the turf that was under gray sand, a surface with singular small stones outcropped, at a depth of 0.5 m - 0.55 m. No signs of any 16th - 17th century development were noticed.

Finds

P 353. Fragment of a "Dutch", wavy roof tile

Horizon 1

Research Area III

After shaving 5 cm from the surface of the cultural layer, the locale of the former hearth outcropped—a 2.9 m x 2.4 m sized pile of burnt through stones.

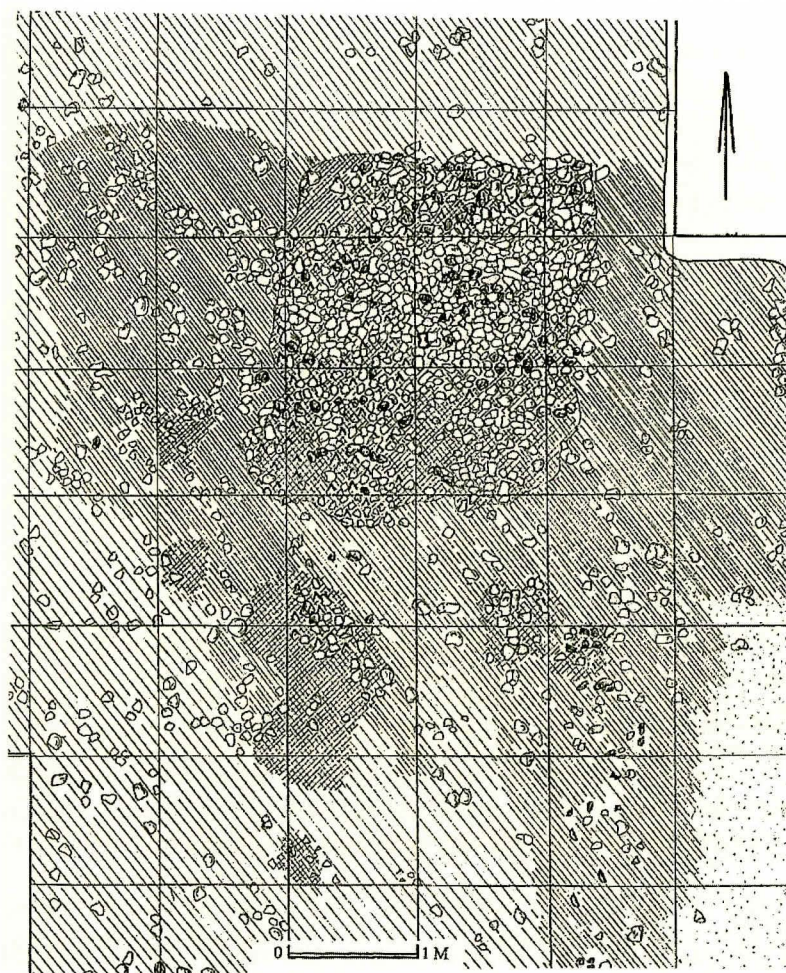


Figure 78.
Plan of
Structure
No. P-7 in
Horizon 1
of Research
Area III

There was ceramics as well. A darker stain, that of **Structure No. P-2**, became distinguishable in this locale, at a depth of 1.1 m (about 13.4 m above sea level). The stain was some 6 m x 6 m in size. An effort to establish where the former walls of this structure had been located with greater accuracy was not successful (Figure 78). The place of the hearth acquired a more deeply definitive form—a stain, some 2 m in diameter, of small, burnt through stones, charcoal and ashes remained. The hearth had not been sunk into the soil—the stones lay directly on the surface of the sand. There was merely one or another, fine piece of clay daub among the burnt through stones.

Finds

P 48 - P 54. Ceramics made on a rotating wheel and on a slowly rotating wheel

P 55 and P 56. Natural amber

P 57 - P 62. Stone weights

P 63. Piece of iron slag

Research Area VIII

The absolute height of the place in the environment of Research Area VIII is 13.2 m - 13.5 m. Wind blown sand began covering the surface of the cultural layer at a depth of some 0.5 m. Stones, approximately the size of a fist, whole and burnt through lay on the surface of the layer in a disorderly fashion. Some ceramics, made on a rotating wheel and shaped by hand, appeared by happenstance, and two pieces of iron slag, iron nails, clay daub and glazed ceramics were found.

Finds

P 274 - P 279 and P 282. Ceramics made on a rotating wheel and shaped by hand

P 280. Piece of iron slag

P 281 - P 283. Iron nails

Isolated finds

P 271 - P 273. Glazed ceramics made on a rotating wheel

Research Area X

Here were charcoal stains and charred stones—the surface of the cultural layer was covered, at a depth of 0.65 m - 0.7 m. A hearth of **Structure No. P-11** was found in the eastern part of this research area (Figure 79). Small stones and a stain of darker earth with charcoal bits and ashes, which had spread out to a diameter of about 1.5 m, pointed to the location of the hearth in the research area. Meanwhile, deeper down, there appeared a ring of stones, having a 75 cm diameter. On average these stones were the size of a fist; however, there were some random, larger ones as well. They were charred, and others were entirely burnt through. The diameter of the pit, excluding the ring of stones, comprised some 70 cm. Four rows of stones, lying one atop the other, were found in the pit of this hearth. The ring of the hearth broke off on the southeastern side, where there was an interval measuring some 20 cm. No stones were at the top

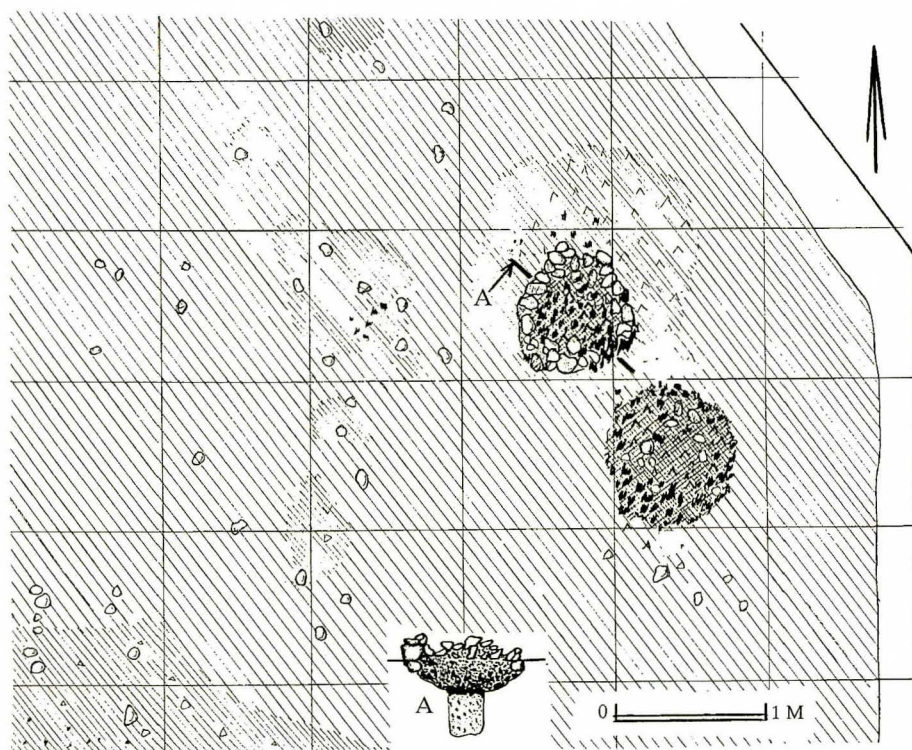


Figure 79. Research Area X of the Southern Settlement—the hearths of Structure No. P-11 in Horizon 1 and Structure No. P-12 in Horizon 2 (Structure No. P-11 is at the top)

here; whereas, at the bottom, they were completely burnt through. The base of the hearth was rounded; it was not paved with stones. No clay was found either. The pit of the hearth had been sunk deeper, by up 20 cm from the lowest wreath of stones. Therefore, the depth of the entire hearth reached 45 cm - 50 cm. The wreath of stones had apparently risen no less than 15 cm above the ground surface. Large pieces of charcoal lay at the base, which were the marks of a burnt up post. It seemed as though a post, some 25 cm in diameter, had been dug into the middle of the hearth and sunk by 30 cm.

There was a chain of formless, brownish stains, up to 0.8 m x 1.0 m in size, west of the hearth with the wreath of stones by 0.8 m - 1.0 m, toward the middle of the research area. There were also more small stones here.

Finds

P 354. Ceramics made on a rotating wheel

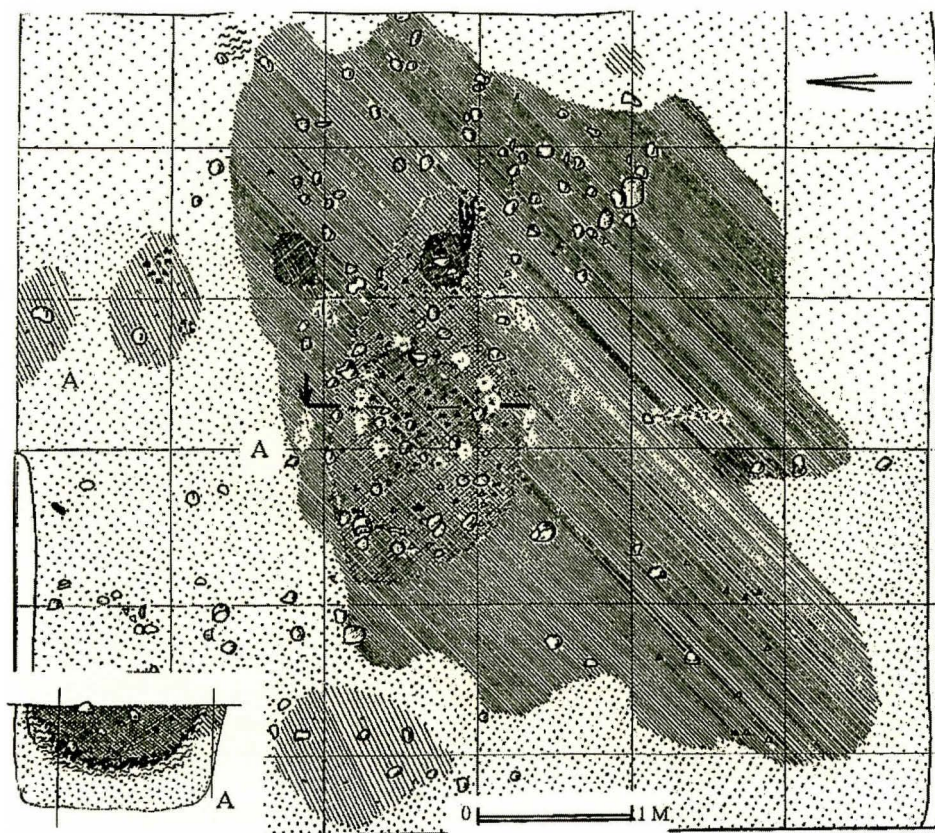


Figure 80. Plan of Structure No. P-1 in Research Area I (Horizons 1 - 3) in the Southern Settlement

Horizons 1 - 3

Research Area I

A surface of black earth with small stones, some burnt through, lay under the brownish upper layer, at a depth of 0.7 m - 0.8 m. The stains at the bottom of the layer outcropped very clearly. A simple research area that was darker, sized about 5 m x 4 m, lay in the southern part, oriented in a westerly - easterly direction. Next to it were black stains; it was **Structure No. P-1** (Figure 80). In the center there was an oblong stain, 2.5 m x 1.3 m in size, of a pear-shaped hearth with an accompanying pit. The main pit for the hearth was up to 40 cm, and the accompanying pit, at the western end, was up to 20 cm deep. The lining of the hearth was vertical and smeared in clay. Black earth with

ashes filled the pit, and there were some rather large pieces of charcoal in the accompanying pit. Ceramics and an iron nail were found at the base of this hearth.

Stains of coal bits and ashes, north of **Structure No. P-1**, were neither large nor deep. Only one, lying over 2 m from the contour of the structure, was more distinct. This was a small pit, up to 26 cm in depth, with a rounded base, which was filled up with brown earth with charcoal bits and ashes. It is possible that these were the remains of a small hearth, which belonged to another dwelling.

Research Area IV

A cultural layer, which was a good deal disturbed, with brown earth, charcoal bits and burnt through, small stones—apparently the remains of a disturbed hearth—was found under the turf and gray sand, at a depth of 0.30 m (14.5 m in absolute height). This cultural layer had already ended, at a depth of 0.45 m - 0.50 m. Sterile sand lay beneath it.

Finds

P 176 - P 179. Ceramics made on a rotating wheel

Research Area V

The surface of a humus layer was under the turf, gray earth and wind blown sand, at a depth of 0.3 m - 0.6 m. Random burnt through stones were at the surface of the layer. Ceramics and darker stains with sparse charcoal bits and burnt through stones only appeared at a depth of 0.6 m - 0.8 m (about 14.3 m in absolute height), where the earth was already lighter. These stains became more distinguishable in the northern and central parts of the research area. These were irregular, and they did not comprise a definitive system. More stones, including quite a few burnt through stones among them, were found at the northwestern edge of the research area. There, next to the stones, were deposits of the fragments from two pots and more plentiful charcoal bits. Additionally an oval, black stain of a disturbed hearth, 0.7 m x 0.45 m in size, became distinguishable there. Another, more pronounced concentration of stones was in the eastern part of the research area, over 3 m from the first, disturbed hearth. There were also burnt through stones, ashes and even stains of decayed wood matter and sparse charcoal bits here. Single small stones and crumbs of burnt through clay daub lay in the southeastern corner of the research area.

Finds

P 180 - P 185. Ceramics made on a rotating wheel and shaped by hand

P 186. Fragment of ceramics with a rugged surface

P 187. Flake of flint

P 188 - P 190. Natural amber

Research Area VI

The surface of the cultural layer was uncovered, at a depth of 0.30 m - 0.35 m. Lying on it were burnt through stones and ceramics that had been both, shaped by hand and produced on a rotating wheel. Additionally a brass ring and a brass band bracelet were found. The layer ended, at 0.55 m in depth (about 14.45 m in absolute height), except that marks of the pit remained in the northeastern corner. The base of the pit was found, at a depth of 1.0 m - 1.05 m. Sand mixed with brownish earth filled up the pit; in its eastern corner, there were charcoal bits, ashes and stones.

Finds

P 205 - P 210. Ceramics made on a rotating wheel

P 211. Iron rivet

P 212. Brass band bracelet with nearly indistinctly widening ends

P 213. Brass ring widened in the middle with overlapping ends

P 214. Natural amber

Horizon 2

Research Area III

Stones, darker stains and ashes were again found under Horizon 1, about 1.2 m in depth (about 13.3 m in absolute height). In the western part of this research area was an oval stain, sized 1.2 m x 0.9 m; it constituted the remains of the hearth from **Structure No. P-3**. The hearth had been sunk into the sand by up to 10 cm. Several very fine fragments of a pot made on a rotating wheel were found here. West of the hearth, there was a great deal of burnt through stones and ashes, the earth was darker and patches of brownish, rotted through wood became distinguishable (Figure 81).

Finds

P 64 - P 74. Ceramics made on a rotating wheel and shaped by hand

P 75. Fragment of the jawbone of a boar (?)

P 76. Flint blade

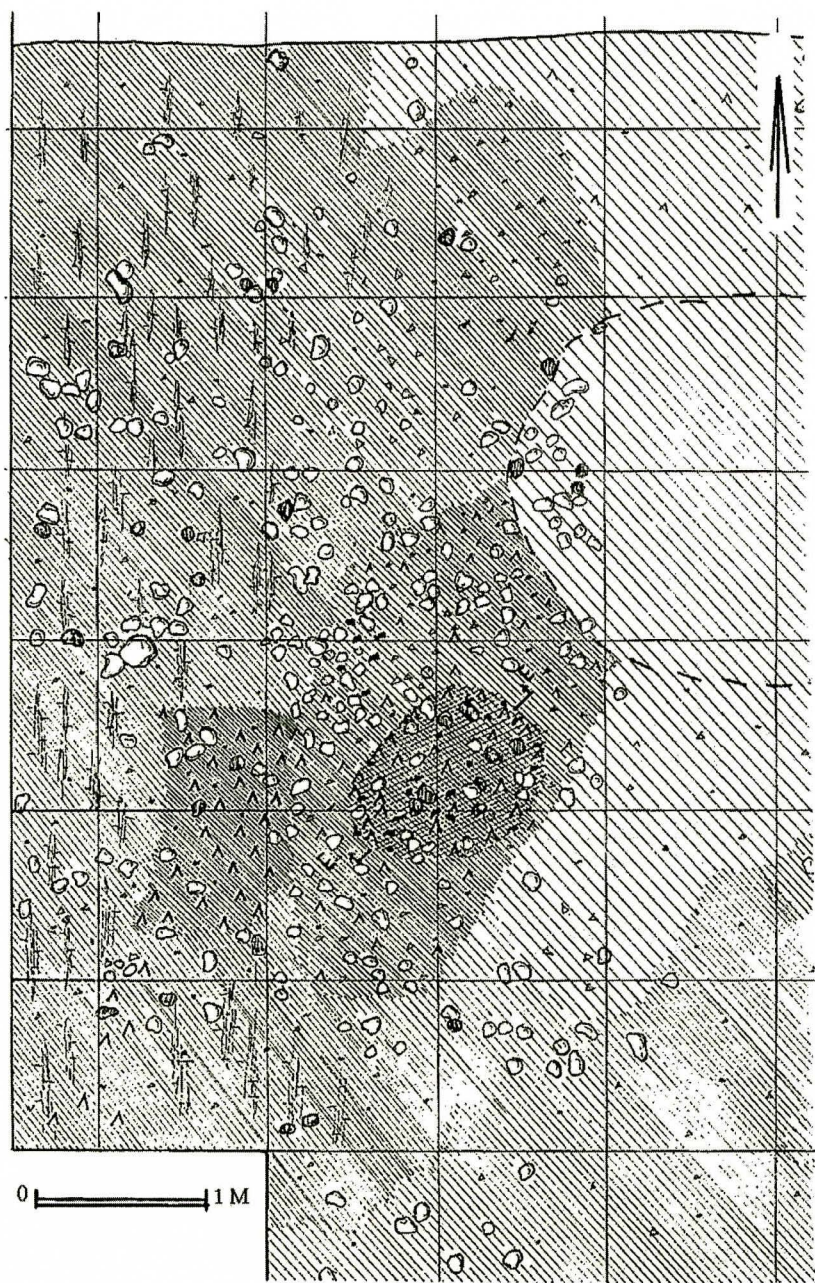


Figure 81. Structure No. P-3 in Horizon 2 of Research Area III in the Southern Settlement

Trench 7

Bits of charcoal were noticed in the layer of brown earth, at a depth of 0.65 m - 0.7 m. There were also ceramics, most of which had been made on a rotating wheel. After shaving about another 5 cm deeper, the layer ended—the brown earth was almost sterile. No traces of development were noticed.

Research Area X

In the eastern part of this research area, at a depth of 0.7 m - 0.9 m, over 20 cm southeast of the hearth from Structure No. 11, a second hearth was found, belonging to **Structure No. P-12**—an oval, 0.95 m x 0.85 m sized stain (Figure 79). The hearth had been erected in sand, where a pit with an uneven base had been excavated to a depth of about 15 cm. In it lay single stones, fine pieces of charcoal, ashes and several fine fragments of ceramics shaped by hand. By applying stratigraphy, it was established that the second hearth had been older than the first one was.

Finds

P 355 - P 357. Ceramics made on a rotating wheel

P 358. Natural amber

Horizon 3

Research Area III

Horizon 3 of the cultural layer outcropped, at a depth of 1.15 m - 1.25 m. In the central part of this research area, there lay light gray earth with sparse bits of charcoal and stains of ashes. Several darker stains became distinguishable at the eastern edge. These were little oval stains, in sizes of 1.0 m x 0.5 m and 0.5 m x 0.5 m, which reached depths of up to 10 cm - 15 cm. A brass beltplate and a hook clasp were found in one of the stains. Yet another stain in the eastern part, which had been oval, sized 1.2 m x 1.0 m, reaching a depth up to 24 cm, constituted the remains of a hearth from **Structure No. P-4**. There were marks of two more pits, 15 cm in depth, with charcoal bits not far from this hearth, at the boundary of the research area.

Finds

P 77 - P 85. Ceramics made on a rotating wheel

P 86. Brass belt (?) plate

P 87. Brass belt (?) plate - hook clasp

P 88 - P 93. Fine pieces of amber (1.5 cm - 3.0 cm)

P 94. Piece of flint

P 95. Saddle quern stone (milling stone)

Horizon 4

Research Area III

Gray sand, crossing over into sterile soil, lay underneath the stains of the structures, which had been in Horizon 3. At a depth of 1.2 m - 1.25 m in this sterile sand (about 13.2 m in absolute height), there were the contours of pits and postholes from different time periods. Two pits were discovered along the western boundary of the research area, and a third one lay by the southern boundary (Figure 82).

The pit at the southwestern edge of the research area had a diameter of 75 cm and a depth of 38 cm - 40 cm. It was filled with brown earth containing stones and charcoal bits. A large piece of slag was found in the pit as well as a fair-sized lump of burnt through clay. Charcoal bits and crumbs of burnt through clay were also noticed around the pit. Over 2.6 m north of this pit, at a depth

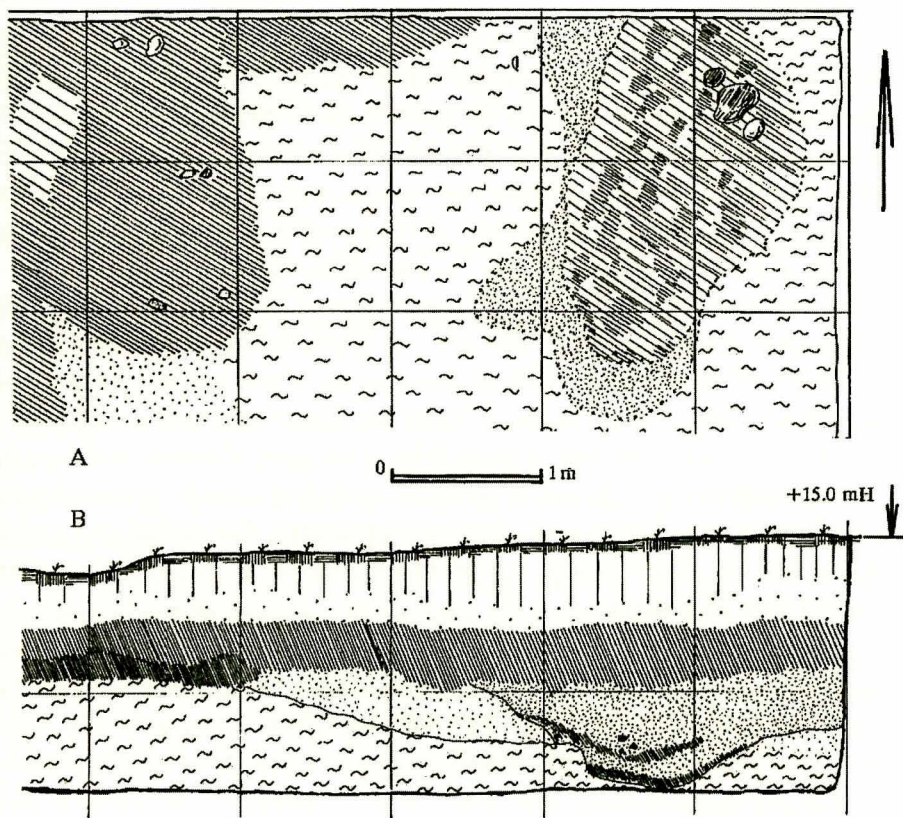


Figure 82. "Clay pit" in Research Area V of the Southern Settlement

A. Plan

B. Horizon 4

of 1.5 m, there was a very pronounced circular contour of another pit, having a diameter of 1.4 m. Brown earth with coal bits, ashes, clay and fine pieces of clay daub filled the pit. The pit linings were rather vertical. The depth of the pit reached 75 cm (its base was found 2.15 m from the surface of the ground, already at the level of the ground water). The pit, it would seem, was designated for an out-building. No finds were discovered in it. The stain, 1.6 m in diameter, by the southern boundary of the research area, disappeared almost immediately upon shaving the surface.

Finds in the southwestern pit

P 174. Piece of burnt through clay daub

P 175. Piece of slag

Research Area V

About 5 cm deeper, than was the layer of the uppermost horizon, the contours of older pits outcropped, at a depth of 0.8 m - 1.0 m. Two circular stains that covered one another were found in the sand, at the western edge of the research area. One had a diameter of 1.2 m, and the other diameter was 1.4 m. The contours of four or five pits that covered one another, having diameters that ranged from 1 m to 1.5 m, were in the middle of the research area, near the northern boundary. After shaving barely 5 cm - 10 cm, all the stains disappeared.

An irregularly formed contour of a pit appeared in the eastern part of the research area, at 0.8 m in depth and at a 1 m depth, in the sterile sand. The pit had a length of 2.5 m and a width of about 1.4 m. It was marked by brownish earth and little lots of loam. Initially the pit was longer and wider, 2.8 m x 1.8 m, but it was either blown over by wind or filled with sand. The base of the pit was found sunk into wet, sterile loam by 25 cm, at a depth of 1.7 m (13.35 m in absolute height). Its base was uneven, and it had been excavated. The overall depth of the pit reached 75 cm. Three stones, two of which were burnt through, were found in the pit's base (Figure 82).

Finds

P 191 - P 196. Ceramics made on a rotating wheel

P 198. Fragment of a stone weight

Isolated finds

P 197. Fragment of a pot made on a rotating wheel from a white mass

Horizon 5

Research Area III

Six postholes and five stake holes, the traces of **Structure No. 5**, were in the central part and at the western edge of this research area. The diameters of the postholes were 18 cm - 28 cm, and they were laid out in a row, oriented in a north to south direction, at 0.3 m - 0.8 m intervals (one posthole and two stake holes stood apart). There was the stain of a pit, 1.5 m in diameter, east of the eastern row of postholes. An irregular, darker stain, sized about 1.1 m x 1.1 m, became pronounced right alongside, in the same place. On its surface, there were found several stones and pieces of burnt through clay. While shaving this stain, amber was also found and deeper still, there was more of it. The stain itself had no form; either it grew smaller or it grew larger. There had been pits here and later a trench as well. A great deal of unprocessed amber was found in the pit, at a depth of 1.5 m - 1.7 m, totaling seventy-seven, not very large pieces. Besides this amber, there were nearly no other finds, except one solitary fragment of a pot made on a rotating wheel. Sterile loam was found in the research area, at a depth of 1.8 m - 2 m (about 12.6 m in absolute height).

Finds

P 96 - P172. Hoard of amber containing unprocessed amber pieces in various sizes

P 173. Fragment of a pot made on a rotating wheel (?)

Research Area VII

Throughout the entire research area, at a depth of 0.8 m, a system of postholes and stake holes outcropped—this was **Structure No. P-8**.

Several rows of posts became distinguishable (Figure 83). One row, which was accurately oriented in a north to south direction, was along the eastern boundary of the research area. Five postholes, 18 cm - 35 cm in diameter, and five stake holes were found in this row. These were placed at 0.7 m - 2.0 m intervals except for the two paired postholes, one large and the other small, at the southern end. Another partition of postholes continued westward from the southeastern corner, the location of the largest posthole (some 25 cm in diameter), which was more deeply sunken. Six large postholes were found here with 0.5 m - 1.3 m sized intervals between them. Three of these were in one row; whereas, the other three formed what seemed to be yet another row, more to the north, alongside of the first. There were ten stake holes next to the posts. To the north of the

larger, southwestern postholes, there were another five postholes. Heading east over 1 m from the northwestern corner, there were three postholes. There were also postholes at the sides of the primary rows. All of the postholes that were uncovered were filled with dark earth with charcoal bits and were sunk into the ground from 10 cm to 50 cm deep. The postholes had rounded bases, and all narrowed downward.

The distance between the rows of postholes, in a westerly to easterly direction, was about 6.5 m and, in a northerly to southerly direction, about 4.4 m. In the middle of this structure, there was a large stain uncovered, measuring 36 cm x 44 cm. A cross-section of this stain showed that it had probably consisted of paired posts. No traces of a hearth were noticed.

*Find*s

P 231, P 232, P 235 - P 242 and P 244 - P 256. Ceramics made on a rotating wheel, shaped by hand and miniature

P 233. Flake of flint

P 243. Fragment of a whetstone

*Isolated find*s

P 234. Fragment of a pot made on a rotating wheel and glazed

Research Area VIII

Darker stains could be seen in the light brown earth, at a depth of about 0.8 m, where the ceramics became more plentiful and charcoal bits appeared along with crumbs of clay daub. Somewhat deeper, not far from the eastern edge of the research area, an oval stain became pronounced; it stretched in an eastward to westward direction. This constituted the pear-shaped hearth of **Structure No. P-8A** with an accompanying pit (Figure 83). This hearth was 1.5 m in length and 0.9 m in width with an eastern end that, although it narrowed down to 0.55 m, was deeper down, reaching 20 cm. Small layers of clay that had not been burnt were found on the western edge of the pit—these were possibly traces of the hearth's lining or border edging. Charcoal, ashes and pieces of burnt through clay daub filled the pit of the hearth, and quite many fragments of pots made on a rotating wheel were found. A black stain lay over 0.4 m to the east of the hearth, measuring 0.7 m x 0.65 m. This bucket-shaped pit had a diameter of about 0.5 m; it was in a depth of 0.43 m.

Over various spots in the research area, not very large stains with charcoal and burnt through clay crumbs became defined. Postholes were found underneath a

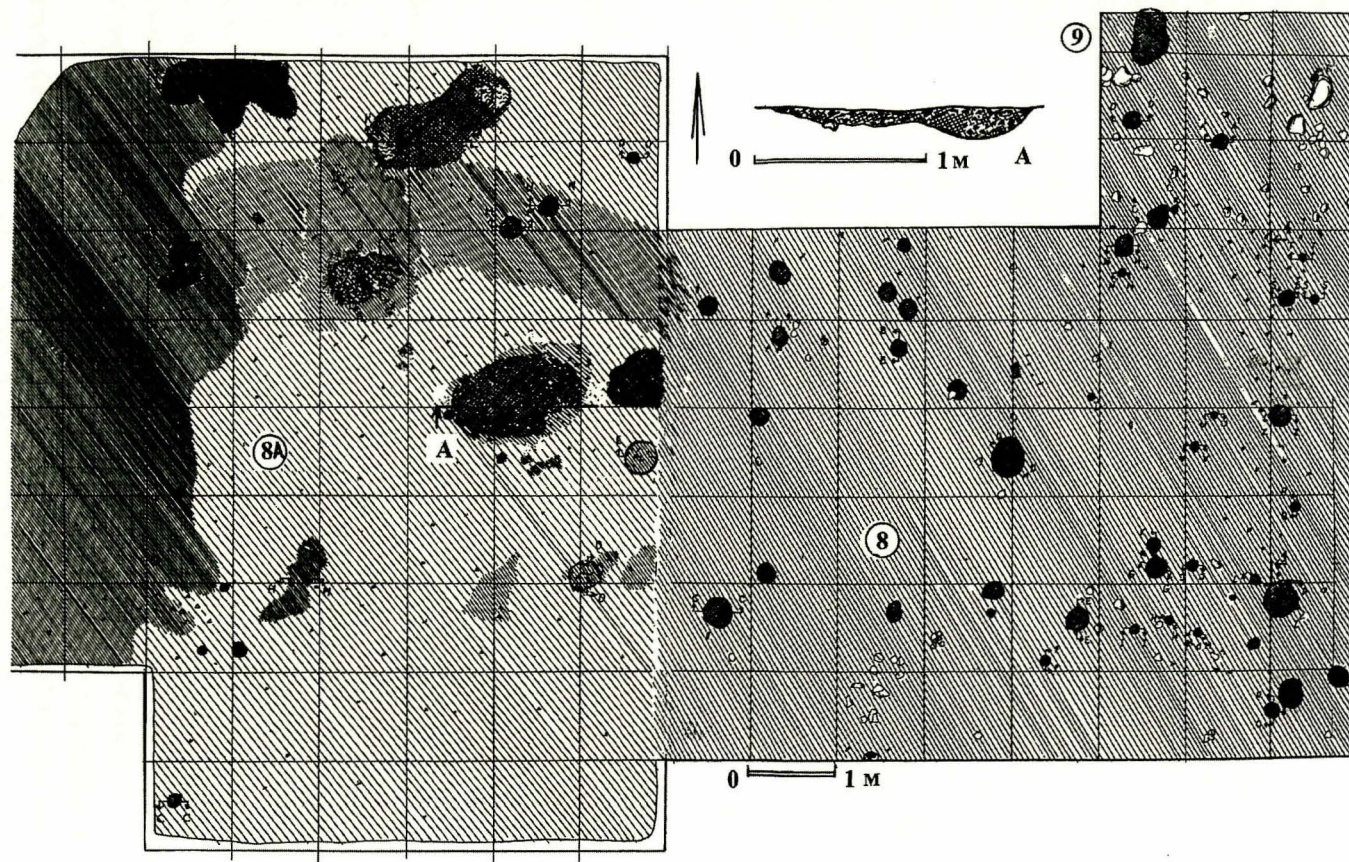


Figure 83. Structures, Nos. P-8 and P-8A, in development Horizon 5 in Research Areas VII and VIII of the Southern Settlement

certain one. Four such stains, in the southern part of the research area, formed a clear line, about 6 m in length, heading in an eastern to western direction. There were 0.2 m - 1.6 m intervals between the stains and postholes. Another four stains also lay along the eastern boundary of the research area, in a southern - northern direction, at different intervals. There were postholes in two of these stains. These stains were uncovered in a segment, around 6 m in length. Seven postholes were found at the northern edge of the research area, and two of these were paired. They were laid out in a rather scattered fashion, heading in an eastern - western direction. There was a darker partition along the western edge of the research area, 2.5 m - 3.0 m from the hearth, which contained bits of charcoal and crumbs of burnt through clay, stretching in a northern - southern direction. Within this partition, seven stake holes were found. The postholes, sized 13 cm - 26 cm, discovered in this horizon, were sunk by up to 42 cm. There were finds within the research area that was bordered by postholes and alongside it—ceramics that were mostly made on a rotating wheel, a small, sash-like ring, a fragment of a brass band bracelet, iron artifacts, nails, stone weights and amber.

Finds

P 284 - P 287. Ceramics made on a rotating wheel

Finds in the hearth

P 288 - P 304. Ceramics made on a rotating wheel and on a slowly rotating wheel

P 305 and P 306. Stone weights

P 307. Fragment of a brass band bracelet

P 308. Brass sash-like ring

P 309. Fragment of an iron nail (?)

P 310. Flint blade

P 311. Piece of natural amber

Finds in the fire place

P 312 and P 313. Ceramics made on a rotating wheel

Finds in the lower part of the horizon

P 314 - P 317. Ceramics made on a rotating wheel

Research Area IX

Five postholes, with diameters of 18 cm - 24 cm, were found in the southern part of the trench, at a depth of 0.8 m - 0.85 m. These were sunk into sand by

12 cm - 24 cm. The distance between the postholes was 1.1 m - 1.4 m. Three postholes formed a little group. Moraine loam with small cobbles was discovered beneath sand, at a depth of 0.9 m - 1.1 m.

Finds

P 350 - P 352. Ceramics made on a rotating wheel

Horizons 5 - 5 A

Research Area VII

Four more postholes, 18 cm - 20 cm in diameter, and a stake hole outcropped north of Structure No. 8. Two average-sized stones lay in a row by the two posts, which were oriented from west to east. All around there were more, finer stones. Over 0.6 m north of these two posts and the row of stones, a black stain with soot was found—this constituted the former hearth of Structure No. 9 (Figure 83). The stain of this hearth was oblong, in a northerly - southerly direction; its size was 0.7 m x 0.4 m. The hearth was installed in a pit that was only 12 cm deep. This pit had a rounded base. Ceramics shaped by hand were found in it.

Finds

P 257 and P 261. Ceramics shaped by hand with coarse and uneven surfaces

P 258 - P 260. Ceramics shaped by hand with mildly coarse surfaces

P 262 and P 263. Flint blades

P 264. Natural amber

Research Area X

At a depth of some 1.0 m - 1.2 m, stains of pits and postholes became pronounced in brownish sand. There was a stain of a oval pit, 27 cm deep, in the northern corner of this research area, which was about 1.2 m x 1.0 m in size. The pit was filled with brownish earth that had darkened due to organic matter (?). There were two more pits in the southwestern corner. One pit was oval, measuring 1.5 m x 1.2 m in size. In this pit, another one was excavated later. This was also an oval stain, about 0.9 m x 1.0 m in size, which was oriented in a northerly - southerly direction. There were small stones, crumbs of clay daub and loam at the surface of the larger pit and, down deeper, it was filled with brown earth containing lenses of gray sand. This pit had a depth of 52 cm and a rounded base. In the course of preparing it, some not very large fragments of pots shaped by hand

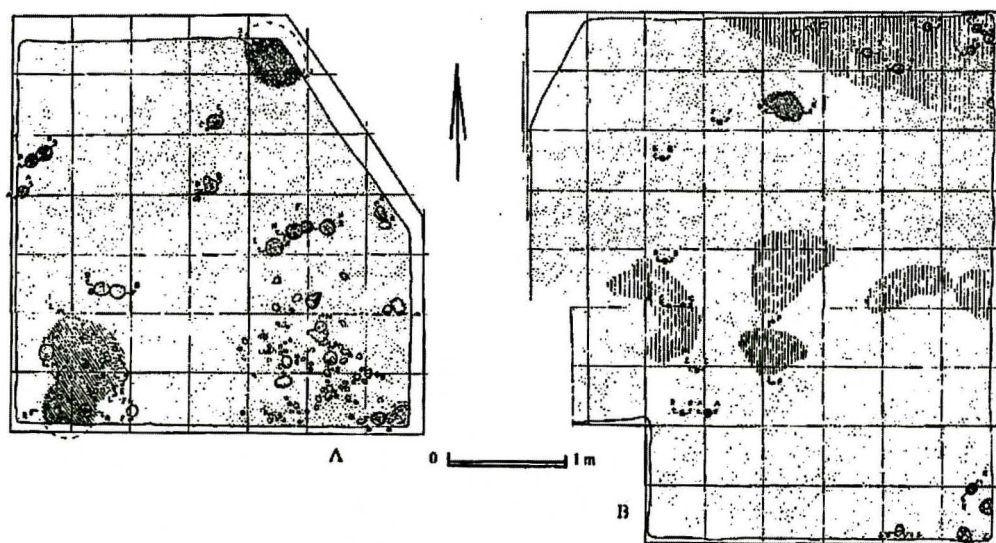


Figure 84. Traces of post-bearing buildings in the Southern Settlement
 A. in Horizon 5 - 5A of Research Area X
 B. in Horizon 6 of Research Area VIII

were found. The other, bucket-shaped pit had vertical linings. Its area reached 80 cm, whereas its depth—54 cm. Deposits of darker and lighter earth filled this pit. Small stones and fine pieces of daub lay at its surface.

The postholes were covered at a depth of 1.0 m - 1.2 m over the entire research area. There were many of them, twenty in all, but a more obvious system for laying them out was not noticed (Figure 84). Three postholes were found in the aforementioned pits.

It was not established whether these postholes could have belonged to one or several structures. Some had been excavated in groups with several in one row, and three pairs of postholes were found. The postholes had diameters of 16 cm - 30 cm. They had been deepened by up to 45 cm. All their bases had been either chopped vertically or somewhat rounded. Sterile, wind blown sand was found everywhere under the layer, at a depth of about 1.2 m. Meanwhile, in the southeastern part of the research area, there was moraine loam containing sandy loam with small stones, at a depth of 1.5 m (12.4 m in absolute height).

Finds

P 359 - P 362. Ceramics shaped by hand

Horizon 6

Research Area VII

Within the darker earth containing bits of charcoal, in the western part of the research area, piles of average-sized stones, 5 cm x 5 cm, were noticed, at a depth of 0.8 m - 0.9 m. These stones lay one atop the other in several rows (Figure 85). In the cross-sections, it was established that there were postholes everywhere under the stones, which had been sunk at depths of 0.8 m - 0.9 m from the bottom of the cultural layer. There was a layer with charcoal bits at the same level, where the little piles of stones lay. This small layer was only 1 m - 5 cm in thickness; however, in some places, it did not differentiate at all. Formerly an entire system—the remains of **Structure No. P-10**—was uncovered within the boundaries of the

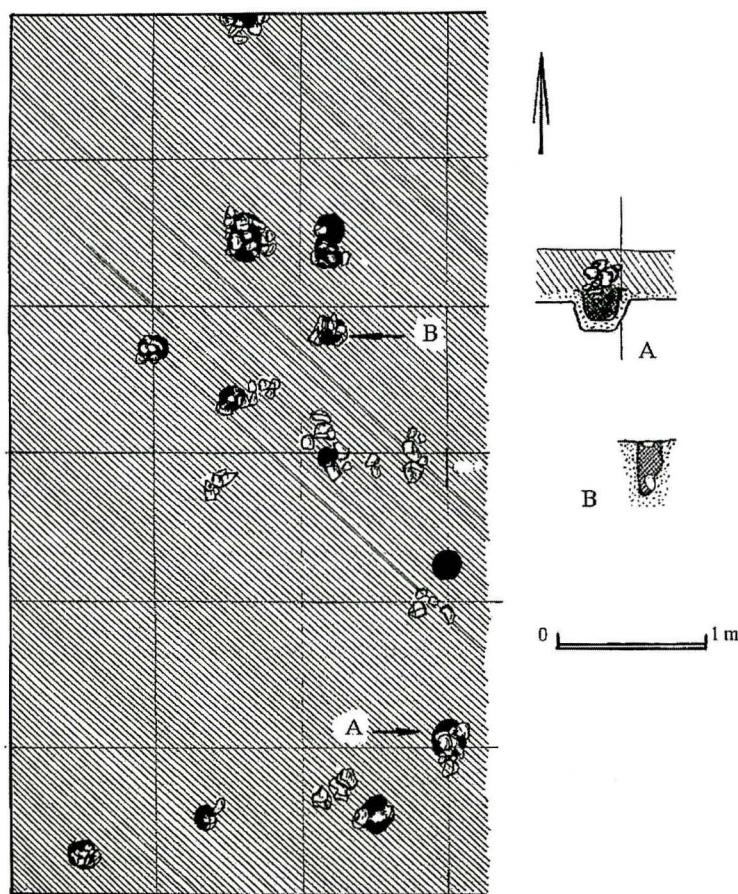


Figure 85.
Postholes laid in
stones in Horizon
6 of Research
Area VII of
the Southern
Settlement

research area, at a depth of 1.0 m - 1.1 m. Under each pile of stones, there was one posthole found or two together. These postholes, 10 cm - 23 cm in size, were laid out in a disorderly fashion over some 6 m x 3 m of the research area. There were intervals, distanced 0.4 m - 1.2 m, between the postholes. Some of them had been paired. The bases of the postholes were rounded, whereas the smaller ones were actually tapered. The smaller ones had been sunk into the sand up to 0.5 m. Only one reached the loam, which lay at a depth of 1.3 m.

*Find*s

P 265 - P 270. Fragments of pots, shaped by hand, with smooth, coarse and mildly coarse surfaces

Research Area VIII

The oldest horizon of the cultural layer was found, at a depth of 1 m - 1.2 m. It was differentiated in the brownish sand by its brown earth and postholes (Figure 84). In the southeastern corner of this research area, four black stains with small stones were discovered—these were postholes, sized up to 20 cm. There were 20 cm, 35 cm and 85 cm intervals between them. The sizes of the stones in the pits measured about 5 cm x 5 cm and 8 cm x 8 cm. In some places they actually lay in four rows, one on top of the other. Another seven postholes, 16 cm - 21 cm in diameter, were discovered in the northeastern corner of the research area. No sort of a system for their layout was discerned.

*Find*s

P 318 and P 319. Ceramics made on a slowly rotating wheel

P 320 - P 327 and P 334. Ceramics shaped by hand with a smooth surface

P 328 - P 330. Ceramics shaped by hand with a coarse surface

P 331 - P 333. Ceramics shaped by hand with a grained surface

P 335 - P 337. Ceramics shaped by hand with a hatched surface

P 338. Stone whetstone of gray-colored rock

P 339. Flake of flint

P 340 - P 341. Unprocessed amber

Horizon 7

Research Area V

Traces of **Structure No. P-6** outcropped in the sand at the western end of the research area, at a depth of 0.7 m - 0.8 m, which constituted the stains of a few posts and several stakes (Figure 86). These were laid out densely but in a disorderly manner. Only one posthole was larger than the others were, having

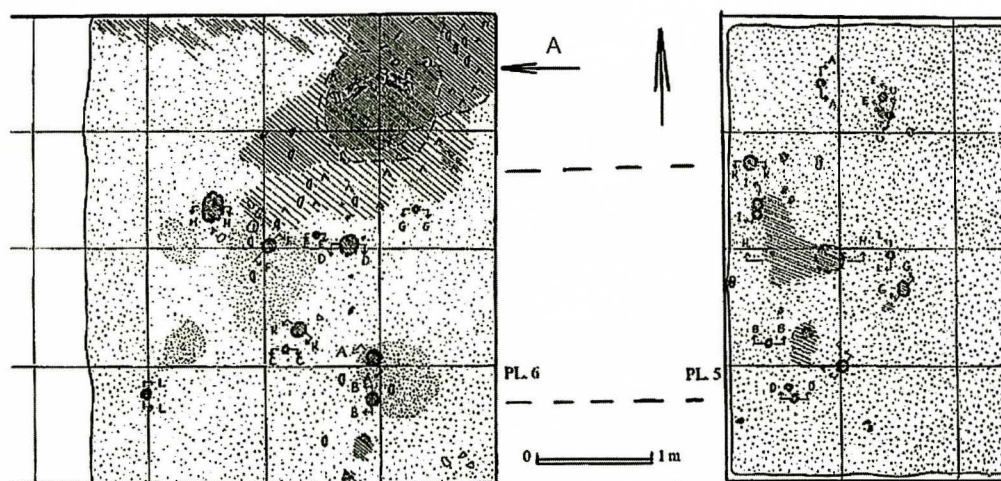


Figure 86. Remains of a Bronze Age, Structure No. P-6 from the end of the Neolithic period in Research Areas V and VI of the Southern Settlement

a diameter of 23 cm. Most of them were found in stains of stakes, which were 6 cm - 8 cm in diameter. Marks of another three stakes in one row were found over 3.6 m from the first group of stakes.

Finds

P 199. Fragment of a small, ground, stone axe with a hole

P 200 and P 201. Flint flake

P 202. Piece of burnt through clay daub

P 203 and P 204. Natural amber

Research Area VI

The postholes and stake holes of the western part of **Structure No. P-6** outcropped in a background of sand over a greater part of the research area, at a depth of some 0.6 m (about 14.4 m in absolute height). The diameters of the postholes were 12 cm - 22 cm and of the stake holes, 4 cm - 8 cm. There was a distance of 40 cm - 80 cm between the posts. Meanwhile the stains of the stakes were between and alongside the postholes. Their layout did not comprise any sort of a system. The depths of the postholes reached 40 cm, and some of them contained charcoal bits and small stones. Fine ceramics that had been shaped by hand were found at the level of the surface. Loam lay under the sand at a depth of 1.2 m - 1.3 m (about 13.8 m in absolute height).

The solid results gained by examining magnetic anomalies of the ancient Šventoji Settlement prompted the application of this method for surveying the ancient Southern Settlement. The foundations of the 16th - 17th century structure, location of the oven and several outbuilding pits in Šventoji became quite accurately defined (Melnikovas, Staniukovičius, Žulkus, Smekalova 1988: 33-39). Therefore, the expectations were that, by applying this method, the research could be conducted much faster and locations could be better selected for further investigations at possible locations of remains of structures, pits and hearths.

The total area of the settlement that was researched measured 6,300 m² (Figure 74). It consisted of ten separate research areas, and each one was subdivided into 1 m x 1 m lots. Four points on the ground's surface of each one of these lots were measured. The null points (southeastern corners) of the plane-tables (research areas) were interrelated with the control point in Research Area III. The proton magnetometer MMP-203 was used for the geophysical tests. The zero readings of this instrument were constantly crosschecked with the control points. The measurement results are presented in maps where the fluctuations of the geomagnetic induction vector module are shown by the conformation of 100 nTl isolines. The discriminate anomalies in the magnetic field—the local dipoles and their chains—appeared clearly linked with objects, having pronounced ferromagnetic characteristics. Such objects were the underground lines of connection that lay within the area under research. Additionally, the insignificant changes in the relief, for example the ditches, were located. No anomalies of an archaeological origin were found. The situation of the magnetic field in the area under research was very unfavorable due to the connection lines. These prompted very intensive anomalies that overwhelmed the magnetic fluctuations of an archaeological origin, which were weak against such a background. Thus, the conclusion was drawn that any further observations of this ancient settlement's territory, using the magnetic anomalies research method, would not prove expedient (Levašenko, Staniukovičius 1989). Furthermore, solid results were not achieved because the remains of ancient structures in this settlement lay comparatively deeply—0.6 m - 0.8 m below the current surface—and the instrument used was not sufficiently sensitive.

IX. STRUCTURES

OLD AND MIDDLE IRON AGE

The remains of structures, distinguishable by postholes that had been installed in an extraordinary manner, are ascribed to this period. The remains of a post-bearing building, Structure No. 10, about 4 m wide and no less than 5 m long, were found in the lower horizon of the Southern Settlement's cultural layer. There were several rows of stones placed with great care around this structure's posts in their pits. Such postholes were also found in Horizon 5 of Research Area XI, in the settlement at the foot of Birutė Hill. Posts reinforced in this way were not discovered at any of the later structures.

Long buildings were built during the Early and Middle Iron Ages, probably throughout the entire range of the Striated Pottery culture, including local territories of this culture in Western Lithuania, for example, at Dapšiai (Daugudis 1977) and Laistai (Žulkus 1984a). These areas had apparently inherited their building traditions, from as long ago as the Neolithic period (Grinkevičiūtė 2005: 45). During that same time, people also lived in small rectangular dwellings, which would sometimes have a stone hearth in the corner at Eglišķiai (Jablonskis LIIA. No. 694).

Postholes with stones are known at the seacoast: at Jokūbavas (Jablonskis LIIA. No. 816) and Jautakiai (Merkevičius, Stankus LIIA. No. 519; Stankus 1975) and the territories of the Jatvingian Baltic Tribe at Kunigišķiai - Pajevonys (Kulikauskas 1982: 34-36) and the Lithuanian Baltic Tribe at Spitrėnai (Merkevičius, Olšauskas 1974), Maišiagala (Kulikauskienė 1974) and Bakšiai (Puodžiūnas 1994). These tribal territories are dated from the first half to the middle of the year 1000 A.D. This sort of method for reinforcing posts, whether the soil happens to be crumbly or clayey, was still being used in the lands of the Curonians (Eketė), Jatvingians (Kaukai) and Prussians (Gračiovka) from the end of Millennium I to the beginning of Millennium II (Merkevičius 1974; Kulikauskas 1982: 29-30; Кулаков 1990: 9-18). The continuation of old traditions for building structures can be discerned here, and it is possible to state that this sort of means for reinforcing posts remained characteristic of Western Baltic people since the middle of Millennium I (Жулкис 1992).

Settlement at the foot of Birutė Hill

Table 4
Types of Structures

Horizon	Structures	Construction	Number of facilities	Heating installation
1	18, 29, 31	lafted	unclear 31-one	clay oven
2	1, 6, 7, 8, 19, 20, 27, 30, 32	lafted unclear	1 - one; 6 - two; 7, 8, 19, 20, 27, 30, 32 - unclear	1, 6, 7, 8, 19, 20, 30, 32 - clay oven
3	9, 10, 21, 22, 33, 28, 34	lafted unclear	9, 10, 22, 33 - one 21, 28, 34 - unclear	9, 10, 21, 28 - hearths 22, 33, 34 - clay ovens
3A	23, 35	lafted unclear	23 - one 35 - unclear	23 - clay hearths 35 - clay oven
4	2, 12, 37, 24, 26, 38	post-bearing -lafted lafted unclear	2 - one 12 - two vestibule	2, 12, 24, 37, 38 - clay oven 26 - hearth
4A	11, 17, 25,	lafted (?) unclear	11 - one 17, 25 - unclear	11, 25 - clay oven 17 - unclear
5	3, 4, 5, 13, 14, 36, 39	post-bearing	13, 36 - one 14 - two, passageway 3, 4, 5, 39 - unclear	3, 14 - hearth with ac- companying pit 4 - hearth 13 - out-building; 36, 39 - unclear
5A	5A, 15	post-bearing 15 - unclear	5A, 15 - unclear	5A - unclear 15 - clay oven
6	15A, 16	post-bearing	15A, 16 - unclear	15A, 16 - unclear

Horizon 1

Structure No. BK-18

The size, orientation and construction of this building are unknown. A part of a cupolaed clay oven, 1.4 m in diameter, survived along with signs of a heating chamber, 1.1 m in diameter, and the mouth of an oven, which had been at the western edge. A fire place, encircled by a little ditch and stones, lay underneath the oven (Figure 36).

Structure No. BK-29

The orientation and size of this structure, and whether it was lafted, were not established. At the western edge of this former structure, there formerly was a clay oven (?). A small plot of burnt through clay and charred stones survived (Figure 36).

Structure No. BK-31

This building is lafted, oriented in an eastern - western direction and sized about 4.5 m x 3.2 m (the stain of the structure is a size of some 4.7 m x 4 m). The three walls of this structure, excepting the eastern one, were wattled and daubed in clay. A clay oven stood right by the western wall. The entranceway was at the rear, eastern wall and, over 0.9 m east of it, there were traces of an open hearth (?), sized 0.7 m x 0.8 m (Figures 36 and 39).

Horizon 2

Structure No. BK-1

This is a lafted structure, oriented in a westward - eastward direction. The size of its stain was 5.2 m - 5.4 m in a north - south direction and about 5 m - 5.3 m in a west - east direction. It appears that the building had been approximately 4.5 m x 4.5 m in size. Underneath the bottom beams of this lafted structure, there were not very large, singular stones (their partition is traceable to a spot at the southern wall). The building has flooring made of clay. Over 1 m - 1.2 m from the eastern wall towards the middle of the structure, there was a cupolaed clay hearth of an oven, some 0.9 m x 0.9 m in size, with a 0.7 m x 0.5 m sized heating chamber. A fire place was found under the hearth of the oven (Figures 40 and 41).

Structure No. BK-6

This is a lafted structure, which could have been approximately 5 m long and 4 m wide, oriented in an easterly - westerly direction and containing two facilities. The western facility, which was partitioned across the building, had been about 2 m in width. The walls of this structure, including the interior one, had been daubed with clay. In the eastern facility by its eastern wall, seemingly towards its middle, there was a stain, some 1.5 m x 1.5 m in size, consisting of black earth with soot and charcoal, ashes, and crumbs of burnt through clay—the stain of a hearth or disturbed oven (Figures 40 and 42).

Structure No. BK-7

This is a lafted structure, oriented in accordance with cardinal compass points; its size is unclear. It would appear that the bottom beams of this lafted

structure had not been placed directly into sand but rather on small seaside stones. The flooring had been made from sand. Approximately 1.5 m from the eastern wall of the structure and over 2 m from the southern wall, there was a 0.8 m x 0.75 m sized hearth of a clay oven along with the mouth of the oven, about 0.4 m in diameter (Figures 40 and 43). A fire place, installed in a shallow pit, lay underneath the clay hearth.

Structure No. BK-8

This lafted structure is oriented according to cardinal compass points; its size is unclear. The walls could have been spread with clay. The oven (it is completely disturbed) might have stood closer to the western wall of this building (Figure 40).

Structure No. BK-19

This lafted structure appears to be oriented in a west - east direction; its size is unclear. The hearth of a cupolaed, elongated oven, stretching in an eastward - westward direction, along with the mouth of this oven, sized 0.75 m x 0.65 m, were over 1.5 m north from the marks of the former southern wall of this structure (Figure 40). There were no traces of a fire place underneath the clay hearth.

Structure No. BK-20

This is a lafted (?) structure; its size and orientation are unclear. Only the remains of a disturbed clay oven, about 1 m in diameter, were found. There were the marks of a fire place under the hearth of the oven (Figure 40).

Structure No. BK-27

The size, orientation and construction of this structure are not known. Only the charred hearth of a cupolaed clay oven was found (Figure 40).

Structure No. BK-30

The size, orientation and construction of this structure are unexplained. Only the remains of a cupolaed clay oven were found (Figure 40). The hearth of this oven was 70 cm in diameter and framed in a border edging made of clay with stones. This hearth lay on brown earth with charred wood particles and somewhat disturbed stone paving, that was some 2 m in diameter. There appeared to be a fire place under the stones. Two stake holes were found underneath the oven's paving.

Structure No. BK-32

This is a lafted structure. Its size is unknown, and it is guessed that its orientation is eastward - westward. All that have survived are weak signs of the northern wall and the hearth of a cupolaed oven, 1 m x 0.9 m in size (Figure 40). There appears to have been a fire place underneath it.

Horizon 3

Structure No. BK-9

This lafted structure, sized about 4.5 m x 4 m, is oriented in an east - west direction. There had been flooring made of clay. A trench had disturbed the southwestern corner of this building. Towards the middle of the building, about 0.5 m from its eastern terminal wall, there was a hearth, 1.3 m in diameter, in a shallow pit. Stones had been laid out around the hearth (Figures 44 and 45).

Structure No. BK-10

This is a lafted structure. Its traces consisted of an elongated stain, directed east - west, with a size of about 4 m x 3.5 m. A great many stones were in this stain. There appears to have been an open hearth, at the eastern part of the stain, which had not been deepened into the sand (Figures 44 and 46).

Structure No. BK-21

This building is a lafted (?) structure; its size and orientation are unclear. An oval, 1.0 m x 0.6 m sized hearth was found in the sand (Figures 44 and 47).

Structure No. BK-22

This is a lafted structure, sized about 4 m x 3.5 m, oriented in an eastward - westward direction. The cupolaed clay oven was towards the middle of this structure, next to the eastern wall. The entranceway had been at the western terminal. A pair of posts held the roof towards the middle of the building. There had not been a fire place underneath the oven (Figures 44 and 47).

Structure No. BK-33

This lafted structure could have been 3.5 m - 4 m wide, surmising from the easterly - westerly orientation. The walls of beam could have been wattled and daubed with clay. There was the hearth of a cupolaed clay oven, 1.7 m x 1.3 m in size, stretched in a westerly - easterly direction, towards the presumed middle of this structure. Found under it was a fire place, sized 1.7 m x 1.7 m, of an irregularly circular form. There were the remains of an open hearth, over 1.2 m east of the aforementioned hearth of the oven (Figures 44 and 49).

Structure No. BK-34

The size of this building, its orientation and construction were not explained. Merely the remains of the hearth of a cupolaed clay oven, some 1.2 m in diameter, were found. There were no traces of a fire place underneath the oven (Figure 44 and 49).

Structure No. BK-28

The size, orientation and construction of this building are unknown. All that was found was a hearth, about 1.1 m in diameter, which had not been deepened. There was a stone wreath of several layers laid around this hearth (Figure 44).

Horizon 3A

Structure No. BK-23

This is a lafted structure made of beams, some 16 cm - 20 cm in diameter. Its length was 6.5 m, and its width was 4 m, oriented in an easterly - westerly direction. The entranceway was in the western, terminal wall. The walls of this building had not been spread with clay and they had only been sunk into the sand by 40 cm. The clay flooring had been made of tightly packed sand (loam?) with bits of charcoal. A rectangular hearth made of packed clay lay, oriented in a westerly - easterly direction, was towards the middle of the structure, over 1.3 m from the eastern wall. It was 92 cm by length and 73 cm by width. Small beams framed this hearth and, at its eastern terminal, it was edged with a clay border in an "U" form. The roof of this structure lay atop its walls, supported by beams, 11 cm - 7 cm in diameter. Planks covered these beams vertically (across the length of the roof). These planks were packed with clay (Figures 50 and 51).

Structure No. BK-35

Neither the size, orientation nor the construction of this building was explained. Surviving were the remains of a hearth, 1.5 m x 1.5 m in size, of a cupolaed clay oven, which had been considerably disturbed (Figure 50).

Horizon 4

Structure No. BK-2

This post-bearing, lafted (?) structure is oriented in a western - eastern direction. The stain of the structure was about 5 m - 5.5 m x 5 m in size. The size and plan of the building could be reconstructed in two ways. In one case, it could be presumed that the darker stains, which had been in the locale of the western wall, indicated the area of the building and its length, which had been about 5 m—in other words, this structure had been square. Meanwhile its oven stood towards its middle. In this case, there should have been not three but four post-holes across the structure—one more to the east of the northern wall, two in the middle of the structure and one more, which was not found, in the locale of the southern wall. Another variant is the more probable one. Since only three post-holes had been discovered, it should be surmised that the structure had been

about 5 m in length and about 3.6 m in width (the distance between the posts at the edges) and that the oven had stood in the southeastern corner. Meanwhile the opening for the door had been in the western wall, in the southwestern corner. There is one fact that would substantiate this sort of reconstruction variant. The heating chamber of this oven had clearly been pulled to the northern edge of the hearth.

The wall posts of this building could have served not only to strengthen the walls but also to support the roof. Meanwhile the central post, which was larger, sized 24 cm x 20 cm, shows that this structure most likely had a hip roof. Its flooring was made of clay. The hearth of the cupolaed clay oven was elevated, up to 20 cm above the clay flooring, in the southeastern corner of this structure. The ridge of this oven was 1.4 m x 1 m, whereas the heating chamber of the hearth at the northern edge was approximately 0.5 m x 0.5 m in size. A fire place, sized 1.1 m x 0.8 m, was found under the hearth of the oven (Figures 52 and 53).

Structure No. BK-12

This is a building of a framework construction, 7 m x 7 m in size, oriented in accordance with cardinal compass points. The structure was not sunk into sand very deeply. There had been a vestibule, sized about 2.5 m x 1.6 m, in the northwestern corner and, not far from it in the interior of the structure, a partially enclosed passageway. The walls of the structure were made from posts with horizontal beams between them. There were no posts in the locale of the western wall; a wall made entirely of beams had already stood there. The vestibule and passageway had been built using rectangular, roughly hewn posts. The walls had been up to 40 cm in depth in a small ditch, and the beams at the bottom lay on a paving of small stones, an original sort of foundation. The walls had been daubed with clay. A layer of packed, sandy loam formed the clay flooring over the entire area of this structure. A cupolaed clay oven stood nearly at the center of this structure, approximately 1.5 m from the eastern wall. The size of its hearth, which was elevated above the floor, was 1.2 m x 1 m, and its chamber was sized 85 cm x 70 cm. A 1.5 m x 1.2 m sized fire place was discovered under the oven.

There was a pitched roof, and the six posts that stood by the oven supported the longitudinal laths of it. The terminals of these laths were supposed to have been chopped into the lafted structures of the terminating walls. The roof was covered with planks or roughly squared timber and packed with clay (Figures 52 and 54).

The finds and their locations within the house show that a weaving loom had stood at the passageway in the northwestern corner by the northern wall. Meanwhile there was either a bench along the western wall or shelves where pottery had been set.

Structure No. BK-24

The size, orientation and construction of this building are unknown. Merely a fragment of the hearth of a cupolaed clay oven was found (Figure 52).

Structure No. BK-26

The size, orientation and construction of this building are unknown. There were traces of a strewn hearth—burnt through stones and ashes. Around this there were some random darker stains with charcoal and small lots of clay to the southwest of the hearth as well (Figure 52).

Structure No. BK-37

This is a lafted structure. Its size is unknown; however, its orientation is according to the cardinal compass points. The remains of a somewhat disturbed hearth, about 1 m in diameter, of a cupolaed clay oven had survived (Figure 52).

Structure No. BK-38

This is a lafted (?) building. Its size and orientation are not known. The hearth of a cupolaed clay oven, some 1.2 m in diameter, along with the former mouth of the oven at the western end and a heating chamber, 0.45 m in diameter, had survived quite well (Figure 52).

Horizon 4 A

Structure No. BK-11

This structure is lafted (?). Its traces were noticed within the research area, having a size of about 3 m x 3 m. This structure appeared to have been driven into the sand by up to 20 cm. A hearth, sized 0.9 m x 0.6 m, of a cupolaed clay oven was found. The base of this oven's chamber measured 60 cm x 57 cm in size. Underneath the hearth of the oven, there were a stake hole and a fire place, with a diameter of about 1 m. The floor of packed clay lay at the level of the oven's hearth and beneath it (Figure 55).

Structure (?) No. BK-17

The size, orientation and construction of this structure are not known. Only stains of separation were found.

Structure No. BK-25

The size, orientation and construction of this building are not known. Merely a fragment of a 0.95 m-wide hearth of a cupolaed clay oven was found (*Figure 55*).

Horizon 5

Structure No. BK-3

This is a post-bearing structure. Its size is unclear. The orientation of it is in a southeastern to northwestern direction. Surviving was a pear-shaped hearth, sunk into sand, with an accompanying pit, oriented in a western - eastern direction. The accompanying pit was in the west. Stones had been placed at the edges of the hearth and packed with clay (*Figure 56*).

Structure No. BK-4

This is a post-bearing structure. Its size is not clear, but it is oriented in a southeastern - northwestern direction. It had not been more than 3 m wide and about 4.5 m - 5 m long. The southeastern wall seems to have been made of beams placed between posts. A hearth, 0.8 m x 0.6 m in size, which had been sunk into sand, had survived (*Figures 56 and 57*).

Structure No. BK-5

This post-bearing structure was sunk, up to 20 cm, and oriented according to the cardinal compass points. Its size is not clear. Only the southwestern corner of the former building was uncovered. The structure was either insignificantly (up to 20 cm) deepened into sand or blown over by the wind. A partition of charcoal bits and postholes might have marked its western wall (*Figures 56 and 57*).

Structure No. BK-13

This post-bearing structure was designated as an out-building; it is oriented in a west - east direction. Its size is 2.7 m x 2.4 m. The northeastern corner, where the former entranceway was located, had been hewn slantwise. The structure might have contained a hip roof (*Figures 56 and 58*).

Structure No. BK-14

Two facilities comprise this post-bearing structure, which is approximately 5.9 m long and 3.6 m - 3.8 m wide, heading in an east - west direction. In the southwestern corner of the larger, western facility, measuring some 3.6 m - 3.8 m x 2.8 m, there was a passageway, sized about 1.5 m x 0.8 m. There had been a small barrier from the wind towards the passage from the exterior, along the former entranceway. Towards the middle of this facility, but closer to the northern wall,

was a pear-shaped hearth, 0.75 m long (directed east - west) and 0.5 m wide, with an accompanying pit on its eastern side. The hearth lining had been reinforced with stones. Packed sand comprised the earth flooring of this building. The eastern part of the house had not been heated. At the exterior of its northern wall, by the partition wall and entrance, was a vestibule, which was sized 1.3 m x 1.3 m (Figures 56 and 59).

The house had a pitched roof—it rested on the walls and partition wall. A massive wood post stood in the middle of the partition wall. The roof might have been covered in reeds or straw, possibly with planks as well; however, it had not been packed with clay.

Structure No. BK-36

This had been constructed as a post-bearing structure, heading in an eastern - western direction. Its stain took up an area of around 16 m² (Figure 56).

Structure No. BK-39

This is a post-bearing structure, but its orientation and size were not established. The remains of a disturbed hearth (?) were discovered (Figure 56).

Horizon 5 A

Structure No. BK-5A

This structure is post-bearing with a size that is not clear. It is oriented along cardinal compass points. The posts of the eastern wall had been dug into a ditch (Figure 56).

Structure No. BK-15

The construction, size and orientation of this structure were not established. The disturbed hearth of a clay oven was discovered. Traces of a fire place were found under the hearth (Figure 56).

Horizon 6

Structure No. BK-15A

This is a post-bearing structure. Its size and orientation were not established. Beams that were split lengthwise were used in the construction.

Structure No. BK-16

This is a post-bearing structure. Its size is not clear; however, it had been no shorter than 6 m - 6.5 m, oriented in an easterly - westerly direction. Rough hewn beams of a rectangular cut had been used for the construction (Figure 60).

ŽEMAIČIŲ HILLOCK SETTLEMENT

Table 5
Types of Structures

Horizon	Structures	Construction	Facilities number	Heating installation
1	1	lafted	one	hearth
2	2, 3, 4, 5, 6, 7	2, 3, 4, 5, 6 - lafted 7 - unclear	unclear	2 - hearth with accompa- nying pit 3, 6 - clay ovens 4, 7 - hearth 5 - unclear
2A	8, 9	8, 9 - lafted	8, 9 - one	8 - stone oven ? 9 - clay oven
3	10, 12	post-bearing	unclear	10 - unclear 12 - hearth ?
5	13	unclear	unclear	clay oven

Horizon 1

Structure No. ŽK-1

This structure had been no smaller than 3 m x 3 m. Its orientation is not clear. The walls of the building appeared to be a lafted construction. The earthen flooring had been made of layer of packed clay, which reached 20 cm in thickness. A circular hearth, with a diameter of about 70 cm, had been installed in a small pit, either in the middle of the building or, possibly, closer to its northern wall. The types of construction of the entranceway and the roof are not clear (Figure 67).

Horizon 2

Structure No. ŽK-2

The size of this structure is not known. It was lafted (?). Only a pear-shaped hearth with its accompanying pit, which had been at the southern edge, had survived. Judging from the position of this hearth, the structure should have been oriented in a north - south direction. The entrance could have been on the side of the accompanying pit, in other words, the southern side.

Structure No. ŽK-3

The size is not known. The type of construction is lafted (?). Only the hearth of a cupolaed clay oven has survived. The orientation of the building is not known (Figure 67).

Structure No. ŽK-4

The size is unknown, and the construction type is lafted (?). The flooring appears to have been made of packed clay. Only a hearth, 1 m in diameter, which had stones placed around it and had been sunk into the ground, still survived. Its locale in the structure is not clear. The orientation of the building is not clear (Figure 67).

Structure No. ŽK-5

Traces of this building's northwestern corner have survived. The size of the structure is not clear. One of the walls of the house is oriented in a southwestern - northeastern direction. It had been lafted; the bottom beams lay on a foundation of several, small layers of piled stones. This foundation had been deepened about 0.4 m, and its area reached 0.8 m. Burnt up, lafted remains lay alongside the foundation. It remains unclear whether or not the structure had been heated and, if so, how.

Structure No. ŽK-6

This building might have been some 3.5 m in width. It headed in a northeastern - southwestern direction. The construction seemed to be lafted. The hearth of a cupolaed clay oven survived about 0.5 m from the traces of the presumed, southwestern terminal wall. The entranceway could have been at the northeastern end. The flooring appeared to be made of clay—many clay patches remained.

Structure No. ŽK-7

The size, orientation and type of construction of this structure are not clear. Only a hearth, having a diameter of 0.7 m, had survived. This hearth had stones placed around it. It had been deepened into sand.

Horizon 2 A

Structure No. ŽK-8

This structure was lafted and about 4x4 m in size. The walls were daubed clay. It was approximately oriented according to cardinal compass points. The eastern and southern walls had been sunk into sand, by 10 cm - 15 cm. An oven, built in a mound of rough stones (or an overground hearth composed of stones), about 1 m x 1 m in size, stood at the level of the former clay floor in the southeastern corner (Figure 68). The place and construction of such a hearth or oven has not been discovered in the settlements of Palanga.

Structure No. ŽK-9

This building had been lafted, sized about 4.5 m x 4 m, and longer in a north to south direction. The marks of the northern wall in the northwestern corner survived as well as the doubtful traces of the southern wall. The plentitude of burnt through pieces of clay daub that were found had two kinds of impresses. The surfaces of circular beams had impressed in some places. In others there were planks or roughly squared timber impresses. The first had coarsely wattled and daubed surfaces. The second have smooth surfaces. Due to this, it was decided that the lafts of the building's walls had been wattled and daubed with clay daub, whereas the plank roof could have had its surface covered with a leveled layer of clay. There were the remains of the hearth of a clay oven, over 2 m from the marks of the northern wall and about 3.5 m from the marks of the western wall. It appears that the clay oven had stood in the southeastern corner. If that were so, then this would be the first such case among the structures of Palanga. In these structures the cupolaed clay oven would have usually been towards the middle of the structure by the terminal wall (Figure 68). The former fire place is under the hearth of the oven.

Horizon 3

Structure No. ŽK-10

This post-bearing structure appears to be oriented according to cardinal compass points. The postholes and stake hole are laid out in an area, about 3.5 m x 3 m in size; however, the structure had been larger. It appears that only its southwestern corner had been discovered. There are numerous postholes, which indicates that these were traces of two structures, rather than one (Figure 69).

Structure No. ŽK-11

The size and orientation of this post-bearing structure are not clear. All that has survived are several postholes and the small pit of a hearth, 0.5 m in diameter, which had stones placed around it. It had been indistinctly sunk into sand (Figure 69).

Structure No. ŽK-12

The size of this post-bearing structure is not clear. It is oriented according to cardinal compass points. Some of the posts of the southern (?) wall have survived. The pit of a small hearth, with a diameter of about 0.5 m, is almost indistinctly deepened in sand, at the terminal of the western row of posts (Figure 70).

Horizon 5

Structure No. ŽK-13

The size here is not clear. It could have been about 5 m long, oriented in an east - west direction. The type of construction is not known. Only the bottom of the hearth of a clay oven, about 0.7 m in diameter, had survived. It had been almost indistinctly lowered into sand.

Southern Settlement

Table 6
Types of structures

Horizon	Structures (P-)	Construction	Facilities number	Heating installation
16 th - 17 th centuries	7	post-bearing	unclear	hearth
1	1, 2, 11	lafted	one	1 - hearth with accompanying pit 2 - stone oven 11 - hearth
2	3, 12	3 - lafted 12 - lafted ?	3 - one 12 - unclear	hearth
3	4	lafted ?	unclear	hearth
5	5, 8, 8A,	5, 8 - post-bearing 8A - post-bearing, lafted	5 - unclear 8, 8A - one	5 - unclear 8 - out-building 8A - hearth with accompanying pit
5 - 5A	9	post-bearing or mixed	unclear	hearth
6	10	post-bearing	the long type ?	unclear
7	6	post-bearing	unclear	unclear

Horizon of the 16th-17th century

Structure No. P-7

The designation of this post-bearing building is not clear and its size is unknown. Its orientation is based on cardinal compass points. A pit was uncovered, stretching in a northeastern - southwestern direction. This pit was for a hearth, measuring 2.3 m x 1.8 m in size. Marks of rough hewn posts are by the hearth, over 0.3 m - 0.6 m away from the southern and northern sides. No remains of a clay floor and roof were found (Figure 77).

Horizons 1 - 3

Structure No. P-1

This structure is lafted, about 5 m x 4 m in size, oriented east - west. There had been a 2.5 m x 1.2 m sized, open hearth that had been sunk in soil in the center of the house, along with its accompanying pit. The accompanying pit, some 1 m in length, was in the western terminal of the hearth. The hearth linings had been spread with clay. It appeared that the entranceway had been in the western, terminating wall. It could have had a pitched roof (Figure 80).

Horizon 1

Structure No. P-2

This one is lafted, approximately 5 m - 5.5 m x 4 m in size and heads in a north - south direction. A rectangular oven, some 2.3 m x 2 m in size, had stood by the northern wall towards the middle of the house. This oven had been piled with stones. It had no special foundation; it was built straight on the surface of the ground. No traces of a clay floor were discovered. The entrance to the house was at the southern end, probably at the southeastern corner, where there also might have been a small vestibule. It should have had a pitched roof (Figure 78).

Structure No. P-11

This is a lafted structure, about 4 m in width, which heads in an eastern - western direction. There had been a hearth, over 1 m east from the stains of the wall. A pit, about 0.5 m in depth with a 0.75 m diameter, constituted the hearth. Stones had been piled along its perimeter in rows. These stones rose above the surface of the clay floor by no less than 15 cm. The locale of the mouth of this oven might have been on the southeastern side; it could have been some 20 cm by width. A posthole, driven into soil, was found in the middle of the hearth (Figure 79).

Horizon 2

Structure No. P-3

This lafted structure appears to be oriented in a northerly - southerly direction. There are stains of rotted through wood over an area of about 6 m x 3 m—these are probably traces of roofing constructions. The bottom of a pit for a hearth or small oven, sized 1.2 m x 0.9 m, survived. Many burnt through stones are around it (Figure 81).

Structure No. P-12

The type of construction here is not clear (it appears lafted). The size and orientation are also not clear. All that survives is the stain of an oval, 0.95 m x 0.85 m-sized hearth that was deepened into sand (Figure 79).

Horizon 3

Structure No. P-4

This structure had probably been lafted. Its size is not clear, and its orientation seems to have been according to cardinal compass points. Still surviving was an oval pit of a hearth, about 1.2 m x 1 m in size, which had been sunk into sand, by some 24 cm in depth.

Horizon 5

Structure No. P-5

The size and orientation of this post-bearing structure are not clear.

Structure No. P-8

This post-bearing building, some 6 m x 3 m in size, heads in a western - eastern direction. It was designated as an out-building. The contours of this structure are quite apparent. Over 0.4 m - 1 m from the corners of the posthole rows that mark the walls, there are also traces of a large posthole and smaller stakes. The structure had wide attics, held at the corners by posts. In the center of this structure, there was a place for a large post, 36 cm x 44 cm, or supporting posts. This indicates that this had been a hip roof. There are more stake holes in the southeastern corner of this structure—this seemingly had been an entranceway. Toward it could have been a passageway. No marks of a heating installation were found (Figure 83).

Structure No. P-8A

This is a lafted type of a post-bearing construction, about 5.8 m x 4 m in size, oriented from the west to the east. The lines of the southern walls of this and Structure No. 8 were in congruence, except that the northern edge of Structure No. 8A was wider. The eastern terminal of Structure No. 8A was alongside the western terminal of Structure No. 8, and both structures seemed to enjoin. There was only one posthole, located approximately in the middle of the structure, in the eastern wall of Structure No. 8A. Alongside of it and the pit of the hearth was an additional, small pit of an out-building. The pear-shaped hearth with its accompanying pit lay toward the middle of the building, somewhat closer to the northern wall, over 0.5 m from the terminal eastern wall. The accompanying pit

had been at the eastern terminal (!), very close to the wall. This would indicate that, in this locale, both structures, the residential and the out-building, could have had a common opening. The contour of this structure defined the rows of postholes and stake holes quite clearly. There were no posts at the western terminal; there were merely six stakes. This wall, just as the eastern wall, could have been lafted (Figure 83). This building might have had a pitched roof. No marks of a clay floor were found.

Horizons 5 - 5A

Structure No. P-9

The construction type is either post-bearing or mixed. The size and orientation are unclear. Two larger stones were alongside the structure, marking the postholes. There was an elongated hearth, 0.7 m x 0.4 m in size, oriented in a northern - southern direction. There are no marks of a roof or clay floor (Figure 84).

Horizon 6

Structure No. P-10

This post-bearing structure is at least 4 m wide and over 5 m long, oriented from the southwest to the northeast. Only part of the eastern corner of the structure had survived. Stones had been stuffed around all the posts in pits. In certain spots they lay as many as four rows, one atop another. Some of the postholes had been doubled. The construction of the roof is not clear.

Horizon 7

Structure No. P-6

This is a post-bearing building, oriented in a west - east direction. The postholes and stake holes (which predominated) lay in an area of about 6 m x 2.8 m. The terminals of the structure appeared to have been rounded. A hearth, if there had been one, had to have been in the middle of the house. The central part of the structure, 2 m in width, was not examined (Figure 87).

CONSTRUCTION TRADITIONS IN PALANGA

Post-bearing structures

Traces of eleven post-bearing constructions were found in the settlement at the foot of Birutė Hill in the cultural layer of Horizons 5, 5A and 6. Traces of three structures were in Horizons 3 - 5 at Žemaičių Hillock whereas, at the Southern

Settlement, four post-bearing structures had stood in the development Horizons 5 and 5A (Horizons 6 and 7 are ascribed to the Middle Iron Age). In such a manner, the remains of eighteen structures of a post-bearing construction were researched in the settlements of Palanga (Tables 4 - 6). In addition to these, post-bearing construction was also employed for the reinforcements of the settlement at the foot of Birutė Hill, where the remains of the construction of the defense wall and tower were researched. Similar reinforcements were found in the remains of out-building (?) structures at the Roužė Stream Settlement. Furthermore, traces of a pit for a hearth of some sort of post-bearing structure along with mid-16th century finds were discovered at the Southern Settlement (Structure No. P-7).

Of the eighteen post-bearing structures at the settlements, designated as dwellings and out-buildings, only four (BK-5, 13, 14 and 36 [of Birutė Hill]); and P-8 [of the Southern Settlement]) have survived better, and it is possible to determine the size and type of construction for three structures. Of these, Structure Nos. BK-13 and 36 and P-8 had been out-buildings, and only one had been a house with two facilities (BK-14), one a dwelling and the other an out-building. There had been a vestibule in a part of the structure, not meant for dwelling. All the post-bearing structures had been oriented according to cardinal compass points.

The posts of the post-bearing structures had been dug in from 0.5 m to 1 m and, less frequently, up to 2 m in distance from each other. No traces of walls have survived in the seashore sand. Therefore, it is not known how the horizontal beams between the posts had been affixed to them. That the spaces between posts had been filled with horizontal beams are indicated by the clay daub impresses on the walls (BK-12).

Certain post-bearing structures had been driven into sand by up to 20 cm (or the wind had possibly blown the sand on them). The posts of one house had not been dug into separate pits but into one small ditch (BK-5A).

Two of the post-bearing buildings, BK-13 and P-8, used to have hip roofs. In the first one, there had been no supplemental constructions for holding up the roof on the small out-building structure of an irregular plan. Towards the middle of the out-building of Structure No. P-8, there was a very massive pit for one or two paired posts. The post should have been designated for holding up the hip roof. An analogy substantiates this assumption. In the middle of the dwelling next to it (P-8A), which was nearly the same length, there were no signs of such a post. This latter house, the same as BK-14 and, apparently, most other structures of a post-bearing or mixed type of construction, had a hip roof, held up by a partition wall across it with a massive post in the middle.

Traces of flooring made of clay and sand were only discovered in one house, BK-14 (of Birutė Hill). It appears that there had only been hearths in post-bearing structures. BK-3 and 14 had pear-shaped hearths with accompanying pits, whereas the hearths in BK-4 and 39 and ŽK-11 and 12 (of Žemaičių Hillock) had been installed in circular pits. The hearths found towards the middles of the structures were sometimes pulled somewhat to one side (BK-14).

The locations of doors in the structures were indicated by vestibules, traces of barriers from the wind on the exteriors of the houses (BK-14) as well as pear-shaped hearths with accompanying pits (some facilities were without vestibules and no passageways in the structures). The accompanying pits had been on the side of the orifice (BK-3).

It is difficult to compare the post-bearing structures of Palanga from the Early Middle Ages, because there are still few analogies from that time in Lithuania. Fragments of a post-bearing structure, designated for other than a dwelling, which had a size of 8 m x 4-5 m, were found during a dig at Eketė Hillfort. This structure was dated at the second half of Millennium I to the start of Millennium II (Merkevičius 1972). Actually, Jablonskis had found post-bearing structures at the seashore, which were sized at barely 4.7 m x 3.7 m and about 3.5 m x 2.6 m. The first had had a hearth in the corner although this one was dated at the 1st to 3rd centuries (Jablonskis LIIA. No. 694; Jablonskis LIIA. No. 1511), the material used for the dating is rather questionable.

Rather large structures with two facilities, where one was a dwelling and the other an out-building were built during the Middle Iron Age beyond the Baltic territories (Bakšiai – Puodžiūnas 1994). The out-building structures during this time are also quite large. One from the 3rd - 5th century, sized 14.6 m - 12.5 m x 5.8 m, was found in Bakšiai (Puodžiūnas 1996), and another, sized 15 m x 7 m, was found in Lieporiai, an area in Šiauliai. Actually, in the same place at Lieporiai (a settlement dated between the 5th and 8th centuries), a very small out-building structure, sized 2.35 m x 1 m, of an unclear designation had been found (Salatkienė 1996). At about the middle of Millennium I, dwelling houses, about 25 m² in size, were also being built with internal passageways (Puodžiūnas 1996). Many of the structures from the second half of Millennium II, which had been researched in Lithuania, had had various building annexes.

Dwelling Structure No. 8A in the Southern Settlement of Palanga had an annex that was not heated along with a small vestibule in the facility that was heated.

In Prussia, during the 9th to 10th centuries, post-bearing constructions were built, oriented in accordance with cardinal compass points. These were small

dwelling with a stone oven in the corner and large out-buildings (some as large as even 16 m x 5 m in size). Some of them had been deepened into soil almost indistinctly (Кулаков 1994: 95-97). During the 9th to 12th centuries, the Teutons built rather large post-bearing buildings, measuring up to 50 m², which contained two facilities with vestibules. One of these facilities would be heated and the other stayed cold (Donat 1980: 128 and 131; Radig 1958: 128-145).

Structures of a Post-bearing, Lafted Type of Construction

The remains of three structures, BK-2 and 12 (of Birutė Hill) and P- 8A (of the Southern Settlement), indicate that they had been built employing a combined type of construction, post-bearing and lafted. Structures of both these types of construction were found in Horizon 4 at the foot of Birutė Hill. The posts of Structure No. 2, probably 5 m x 3.6 m, had been towards the middle of the side walls, but there were none in the corners. The massive central post would indicate the building might have had a hip roof. Three walls of Structure No. 12, sized 7 m x 7 m, had been made from posts with beams laid between them, and the western one should have been half lafted. Both terminal walls of Structure No. 8A in the Southern Settlement, the western and eastern ones, sized 5.8 m x 4 m, could have been lafted. The eastern wall seems to have connected with the terminal wall of an out-building. There might have been even more structures, built in such mixed types of construction.

Lafted Structures

Buildings built from horizontal beams, hewn in corners, were predominate in the settlements of Palanga. Traces of at least eighteen lafted structures were found in Horizons 1- 4A in the settlement at the foot of Birutė Hill. There could have been more since the construction type of some of the buildings was not determined. Eight lafted houses stood in Horizons 1 - 2A at Žemaičių Hillock. In the Southern Settlement, there were at least four (possibly six) lafted structures; their marks were in Horizons 1 - 3. Thereby, the traces of at least thirty lafted structures are known in the settlements of Palanga.

The sizes of the lafted houses were from 9 m² to 26 m². Most of the buildings in all settlements were always oriented in a western - eastern direction. All the houses in the Birutė Hill Settlement were built this way. Most at Žemaičių Hillock were also built the same way, except for one, which was stretched in a north - south direction. At least three lafted houses were also oriented north - south at the Southern Settlement; the others stretched from the west to the east.

Table 7
Sizes of Lafted Structures at the Palanga Settlement

Structure No.	Size (m)	Door locale	Heating installation type and locale
BK - 1	4.5 x 4.5	W terminal (?)	Clay oven by the E wall
BK - 2	5 x 3.6	SW corner	Clay oven in the SE corner
BK - 6	5 x 4		E facility by the E wall
BK - 7			Clay oven by the E wall
BK - 9	4.5 x 4	W terminal (?)	Hearth by the E wall
BK - 10	~4 x 3.5		Hearth (?) at the E terminal
BK - 11	3 x 3		Clay oven
BK - 22	4 x 3.5	W terminal	Clay oven by the E wall
BK - 23	6.5 x 4	W terminal	Clay hearth by the E wall
BK - 31	4.7 x 4	E terminal	Clay oven by the W wall, hearth in the middle
ŽK - 9	4.5 x 4		Clay oven in the SE corner (?)
P - 1	5 x 4	W terminal	Hearth with accompanying pit in the center
P - 2	5-5.5 x 4	SE corner	Stone oven by the N wall
P - 3	~6 x 3		Hearth in the center (?)

Various heating installations were found in lafted houses. In the settlement at the foot of Birutė Hill, fourteen lafted structures were heated with cupolaed clay ovens and only three with hearths. A clay oven was found in four lafted structures at Žemaičių Hillock, a hearth in two and a stone oven in one. At the Southern Settlement, a stone oven was in one structure whereas, in others, there were three or five stone ovens; hearths were also found.

Wall and Roof Constructions and Flooring of Structures in Palanga

Organic material decays in sand very rapidly; therefore, there are no surviving traces of construction parts, structural connectors or roofing in Palanga. A discussion on all such matters can only be based on indirect evidence. Therefore, in the field of construction as well, it is only possible to research post-bearing, lafted and mixed constructions. In the meantime, it is impossible to say whether framework construction was practiced as a means in Palanga, where a circle of horizontal beams or baulk supported the posts. It is not known if the spaces between the walls of the structures between posts were filled in lengthwise with split beams or planks or only small logs. It is not clear if there was a practice for making walls from wickerwork, where the stems would be placed as a horizontal, bottom circle (Wilde 1934: Abb. a; Barnycz-Gupieniec 1984: 150-158). In truth,

the clay daub impresses found at settlements do not show that houses in Palanga were being built with wickerwork walls. Evidence that various constructions were being employed for building post-bearing structures in Palanga is provided by the marks of posts, left behind by beams split lengthwise, which were found in Structure No. BK-15A of Horizon 6. Meanwhile, the wall posts of Structure No. BK-16 had been rough hewn; in a cross-section, they are rectangular.

The lafted buildings of Palanga did not have capital foundations. The bottom circle of beams was nearly always placed on the sand. At times the post-bearing as much as the lafted structures were found sunk into the sand at a depth of 20 cm - 40 cm (Structure Nos. BK-5 and 12 [of Birutė Hill]). This could have been done while building the houses or the wind could have blown sand at their bottoms later. Only rarely paving made of different, small stones from the seashore would be installed under the bottom beam, forming a peculiar sort of foundation (Horizon 2, Structure Nos. BK-1 and 7). The foundations of Structure No. 5 in Horizon 2 of Žemaičių Hillock were piled up with several layers of small stones. The mounting of such "foundations" would be a reflection of the construction traditions of far-off Scandinavia, especially Gotland (Jonsson, Lindquist 1993: 48, 89, 195; Magnusson 1999), and the Prussians (Кулаков 1994: 95-97).

The impresses of burnt through clay daub in the locales of houses built in a mixed construction type and lafted houses indicate that the walls of some of them, BK-6, 8, 12, 31 and 33 and ŽK-9, had been wattled and daubed in clay; sometimes such clay daub was leveled by fingers. The pieces of clay daub, found in the stain of Structure No. BK-6, showed that walls had been daubed and from both sides. Three walls of the lafted, Structure No. BK-31 had been daubed with clay; whereas one, the terminal eastern wall, which also had had a doorway, had been left with the beams bare. Vestibules were built for doorways for protection from the wind and cold (Structure No. BK-14). In the larger buildings, there were also passageways (Structure No. BK-12) and, at times, small barriers that were seemingly made of wickerwork would be erected outside (Structure No. BK-14).

Clay flooring was also sometimes made for the structures. Actually, however, this was not done for all the structures because a clay floor, apparently, was a substitute for sufficiently, tightly packed sterile sand. There were clay floors at Structure Nos. BK-1, 2 and 11 (of Birutė Hill) and ŽK-4 and 8 (of Žemaičių Hillock); whereas, Structure Nos. BK-7, 12, 14 and 23 had loamy sand coverings. No marks of clay floors were found at all in the Southern Settlement.

It seems that the roofing at Palanga settlements were pitched roofs most often, judging from their constructions. Only four, Structure Nos. BK-2, 13 and 22 (?)

(of Birutė Hill) and P-8 (of the Southern Settlement), might have contained hip roofs. Two of these had out-building designations (Structure Nos. BK-13 and P-8). An inaccurate plan for the small, Structure No. BK-13 showed that it had contained the form of a hip roof. Elsewhere postholes found in the center of a structure were the evidence of such constructions.

Most roofs had been covered with reeds or straw. There were stake holes along the side walls of post-bearing Structure No. BK-14, which might have remained from the poles, which had pressed the reeds or straw on the roof. Some of them seemed to have an out-building designation more often, and the houses had wide attics. In the corners of the perimeter of the hip roof on the out-building, Structure No. P-8, which was over 0.4 m - 1 m from the wall posts, there were large postholes, including a stake hole among them.

There were traces in the stains of three structures, which had stood in the settlements at the foot of Birutė Hill and Žemaičių Hillock. These attest that the houses had plank roofs spread with clay. Structure No. BK-12 was about 49 m² in size. Inside it there were as many as six postholes, nearly towards its middle but closer to the southern wall. The great deal of burnt through clay daub with impresses of beams, in the locales of the eastern and especially the western walls, indicated that the frame of the terminal walls had been high. Therefore, it was surmised that the house had had a pitched roof. The pieces of clay with impresses, lying throughout the entire area of the structure's stains, are evidence that planks or roughly squared timber had been laid for the roof and covered over with clay. The quite distinct traces of the burnt up roof on Structure No. BK-23 showed that the roof of this house had been supported by beams - rafters, 11 cm - 7 cm in diameter. Planks covered these lengthwise across the house. Additionally clay had been packed in the plank roof. At **Structure No. 9** of Žemaičių Hillock, there were not only rough pieces of clay daub with beam impresses but also traces of daub with planks or roughly squared timber with even surfaces. These indicated that the roof of this structure had a roof of planks, packed in with clay as well.

Hearths and Ovens

Two kinds of heating installations were being used during the Early Middle Ages in Palanga—open hearths and ovens. On their own accord, there had been several types of hearths equipped in different ways, as well as different kinds of ovens (Table 8).

Table 8
Hearths and ovens in Palanga settlements (sizes by meter)

Structure No.	Hearth				Clay oven	Stone oven
	In a pit		On the surface			
	Ordinary	With accompanying pit	Stone	Clay		
BK-1					0.9 x 0.9	
BK-2					1.4 x 1	
BK-3		1.46 x 1	inlaid	packed		
BK-4	0.8 x 0.65					
BK-7					0.8 x 0.75	
BK-9	1.3		inlaid			
BK-10				unclear		
BK-11					0.9 x 0.6	
BK-12					1.2 x 1.0	
BK-14		0.75 x 0.5	in walls			
BK-15					disturbed	
BK-18					Ø 1.4	
BK-19					0.75 x 0.6	
BK-20					Ø 1	
BK-21	1 x 0.6					
BK-22					disturbed	
BK-23				clay, 0.92 x 0.73		
BK-24					disturbed	
BK-25					disturbed	
BK-27					disturbed	
BK-28			inlaid	1.1		
BK-30					Ø 0.7	
BK-31	0.75 x 0.6				1.3 x 1.1	
BK-32					1 x 0.9	
BK-33					1.7 x 1.3	
BK-34					Ø ~1.2	
BK-35					disturbed	
BK-37					Ø ~ 1	
BK-38					Ø ~ 1.2	
ŽK-1	0.9					

Structure No.	Hearth				Clay oven	Stone oven
	In a pit		On the surface			
	Ordinary	With accompanying pit	Stone	Clay		
ŽK-2		1.4 x 0.8	inlaid			
ŽK-3					0.9 x 0.7	
ŽK-4	1		inlaid			
ŽK-6					1 x 0.8	
ŽK-7	0.7		inlaid			
ŽK-8						1 x 1
ŽK-9					disturbed	
ŽK-11	0.5		inlaid			
ŽK-12	0.5					
ŽK-13					Ø ~ 0.7	
P-1		2.5 x 1.2		packed		
P-2						2.3 x 2
P-4	1.2 x 1					
P-8A		1.5 x 0.9				
P-9	0.7 x 0.4					
P-11	0.75		inlaid			

Hearths

An open hearth is the oldest and simplest piece of equipment for heating used in buildings. Seventeen hearths of various types (Figure 87) were discovered in the dwellings of Palanga. Six of these were made in the simplest fashion by digging circular or oval pits directly into the sand. Of these six, the smallest was 0.5 m, and the largest reached up to 1.2 m x 1 m. The depths of the pits for the hearths fluctuated from 10 cm to 50 cm. Stones were often placed around a hearth. In **Structure No. P-11** of the Southern Settlement, the pit of its hearth had a wreath of stones placed around it that was several layers high (four layers had survived). This wreath was up to 30 cm in height, above the level of the former clay floor.

Pear-shaped hearths with accompanying pits were found in five stains at the structures. Their lengths ranged from 0.75 m to 2.5 m—larger hearths were generally in the larger structures. Hearths of this type are deeper, especially

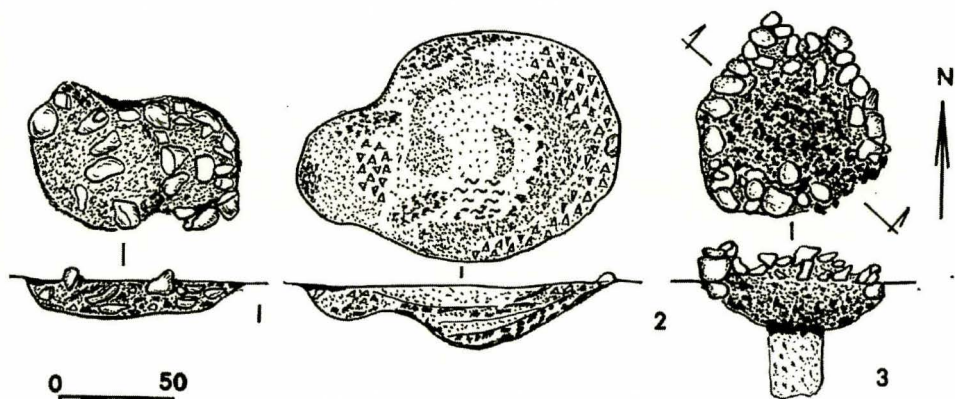


Figure 87. Types of hearths at the Southern Settlement

the central pits; however, they were never more than 40 cm in depth. Hearths with accompanying pits sometimes had stones placed around them at the top. Meanwhile the edge of Structure No. BK-3 was found to have also been packed with clay. The hearth found at Structure No. P-1 of the Southern Settlement had linings packed with clay.

Only two ordinary hearths (all found in the settlement at the foot of Birutė Hill) were installed on the surface of the ground. One of them was reminiscent of an ordinary fire place, whereas the other was inlaid with stones. One hearth that was found in the dwelling, Structure No. BK-23, was different from the rest. It was rectangular, packed of clay and framed in small beams and it had a border edging on one of the terminals. There is no other clay hearth like this one in Lithuania. Analogies in other countries, however, are discussed below.

Clay ovens

The remains of twenty-five clay oven hearths, which had survived better or less well, were found in the settlements at the foot of Birutė Hill and Žemaičių Hillock; however, none were found at the Southern Settlement. The clay oven hearths were circular, with diameters from 0.7 m to 1.4 m, or oval, in sizes from 0.9 m x 0.6 m to 1.7 m x 1.3 m. These clay oven hearths used to be packed on an even surface. Only one (BK 13) was deepened into the sand almost indistinctly. Generally clay oven hearths used to be elevated by several centimeters above the clay floors of the structures. They reached thicknesses from 5 cm to 15 cm but,

usually, they were about 10 cm. The central part of all of them was nearly circular, with diameters ranging from 40 cm (BK-7) to 1.2 m x 1 m (BK-12); this part was painstakingly slipped and burnt through. Certain oven hearths were burnt through up to 10 cm. There are always remains of clay border edgings or linings around the mouth of an oven that was burnt through. All of these oven hearths of packed clay that had been found are considered as the remains of cupolaed ovens (Žulkus V. 1997: 171). Some of the burnt through clay hearths, which were found with scant clay around them, actually could have been open clay hearths. Most of the burnt through hearths discovered were covered with a thick layer of burnt through clay, and a good deal of soggy clay was found around them. There was often something akin to border edgings, elevated along the perimeter, at the edges of the heating chambers. However, the top of not one of them was ever found—all of them had crumbled. Therefore, the opinion held is that these happen to be precisely the remains of the linings of cupolaed ovens. The remains of an oven found at the top layer (Structure No. BK-18) substantiated this opinion. A ring made of loosely piled stones, 1.5 m in diameter, formed its foundation. This ring was broken on the western side, where the mouth of an oven had been. A layer, 10 cm - 15 cm in thickness, of heaped and packed clay, was in the middle of this ring. The oven hearth was somewhat wider than was the stone ring. This packed hearth was enwreathed in long clay cylinders, in a thickness that could almost be grasped by a human hand. As the linings of the ovens rose upwards, they had been narrowed in stages, thus forming a cupola. Ovens made in this fashion could not be tall because their cupolas did not have any framework. There had been an opening at the top of an oven, apparently as a smoke exhaust and a place to insert a pot. There is data in the ethnographic material of Latvia about the construction of clay, cupolaed ovens. It seems that cupolas were sometimes formed in other ways as well: timber would be piled on top of a packed hearth in the sort of a form that the arch of the oven needed to be, covered over with tree bark and packed with clay. Afterwards the timber would be burned out and the burnt through oven cupola would remain standing (Цайне 1984: 68). Occasionally ovens would be renewed by manually shaping its walls while leaving the old hearth as it was. Two oven hearths, one atop the other, were found in Structure No. BK-20. In this case, the old oven was apparently no longer fixed; a new one was built in its stead.

There were fire places under more than half of all the clay oven hearths found in the settlement on Birutē Hill. As a rule, these were larger than the oven hearth was (only the one at Structure No. BK-2 was smaller). Frequently, a thin layer of

clean sand lay beneath an oven hearth, and a fire place would be deeper down. Fire places would be barely deepened into the soil, from several centimeters up to 12 cm, or assembled on the surface. Under the oven hearth of Structure No. BK-30, there was a thin layer of earth and a paving of small stones, about 1 m in diameter, and the fire place was right under that.

A shallow ditch had been dug around the fire place of Structure No. BK-18. Afterwards a thin layer of sand had been poured on the fire place and stones piled into a 1.5 m diameter circle; then the packed oven hearth was placed into it.

Sometimes there was a great deal of charcoal in fire places and, as was usual in an ordinary hearth, a happenstance of animal or fish bones (**Structure No. BK-12**) and ceramics. In the fire places of Structure Nos. BK-12, 18 and 33, which were beneath the ovens, there appeared to be items tossed in deliberately—spindles, a whetstone, a penannular brooch, a small knife and amber pieces.

The fire places found beneath clay ovens could have been meaningful in two ways. Apparently they served as places for firing up a household fire until an oven was built. On the other hand, the fact that fire places were always found under ovens would indicate a ritualistic meaning. A clay oven would be built in a blessed place, which had already been cleansed by fire. Things, found in fire places, that were unscathed by fire would substantiate such a claim. In Structure No. BK-18, a decorated spindle and whetstone had been placed at the edge of the fire place, possibly to avoid their damage from the remaining heat. The cupolaed clay oven, found in the structures of Palanga settlements, was designated for heating the facilities and food preparation. Bread was probably also baked in the larger ones.

No clay ovens like the ones in Palanga are known in Lithuania nor were they very widespread elsewhere either. These were built during the Early Middle Ages in western Slavic lands and Scandinavia. The cupolaed clay ovens in northern Germany and Jutland are considered a feature of Slavic culture. The clay cupolaed ovens, usually in an oval form, were widespread in Starigard/Oldenburg during the 8th to 12th centuries (Gabriel, Kempke 1991: 157, 163; Eckstein, Schietzel 1986: 171-184) and in Gross Raden during the 9th to 10th centuries (Schuldt 1990: 52, Fig. 50-52). Cupolaed clay ovens were not particularly usual; they were used for heating facilities, preparing food and especially for baking bread. As pertinent to the latter case, there were also other heating installations in addition to clay ovens in buildings. Often, under the hearth of the ovens, there was stone paving. In the northern part of Russia, the cupolaed clay ovens built were large and stood on a special foundation of wood or stones; these were used exclusively

for baking bread (Barnycz-Gupieniec 1984: 157 – 158). Cupolaed bread-baking ovens, about a meter in size and somewhat larger, which were circular and oval, were built in Denmark in their post-bearing dwellings and in the Western Slavs land (Gross Raden – Germany). These were of a very similar construction to those in Palanga. There would be a cobblestone paving under the clay hearth and stones placed in a circle in the locale of the linings (Steensberg, Østergaard Christensen 1974: 253-265; Schuldt 1990: 52, Figures 50-52). The cupolaed clay ovens, which began being built in Latvia during the Late Iron Age, survived up to the 14th - 15th century. Their construction was related to the bread-baking ovens, which were widespread in western Slavic lands and northern Russia. These had wooden or stone foundations (Мугуревиц 1983: 28-35; Седов 1975: 296-301; Цайне 1984: 67). The clay ovens in the structures of Lake Araiši settlements were very similar in terms of size and construction (Apals 1974: 141-153; Apals, Mugurēvičs 2001: 311-317). Clay ovens were built in an oval or horseshoe form in Riga during the 12th to 14th centuries; these are found more often than stone ones are. Most ovens in Riga were built directly on soil; only several were on a specially equipped platform. The mouth of Riga ovens would be made higher than the clay floor. The settlers of the lower River Dauguva also packed their clay ovens directly on the soil during the 10th to 13th centuries. Analogical ovens of later times are also known in the ethnographic material of Curonia, Semigallia and Vidzeme (Цайне 1984: 67-68). These appeared in Russia (Podolia) under the influence of Western Slavs during approximately the 10th century. During the 10th - 11th century, they reached the Upper Nemunas River and disseminated into the zone of forest steppes. Such ovens were mostly built during the 12th to 13th centuries (Раппопорт, Колчин, Борисевич 1985: 138-141).

Seaside Slavs packed hearths of clay that were also rectangular, framed in wood and reinforced with small stakes; in rarer cases the hearths were circular. However, clay hearths in a rectangular form were not only employed along the seashore of the western Slavs. Rectangular open hearths, piled up out of stones and later packed in clay or made merely from clay, were being erected by northern Teutons in their structures since olden times. These were quite large in the largest post-bearing buildings in Denmark and Sweden during Viking times. Meanwhile, in the smaller dwellings, particularly in Norway, they were made considerably smaller. Hearths stood either in the middle of a structure or towards the middle, closer to the wall opposite the entrance (Reinerth 1937: 90. Abb. 86; Herteig 1974: 146-158. Abb. 4). Additionally, open clay hearths, framed

with small beams or bricks, packed on a foundation of wood, stones or brick-bats, were being built in the dwellings of Riga during the 12th to 13th century (Цайне 1984: 64-66; Caune 1996: 62-71).

Stone Ovens

The remains of two ovens piled up with stones were discovered in two structures at Žemaičių Hillock and the Southern Settlement. The oven piled of stones in Structure No. ŽK-8 was about 1.2 m x 1 m in size. It had stood in the south-eastern corner of the structure, which was some 20 m² in size. A stone oven, sized 2.3 m x 2 m had stood in the middle, closer to one wall of Structure No. P-2 in the Southern Settlement.

Stone ovens were very widespread throughout all of Eastern Europe (Barnycz-Gupieniec 1984: 150-158). The closest analogies are found in Imbarė, of the Curonians. According to V. Daugudis, who spent long years researching the complex of Imbarė, circular stone ovens, about 1 m in diameter, which were installed in pits, had stood in the corners of the dwellings here since the earliest Middle Ages (Daugudis 1982: 95-97). In consideration of the provided plans and cross-sections, these had seemingly been hearths, not ovens. Assuming this researcher had dated accurately, the prototype of Western Lithuanian stone ovens could be considered the place for a domestic fire, found in Žvelsėnai, which was dated at the 4th - 5th century. This was 1.26 m x 1.12 m in size, piled around with stones from three sides, with an oblong pit, deepened some 18 cm. Pieces of clay lay above the stones (Jablonskis LIIA. No. 694). The remains of a stone oven, the construction of which was related to ovens found in Latvia and Russia, were uncovered in a structure at the Aukštadvaris Hill-fort (Daugudis 1982: 89-90). Remains of a stone oven in a form that is not clear were found in the corner of a 4 m x 4 m sized structure in the Daubariai Settlement. In that same structure, there were also found clay weaving weights of a low cylindrical form, held by little net weights (Daugudis 1977: 20-27).

Place for domestic heating installations

In the Palanga settlements, the same as everywhere else, open hearths in circular, oval formed pits or pear-shaped hearths with accompanying pits had been in the middle of buildings. One stone oven was in the corner of a structure, while another was in the middle, closer to the terminal wall. Cupolaed clay ovens were also built the same at Palanga settlements—in the middle, closer to the wall opposite the entrance. The open, rectangular clay hearth also stood the same way (Structure No. BK-23). Only in rare cases was a clay oven moved more towards one of the corners.

In the structures of the Balts during the 5th - 7th centuries and the Early Middle Ages, the hearths piled around with stones used to stand in the middle of structures; whereas, the stone ovens were in a corner (Atgāzis 2001: 240; Apals, Mugurēvičs 2001: 314-315; Apals, Mugurēvičs 2001: 311-317). Heating installations were usually built that way in Riga during the 12th - 14th centuries as well (Цайне 1984: 73-80). An oven was rarely built in the middle of a dwelling, closer towards one of the walls. Slavic traditions of Central Europe appeared in the northern part of Eastern Slavic territories, where they became established during the 9th - 13th centuries. Here the stone or clay ovens would be built in the corner of a structure (Седов 2002: 9-31). Western Slavic stone ovens, during the 5th - 7th centuries, used to be in the corner of a structure (Kobyliński 1997). Later, especially in the Pommern region, ovens were already standing towards the middle of a wall more often. In Gdansk, 45% of all the ovens and hearths were found in such a location (Barnycz-Gupieniec 1984: 26-28). For safety reasons, open places for domestic fires were rarely placed against the walls; therefore, they were usually built in the middle of a facility everywhere. However, in the Baltic region, there was no tradition for moving open locations for domestic fires closer against the terminal wall. The Scandinavians as well as the Western Slavs often had their places for domestic fires standing in the middle of a facility or closer to the terminal wall; much more rarely they were in the corners of their structures (as a rule, these would be quadrangular, stone or clay hearths). Hearths in dwellings with several facilities would stand in an enclosed facility or closer to one of the terminal walls (Reinerth 1937; Roesdahl 1991:111. Fig. 28; Pettersen 1991: 38-49; Pettersen 1992: 1-6. Olsen, Schmidt 1977; Hinz 1974: 31, 32, 37,38, 64, 65), the same as in Palanga.

X. NAGLIS HILL

Naglis Hill, the same as Birutė Hill, is a sandhill of the litorinian terrace in the northern part of Palanga. Naglis Hill is over 200 m from the seashore. East of the hill, several hundred meters away, there had been swamps and small, lagoonal lakelets. People can remember fish still being caught in one of them during the turn of the 19th - 20th century. The locale is still named Ežeralis today. Another small stream that had recently flowed from it, curving past Naglis Hill, which is now dried out, received this same name (Končius, Ruokis 1926: 94). Naglis Hill is not high. It is only elevated up to 12 m above sea level, and it is only about 7 m in height from its foot. The inclines of the hill are sloping, and only the northern slope is steeper. However, it was formed this way artificially—it was dug away during World War I. The after-effects of that war are still evident currently—the platform and slopes are badly damaged by foxholes and dugouts, and the pines were chopped down. Only seven old pine trees remained after this war (Figure 88). Palanga residents left many pits on the slope and the foot of the hill when they pulled up pine stumps (Končius, Ruokis 1926: 30). Certain pits had been already dug during the latter half of the 20th century, in unsuccessful hunts for treasure.



Figure 88. Naglis Hill after the First World War

The platform of the hill, at this time, has an oval form. It is approximately a mere 25 m x 15 m in size and stretches in a westerly - easterly direction. Its surface is nearly horizontal. Traces of something akin to ramparts with ditches are seen at the northern, northwestern and southern foots of the hill.

The oldest name of this small hill seems to have been *Olandų kepurė* (Dutchman's Cap).⁹ It was so-named because it was a landmark guiding sailors. A stream flows into the sea beside the hill, along which there were still traces of an ancient settlement as late as the 20th century. Palanga residents referred to this settlement as the "*Senasis uostas* (Old Harbor)". M. Baliński believes that this had been the ancient Palanga (Baliński 1846: 529-530). The long-standing, old residents of Palanga call this sandhill "*Kapų kalnas* (Hill of Graves)" or "*Žuvėdų kapai* (Graveyard of seagull terns)". People do not call it Naglis Hill. Their grandparents had told tales that infants that had not been baptized, suicides and the drowned found along the seaside used to be buried at the northern edge of this hill's platform. Thus the hill was haunted at night. Between the world wars, it was usually called "*Kapų kalnas*" though the name Naglis Hill was also known. According to people's stories, this name is associated to the word *nagla*, which refers to a sudden, violent death or to nails (from the German *nageln*).¹⁰

WRITE-UP OF THE RESEARCH

Under the direction of this author, a 159 m² research area on Naglis Hill was examined in 1978 (Žulkus V. 1981). The hill's platform was excavated and the aforementioned ramparts and ditches at the foot of the hill were traversed with trenches (Figure 89). The trenches were laid out under the assumption that Naglis Hill had formerly been a hill-fort (LAA II 1975: 124). Furthermore, in 1988, a large territory east of Naglis Hill was surveyed in search of *senkapių* ancient gravesites. The gravesites were not found. However, it was established that earlier this place had been lower and that the sandhills, now by the former Ežeralis where the Jewish gravesite still exists, had been wind blown during modern times.

While excavating by the slope of the hill, no cultural layers or traces were found of human activity. These excavations substantiated the data of I. Končius and V. Ruokis—over a century, the sandhills had been blown in at the foot by

9. Another Dutchman's Cap is at the seashore of Karklė (Karkelbeck) by Klaipėda.

10. As told to the author in 1978 by Palanga resident, Vladas Joskautas, the son of Jokūbas, born in 1896

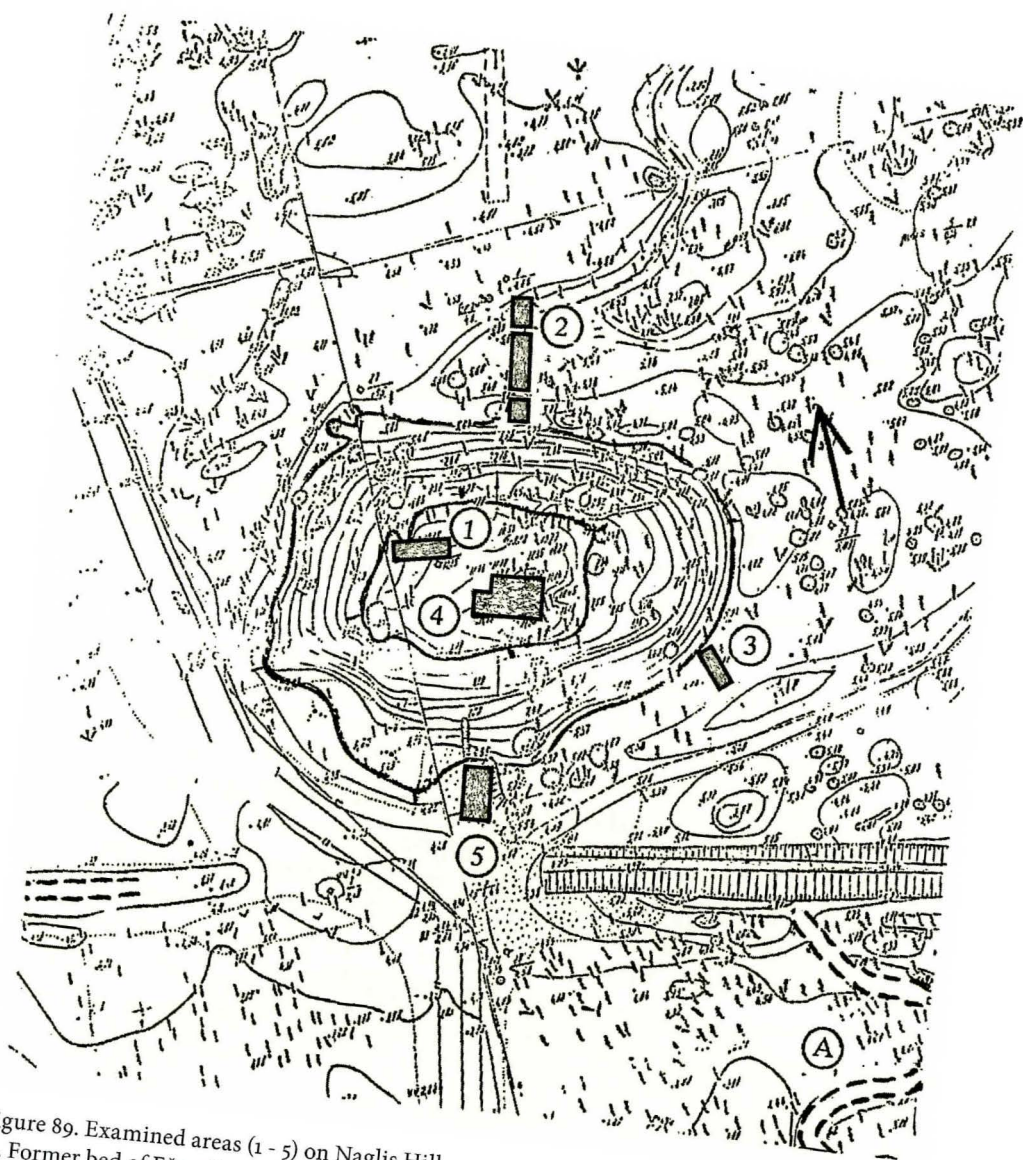


Figure 89. Examined areas (1 - 5) on Naglis Hill
 A. Former bed of Ežeralis Stream

the wind, reaching 1.3 m in height (Končius, Ruokis 1926: 88). Additionally, no signs of reinforcements were discovered either; therefore, Naglis Hill is not considered a hill-fort.

Two cultural layers and graves were found in the southeastern part of the hill's platform. The graves and foxholes had wasted the layers. The highly disturbed Layer 1 was composed of decayed pine needles and charcoal. Its surface was found, at a depth of 0.4 m - 1.4 m, and the thickness of this layer was barely several centimeters. The surface, at the time that the sandhill was forming, was different from the present one. It had been highest at the northern edge, descending southward and eastward. In the west, it merged with Layer 2 and, in the east, it was considerably higher than the bottom layer was. No finds were discovered in this layer.

The bottom layer, named Layer 2, lay at a depth of 0.8 m - 2.0 m and it was equally as thin at the other was, only 1 cm - 3 cm in some places. In addition to the pine needles, marking the former surface of the hill, there was a good deal of charcoal bits found in Layer 2, and several fire places became distinguishable. No finds were discovered in the layer. The hill's platform, at the time that the layer formed, was smaller than it is currently. Furthermore, it descended in a northern to southern direction and somewhat eastward to westward.

The manner in which the cultural layers formed in the platform of Naglis Hill is very similar to the layer of the Pagan sacral place at Birutė Hill. In both earth with charcoal bits comprised the layer, and there had been fire places. Although no traces of development were found, there was charcoal. It is possible that here, there had been a Pagan sacral place, the same as at Birutė Hill, only later. After Birutė Hill became neglected, early in the 15th century, Palanga settlers could have performed their Pagan rites at Naglis Hill.¹¹ As known, the Jesuits stumbled upon Pagans still sacrificing to their Gods as late as 1613-1614 (Valančius 1972: 393).

11. A 19th century historian, Simonas Daukantas, wrote in *Būdas senovės lietuvių* "... the Gintis Temple that had been in the forests of Palanga, so-named by the inspirers of the author, as they told, upon Curonian lands, which was secretly visited, much after already being Christians, by the Samogitians, Parusénians and Semigallians or the people of Courland ... but the seagull terns turned it inside out in 1700 [author's note: as per Swedes] ..." (Daukantas 1935: 144). It is quite believable that this is about Naglis Hill. Additionally, Swedes are often mentioned in writings about Naglis Hill for various occasions.

XI. FINDS

CERAMICS

Fragments of pots and vessels, designated for other purposes, generally constitute the most plentiful kinds of finds in ancient settlements. Palanga is no exception. While excavating, the numbers of ceramics fragments found and registered in the settlements at the foot of Birutė Hill were 606, on Žemaičių Hillock - 137 of 184, in Southern Palanga - 195 amidst 362 and at Roužė - 20 of 62. In summary of the data from all the examined settlements, more than half (928) of the 1,612 finds (approximately 58%) were ceramics. The finds of ceramics were very different. Next to small fragments, there were also partially repaired parts of pots and even fully restored vessels. The ceramics gathered at the settlements originated from very different periods. Excepting several fragments from the Southern Settlement, which were assigned to the Bronze Age, there were also 17th - 18th century ceramics from the surface layers. Fragments of clay vessels from the Early Middle Ages constituted the greatest portion. These included ceramics shaped by hand, shaped by hand with traces of production on a slowly rotating wheel and produced on a rotating wheel.

The ceramics are not located evenly over the horizons of different cultural layers either; in some places there are more and in other areas, very few. Most pot fragments were found in the stains of structures and alongside them.

The plentitude of ceramics in the Palanga settlements seemingly should assist in dating the horizons of the cultural layers and different structures quite accurately; however, this is not the case. Previously there had been no typology of the ceramics in Lithuania or in the settlements of the western part of the country. Furthermore, there had been no special research done on the ceramics of the Early Middle Ages except for several rather old publications on the ceramics of Lithuania and Curonian graves (Sadauskaitė-Mulevičienė 1965: 41-45; Ozepe 1986: 48-58). Publications, especially dedicated to the ceramics from Curonian graves, only appeared in recent years (Bliujienė 2005a). Publications provide very approximate dates of the ceramics from settlements, hill-forts and burial grounds; the level of accuracy is by several centuries or, in the best instance, over one hundred years. Due to such a dearth of material, there has been insufficient discussion regarding the time when ceramics produced on a rotating wheel appeared in Lithuania and from whence it came. Prior to the

publications on the research of Palanga settlements, there had been neither discussions nor writings regarding imports of ceramics into Lithuania during the Early Middle Ages.

The author of this work has already published work on the ceramics of Palanga settlements. The types of these ceramics were distinguished, and an opinion, regarding possible imports of ceramics from Western Slavic areas, was expounded (Žulkus 1997).

The author pursued the following goals during the course of the research on the ceramics of Palanga settlements: 1) discuss technical features of the ceramics, 2) differentiate the ceramics into types, 3) establish the rules of regularity for the distribution of ceramics in layers, 4) distinguish traditional forms of ceramics, 5) determine the imported ceramics and their origins and 5) date the ceramics as accurately as possible. To achieve these goals, the technology and ornamentation of the ceramics are analyzed with the aid of analogies from the settlements, early towns and burial grounds of Lithuania and other Baltic regions. With the help of these ceramics, an effort was made to synchronize the horizons of the cultural layers of different Palanga settlements; in other words, it had to be established if these settlements had existed simultaneously and when. Furthermore, the ceramics were expected to assist in conjecturing the ethnic make-up of the different settlements and their economic means. Most ceramics were found in the settlement at the foot of Birutė Hill; therefore, it provided the basis for forming a typology. The ceramics from this settlement also provided the point of departure for researching other Palanga settlements.

Find Spots of Ceramics

The indicators of a cultural layer at all Palanga settlements consisted of individual, usually small fragments of pots along with small, burnished sand stones. Plentiful accumulations of ceramics, as known, generally indicate locales of former structures. Traces of former structures in the layers of the Early Middle Ages in Palanga are not always established sufficiently; therefore, frequently, only marks of hearths and a concentration of ceramics indicated that a structure had stood in one or another place. The distribution of the ceramics in the locations of former structures sometimes assist in surmising the nuances of dwelling designs, which previously had not been determined, along with details of the interiors that had not survived. Additionally finds of greater quantities of ceramics can reflect the material standing of the former dwellers, the length of time the structure had stood as well as the intensity of life therein at that time.

Table 9 submitted below, illustrates the distribution of the numbers of ceramics in the better-surviving stains of structures.

Table 9

Pot Fragment Numbers in Structure Stains of Palanga Settlements and their Surroundings

Birutė Hill Settlement		
Structure No.	Total number of finds	Number of ceramics
P. 1 (on a rampart)	31	23
1. P. 7 (on a rampart)	17	10
P.8 (on a rampart)	19	12
1	12	5
2	24	12
3	17	11
4	6	3
5	4	3
5A	6	6
6	12	5
7	6	4
9	11	7
10	30	18
11	11	5
12	75	38 (incl. pots)
13	4	4
14	12	6
15	8	5
18	11	6
19	8	4
20	9	4
21	22	16
22	4	2
23	38	17 (incl. pots)
27	13	8
30	12	6
31	39	28
32	18	14
33	89	25 (incl. pots)
35	43	12

Žemaičių Hillock		
Structure No.	Total number of finds	Number of ceramics
3	3	3
5	9	9
8	12	5
9	24	13
11	15	9
12	3	2

Southern Settlement		
Structure No.	Total number of finds	Number of ceramics
1	35	24
3	7	3
4	19	9
7	16	12
8	25	23
8A	28	21

Roužė Settlement		
Structure No.	Total number of finds	Number of ceramics
1	21	8

First the data presented in these tables show that pot fragments constituted half or more of all the finds within the boundaries of the dwellings and alongside them. There are very few ceramics in out-buildings and their surroundings—merely isolated pot fragments (for example, in Birutė Hill Structure No. BK-13 and Southern Settlement Structure No. P-9 where there seems to have been stalling areas or barns). Such a situation is clearly seen in Structure Nos. P-8 and P-8A at the excavated complex of the Southern Settlement. Pot fragments were found in all the squares of the dwelling stains, and there were up to ten or more per square around the hearth. Meanwhile only several fragments of pots were found in the stain of the out-building standing next to it (Figure 90). Most of the ceramics in the stains of dwellings were discovered by the remains of the hearths and ovens (Figures 90, 91 and 92). Larger fragments of better-surviving pots or even whole vessels are happened upon more frequently near the heating installations (Structure Nos. BK-12 and 23). While it was cold, not only was food made here but also various kinds of home

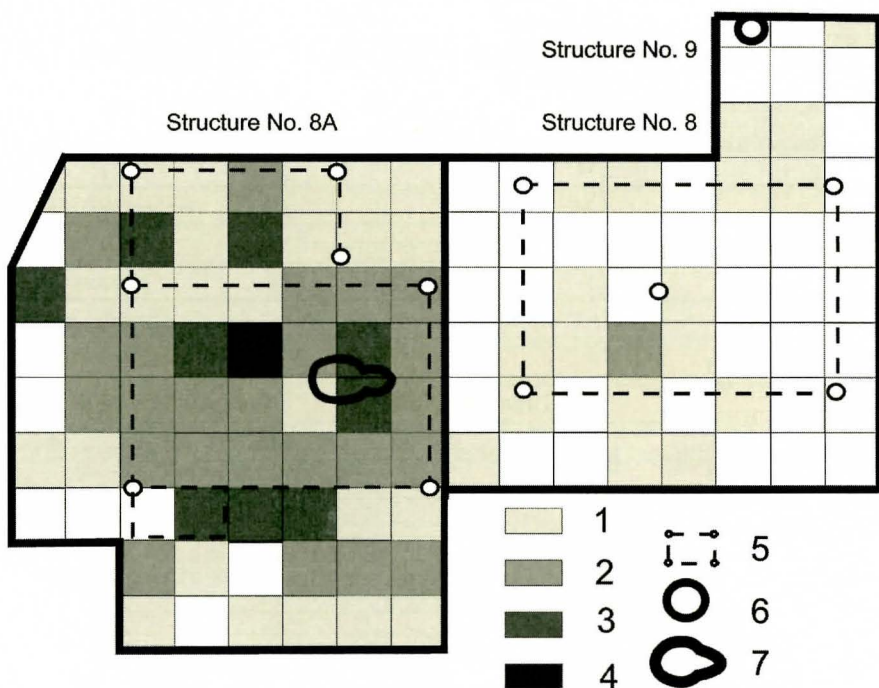
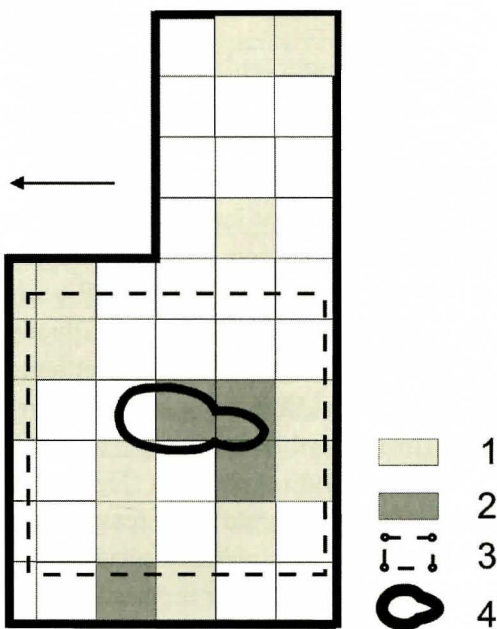


Figure 90. Ceramics distribution in Structure Nos. P-8 and P-8A in Horizon 5 of Research Areas VII and VIII of the Southern Settlement

1. from 1 - 2 fragments
2. from 3 - 5 fragments
3. from 6 - 10 fragments
4. more than 10 fragments
5. post-bearing structure
6. hearth
7. pear-shaped hearth (with additional pit)

Figure 91. Ceramics distribution in Horizon 1 of Research Area I of the Southern Settlement

1. from 1 - 2 fragments
2. from 3 - 5 fragments
3. lafted structure
4. pear-shaped hearth (with additional pit)



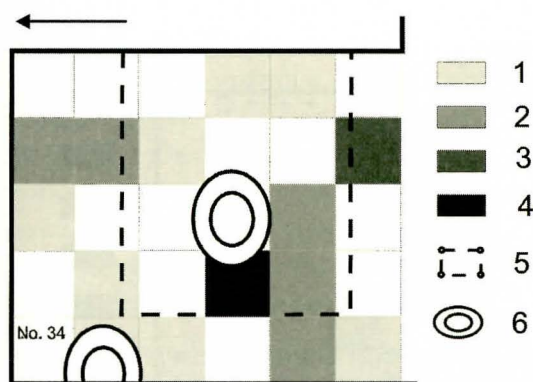


Figure 92. Ceramics distribution in Structure Nos. BK-33 and BK-34 in Horizon 1 of Research Area XIII of the settlement at the foot of Birutė Hill

1. from 1 - 2 fragments
2. from 3 - 5 fragments
3. from 6 - 10 fragments
4. from 11 - 15 fragments
5. lafted structure
6. cupolaed oven

crafts. The bottom part of a pot with burnt through stone grains, designated for tempering clay, was found next to the hearth of Structure No. BK-23. Most fragments of knife blades and whetstones were found next to hearths. The pots, especially the large ones in the more sizeable dwellings, which were designated for storing food reserves, had their own place, possibly even farther from an oven. Structure No. BK-12, a dwelling in the settlement at the foot of Birutė Hill, contained the most fragments. These, found by the passageway of the former western wall, were used to reconstruct as many as four pots. Apparently there had been a bench here, where the pots had stood. No greater concentration of ceramics was in this structure next to the cupolaed oven hearth (Figure 93).

The situation was different at Structure No. BK-31, a small lafted dwelling. Most of the pot fragments inside were, as usual, alongside the oven hearth. No pot fragments were found in the eastern part of the dwelling, where the entrance had been, or in its center. A great many of them were outside the structure by the southwestern corner (Figure 94). In this location, there were also small charred stones and numerous bits of charcoal found—apparently the traces of a disturbed, overground hearth. Since this small hearth had existed at the same time as the structure, the speculation is that a temporary hearth had been outside the dwelling, which its inhabitants used during summer.

A highly inequitable number of pot fragments were found in and next to the structures. There were only up to five pot fragments found in ten structures at the Birutė Hill Settlement, up to ten in six structures, up to twenty in eight structures and more than twenty-one in only four structures. The situation was similar at Žemaičių Hillock. There were more ceramics found in the stains of structures at the Southern Settlement. In three dwellings, there were from two

Figure 93. Ceramics distribution in Structure No. BK-12 in Horizon 4 of Research Area X of the settlement at the foot of Birutė Hill

1. from 1 - 2 fragments
2. from 3 - 5 fragments
3. from 6 - 10 fragments
4. from 11 - 15 fragments
5. more than 15 fragments
6. post-bearing structure
7. cupolaed oven

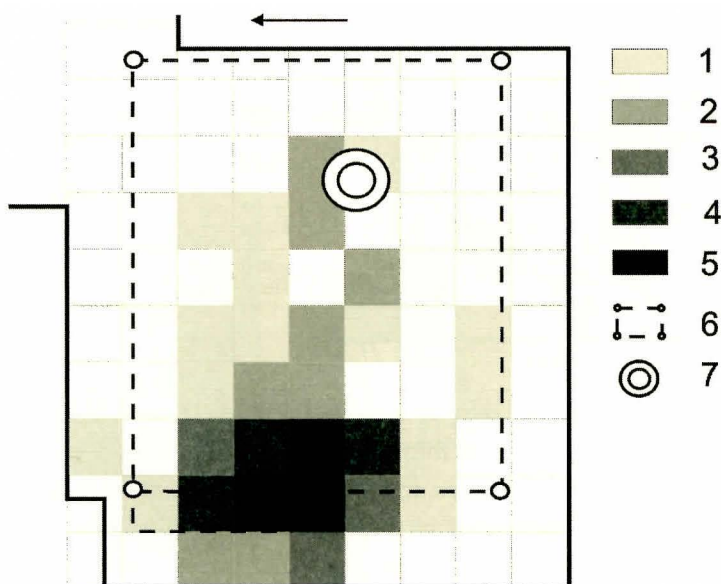
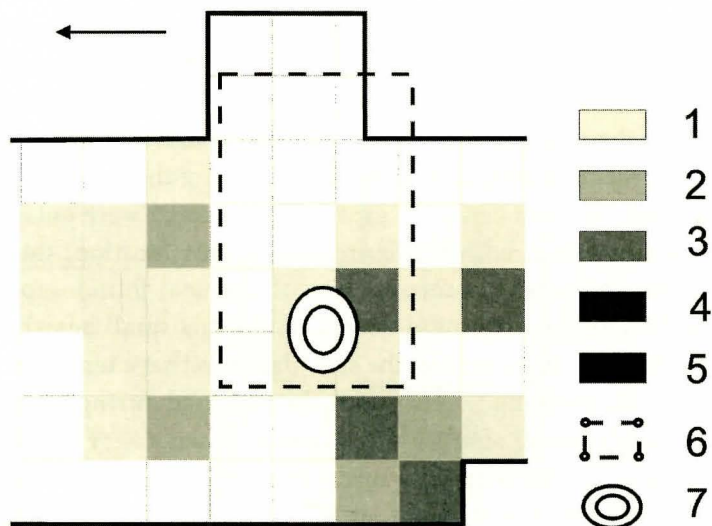


Figure 94. Ceramics distribution in Structure No. BK-31 in Horizon 1 of Research Area XIII of the settlement at the foot of Birutė Hill

1. from 1 - 2 fragments
2. from 3 - 5 fragments
3. from 6 - 10 fragments
4. from 11 - 15 fragments
5. more than 15 fragments
6. lafted structure
7. cupolaed oven



to twenty pot fragments and in three—more than twenty-one. Without a doubt, the dwellers who lived in greater affluence also had to have more pots; however, it is also possible to surmise a link between the number of pot fragments found in the stains of structures and the duration of time the structures had stood. No traces of clay flooring were found in most of the dwellings from that time, or the flooring had been made of clayey sand. Therefore, the greater portion of broken pot fragments had to have remained within the boundaries of a structure. The actual duration that the structures themselves had existed, unfortunately, cannot be established by the pot fragments found.

Problems in systematizing ceramics

The descriptions of ceramics from the Palanga settlements are based on reports and a specially arranged ceramics card catalogue, containing formalized descriptions and tables of the ceramics excavated during 1976 - 1983. Recently these are used for writing-up ceramics and included in reports on archaeological investigations. The techniques, characteristics of décor and elements of form are distinguished in the descriptions of the ceramics, attempting to employ categories that are generally accepted internationally (Vorschläge, Suggestion, Proposition 1986).

The truth is that certain technical features of ceramics are, as a rule, characterized visually and, therefore, are not sufficiently accurate.

The firing process, which had been used on the fragments, is described as good, medium or poor, depending on the hardness of the ceramics—hard, medium or crumbly. For some ceramics, the hardness of a fragment was determined by scratching it with material of appropriate hardness. In German archaeology the quality of the ceramics firing is described by the terms, “soft”, “hard”, “very hard” and “exceptionally hard” (*klingend hart*). According to the Mohs Scale, “soft” ceramics has one to two degrees of hardness, whereas “hard” ranges from three to seven degrees and more. Actually it is sometimes recommended to use a practical, very simple and sufficiently accurate method to establish the hardness of a fragment. Soft ceramics can be distinguished from hard by scratching it with a fingernail, because the hardness of a human nail is approximately equal to the number on the Mohs Scale (Lüdtke 1987: 9-82). In the classification herein, a good firing is when the hardness is about 3 or more degrees, medium is about 2 - 3 degrees and poor is about 1 - 2 degrees, according to Mohs. An effort by this author to determine the hardness of a fragment instrumentally by the Mohs Scale did not prove fruitful, because the hardness of materials in Lithuania, at the time of the excavations, was still being measured by different standards.

There is also no single standard for establishing the size of the temper used. Ceramics are tempered with variously coarse sand or crumbs of burnt through and crushed stone. The usual categories for describing the size of the temper are “fine”, “medium” and “coarse”; sometimes these are further detailed. The descriptions of temper size vary in different regions due to the rather differing traditions in ceramics and the more advanced or more primitive technologies. Ceramics technology is markedly more advanced in Western and Central Europe, where pottery developed under the influence of Roman world traditions during the Middle Ages. Therefore, the facies of the clay tempers are significantly finer. The description of temper size, employed in this work, is similar to practices in other countries, more oriented to the Eastern and Northern European tradition (see Table 10)

Table 10
Clay Temper Size (mm) Descriptions as per Certain Researchers

As per E. Shuldt, 1956	As per Vorschläge, Suggestion, Proposition 1986	As per J. Kruppé, 1961; B. Lepówna, 1968: 69	As per H. Lüdtke, 1987; A. Feiler, 1996	As per D. Poliński, 1996	Used in Palanga
fine <0.5	fine 0.06 - 0.2	fine 0.5 - 1	very fine up to 0.2	very fine up to 0.1	very fine up to 0.25
medium 0.5 - 1.5	medium 0.2 - 0.63	medium 1 - 2	fine 0.2 - 0.63	fine 0.1 up to - 0.5	fine 0.25 - 0.5
coarse >1.5	coarse 1 (0.63 - 1)	coarse 2 - 5	medium 0.63 - 2	medium 0.5 - up to 1.5	medium 0.5 - 2
	coarse 2 (1 - 2)		coarse 2 and >	coarse 1.5 >2	coarse 2 - 5
	very coarse >2				very coarse >5

The size of the temper in the ceramics of Palanga was visually established by comparing the filler size in a fragment with the calibrator table, used in geology, by “d” numbers as per Vasilevski (see Table 11).

Table 11
Graininess as per M. Vasilevski

Number “d”	2	3	4	5	6	7	8
Graininess mm	0.25	0.5	1.0	2.0	3.0	5.0	7.0

A highly important technical feature that reflects firing technology is how multi-colored the fragments are; however, ceramics researchers often ignore this. The colors at the surfaces and breaks of the fragments are visually established and written-up by using descriptions, such as "brownish", "blackish-red" and the like. Use of international color charts and indexes are sometimes recommended, such as, for example, *Schwanberger Farbenführer* (1968) or *Munsell Book of Colors* (1976). The latter catalogue has been adapted for computers as well; therefore, it is very convenient for objectively establishing the color of ceramics. Sometimes both aforementioned catalogues are matched one with the other (Vorschläge, Suggestion, Proposition 1986: 57-60).

A formalized chart for writing-up the ceramics, examined at the Palanga settlements, was employed. The opinion here is that the most important parameters, techniques and elements of décor for ceramics are reported in this chart (Addendum 1).

Technology

Data from the excavations are insufficient for fully reproducing the process of ceramics production in Palanga. Thus, an analysis of already completed artifacts provides most of the information about ceramics technology.

A pit was found in the Southern Settlement; clay had been taken from there, not only to spread over the walls of the structures but also, it is presumed, to produce pottery. This would indicate that ancient potters used the existing raw material that was right at hand. Moraine loam – marl deposits nearly reached the surface but only at the locale of the Southern Settlement and further east from it. Clay, found at a depth of barely 0.5 m - 1.8 m, is readily accessible in other places as well. In the vicinity of Palanga (at Želviai), the greater percentage of calcium carbonate in the clay (8.13%) was only in the composite particles that were more than 5 mm by coarseness. These, on their own accord, only comprised 5.44% of the clay mass (Končius, Ruokis 1926: 84-87). In this way, the clay at Palanga was entirely suitable for producing pottery (Mikėnas 1967: 22, 34-36). The marl that had formed in water, which was being excavated eastward from the Southern Settlement, was used to produce bricks and drainage pipes from the end of the 19th century up to as late as the 1960s.

A portion of the ceramics from the Palanga settlements is tempered with sand. Such filler is described as "very fine" and "fine" since a medium sized particle of Palanga seaside sand is about 0.25 mm. However, particles that are coarser than those are appear only as happenstances between layers and contain

significantly larger quartz crumbs (colorless quartz comprises about 82% of all the sand (Končius, Ruokis 1926: 86 and 87).

The greater portion of ceramics from Palanga settlements, especially the ceramics shaped by hand and made on a slowly rotating wheel has been tempered with rather large crumbs of stone. In Structure No. 23, at the Birutė Hill settlement, the bottom half of a pot, next to the hearth, which had been shallowly dug in, contained red, burnt through crumbs of stone, from 1 mm up to 7 mm in size. These had been placed in the pot. The temper prepared for this pottery clay has the same coarseness as that found in vessels which had already been fired. Such a temper had been used in pottery that was both shaped by hand and produced on a rotating wheel. Temper, sized 3 mm - 5 mm, predominated in the ceramics produced on a rotating wheel (comprising about 70%). The percentage of temper in the clay mass was not the same; it usually comprised some 30% of the entire contents of the fragments and sometimes about 40%. A fourth of all the fragments that had been produced on a rotating wheel had been tempered with sand along with crushed stone crumbs. There were randomly found pot fragments that had been produced on a rotating wheel, which contained coarse stone crumbs in their middles; whereas, the outer surface layer had been tempered with either fine stone bits or sand alone.

The clay for small and miniature pots was, as a rule, tempered with sand (Rimantienė 1968: 202); additionally such cases occurred and not only at the seashore of Lithuania (Ayh 1992: 51).

Most of the pots from the Palanga layers of the Middle Ages had linings, 7 mm - 10 mm in thickness. No vessels at all were found with linings thinner than 5 mm; meanwhile, the thickest one was about 13 mm. In general the ceramics produced on a rotating wheel have thinner linings than those shaped by hand have. Vessels with linings, 6 mm - 9 mm in thickness, comprised approximately 80% of all the ceramics produced on a rotating wheel. The average thickness of the linings was about 7.5 mm.

Comparing the pot fragments from the lower and upper horizons, no pronounced tendency for the linings to become thinner was found. Indeed, moving from the older to the later horizons, the filler does become finer. This indicates that there was progress in the production of pottery even though it was not particularly distinct. The correlation coefficient between the thickness of the pot linings and the maximum size of the filler was sufficiently high for certain groups of ceramics (B-1). This means that the clay was being tempered with finer filler as the pot linings became thinner.

Technical marks show the manner used for constructing the pottery, including the shaping seals in the fragments of pots shaped by hand and made on a slowly rotating wheel and the characteristic impresses on the bases of the pots. Usually there are rather pronounced, crosswise or diagonal seams due to the shaping on the linings of the vessels. The pots from Palanga were shaped the same as elsewhere. In fact it was not noticed that the archaic technology had been employed of coil-building pots. The people of Palanga shaped pots from clay strips that had been prepared in advance. Such strips and different parts of the pots were adjoined in various ways (Figure 95). Most often (in about 70% of all cases) the strips were adjoined by shaping them diagonally (Figure 95 A). Some 26% of the fragments have horizontal seams (Figure 95 B). In this case the clay strips were placed one on the other in rolls and adjoined by manual strokes. This was usually done for the thicker vessels. Additionally this method of shaping is more characteristic of older ceramics. About 4% of the fragments have one and the other types of seams. Sometimes the potter did not adhere to the rules and adjoined a clay strip to another in whatever way seemed better (Figure 95 C). The seams that are characteristic of pottery shaped by hand and made on a slowly rotating wheel are found on the bases. These were usually formed by adjoining the pot walls to the horizontal seam of the base, which had already been shaped, the way that BK 189 was made (Figure 95 D). At times, while adjoining the sides with the base, the base was made larger with a resulting vertical seam on the base, like BK 257 (Figure 95 E). On rarer occasions the sides are adjoined to the base at an angle (Figure 95 F). Sometimes several seams happen to be found (Figure 95 G)—apparently more clay was being added in an effort to form the foot of the base.

In the interiors of pots shaped by hand and, sometimes, those made on a slowly rotating wheel, seams or rifts sometimes remained at the places where the strips

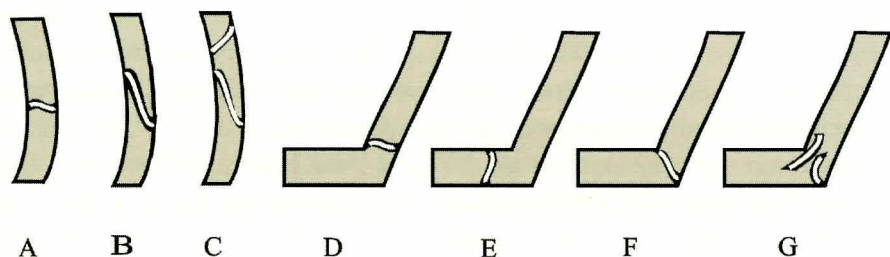


Figure 95. Shaping seams in the ceramics of Palanga settlements

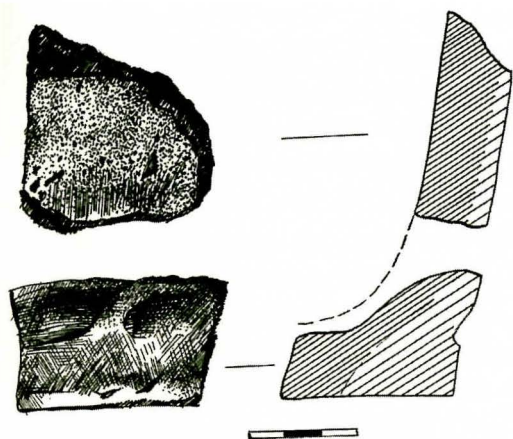


Figure 96. Technical marks of the base of pot P 304

had been adjoined. On one pot made on a slowly rotating wheel (P 304), on the exterior of the base, deep fingerprints still remain (Figure 96). Lengthwise finger strokes are often noticed on pot exteriors and even on the insides of pots made on a slowly rotating wheel. These have rather smooth external surfaces and random fingerprints in the spots where the clay strips were being adjoined. The strokes that form while smoothing the surface are also on the bottoms of pots, such as those on BK 339. The shaping seams on the

smaller vessels were not smoothed; they were merely pressed together with fingers. A good portion of the pots made on slowly rotating wheels had horizontal grooves on their exteriors. Apparently, while on a manually rotated wheel, the shaping would be matched with the whirling of the wheel (Kruppé 1961: 125). Larger or smaller deformations are characteristic of hand-shaped pots, except for the smaller ones. Stone crumbs are frequently stuck to the pot bases; these indicate that the pots had been shaped on a surface covered with crushed stone crumbs. This is the most frequent case with ceramics shaped by hand; however, pots produced on a rotating wheel were erected for drying on coarse sand or stone crumbs in Palanga, the same as elsewhere (Kruppé 1961: 122). At times grasses were laid down prior to shaping the pots—their imprints have remained on certain base fragments, such as those on BK 111 and 257. Actually the grasses would also impress in the event finished pots were placed on them to dry. Such surface impresses from grasses and uneven drying processes also appear on pots produced on a rotating wheel and those on a slowly rotating wheel, like the ones on BK 95, 111, 257 and 279. The bottoms of the bases of quite a few pots have marks of leveling and even thrusting (BK 145); apparently, leveling and thrusting had been performed once the pots had partially dried.

Traces have remained on certain bases of pots, both produced on a slowly rotating wheel and on a rotating wheel, which reveal the construction of the rotating wheel. Both a manually turned wheel and foot-operated wheel would be used for smoothing the surface of the pots. However, in one or the other case, the construction of the upper, circular planks had been similar. Many of the

bottoms of the bases of pots produced on a slowly rotating wheel and on a rotating wheel contain concave cross-sections. This is a mark indicating that the pot had been decorated by a wheel or that it had stood on planks with concave cross-sections while it was made on a potter's wheel. There are available fragments of pot bases in which the characteristic impresses indicate that the circular planks on which the pot had been formed had a smaller diameter than did the base of the pot (Figure 97). All these marks are characteristic of ceramics produced on a slowly rotating wheel and on a rotating wheel, independent of the locale where it had been produced (Lepówna 1968: 83-97; Poliński 1996: 43, ryc. 5; Weinkauff 2002: 92, Figure 12; and Janowski 2002: 199).

Such ceramics have been found at all Palanga settlements except at the Southern Settlement (BK 43, 46, 236, 724 and 824, K 1080 and K 1087, ŽK 73 and 128 and R 25). Three base fragments with impresses of planks are known to be from the burial grounds of Palanga. One was found in Grave No. 125, which was dated, according to the other items, at the 11th - 13th century. The other, having a diameter of 12 cm and containing an impress of a plank with a concave cross-section, 11 cm in diameter, was in Grave No. 280, dated at the 11th - 13th century. Meanwhile the third one was among the ceramics from the fire places of the same burial grounds (Tautavičius IIA 182 and 183. IEM K 280: 2206).

The planks placed on the wheel were 7 cm, 9 cm, 12 cm and larger, as determined by the impresses. Aside from the planks with concave cross-sections (BK 724 and ŽK 128), small flat ones were also employed (BK 824, K 1087 and ŽK 73). Certain impresses (BK 43 and 236 and K 1080) indicate that the planks were sometimes similar to small plates—their edges were protruding. Only in one case, the plank was larger than the diameter of the pot—the base remained on the foot, extending beyond edges (BK 46). There are usually more impresses in these planks, or the surface is less smooth. A small layer of fine stone bits happens more rarely, indicating that the planks had been sprinkled with crushed stone crumbs prior to forming a pot (BK 824). No traces or marks were noticed of a rotating wheel axis in the pot bases found at Palanga.

Remains of pot kilns have not been found in Palanga to date. Possibly this is because the pots were not usually fired in the actual settlements but next to them. Meanwhile the surroundings of the settlements have not yet been excavated. Undoubtedly they were built the same as they were elsewhere. The highly widespread tradition for constructing cupolaed ovens would be the testimony that pot kilns were being produced with a clay cupola. This type of an over-ground oven, in Germany during the Middle Ages, had been in an oval or pear-

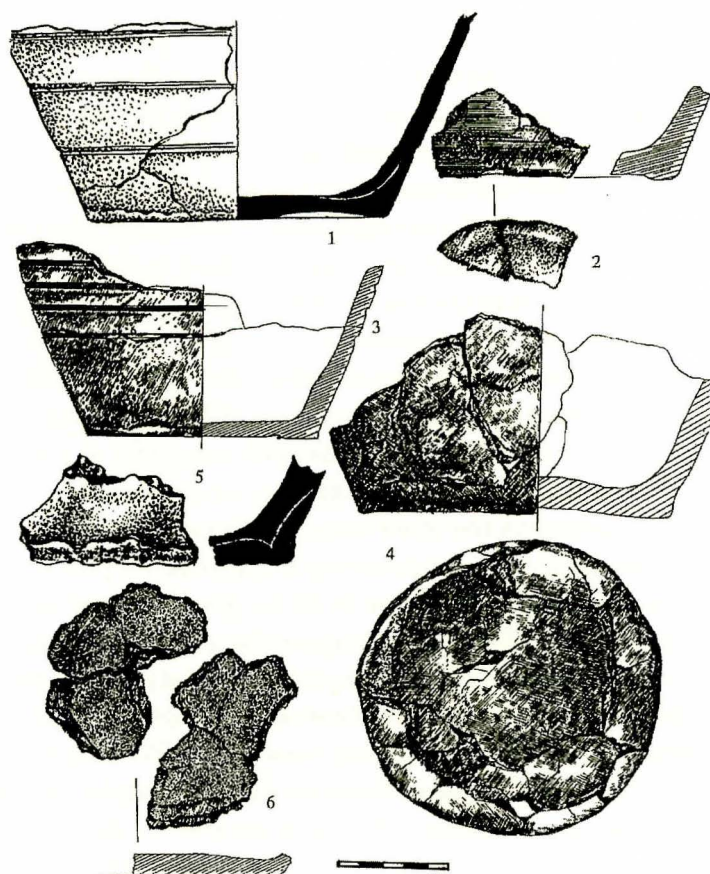


Figure 97. Holder plank impresses at the bases of pots

1. BK 236
2. ŽK 73
3. ŽK 128
4. BK 724
5. BK 46
6. BK 824

shaped form, from 2 m up to 4 m in length and up to 3.3 m in width. These had a hearth of packed clay and a cupola, which used to have an internal height of about 1 m. A temperature of more than 800° could be reached in such an oven (Mangelsdorf 1994: 36-37). It is possible that the people of Palanga sometimes fired their pots in the cupolaed clay ovens that stood in the dwellings as well. Actually no similar proof was discovered while excavating; however, this was being done, for example, in locales of Russian villages during the Middle Ages (Lepówna 1968: 130). The simplest would have been to fire the pots in an open fire. During the Middle Ages, in Sweden, logs were used to fire up such bonfires, and peat was less often used. Therefore, pots were heated to temperatures of up to 500° - 550° in the course of four hours. A pot fragment, fired in an open

fire, is heterogeneous, multi-colored and often cracked (Selling 1955: 25). The pot fragments from Palanga, which were described as “poor”, had been fired at temperatures of 400° - 550°. The “average” ceramics had been fired at temperatures of approximately 550° - 650°, whereas the “good” at a temperature of about 700°, maybe up to 800°.

Of the well-fired ceramics, in the settlement at the foot of Birutė Hill, the least amount of pot fragments is among those shaped by hand (about 32%) but somewhat more than the poorly fired (the average-fired predominated here). The ceramics that had been fired entirely poorly, sometimes barely fired at all, constituted the Type A-3 ceramics, especially the smallest vessels. The ceramics made on a slowly rotating wheel, which were well-fired, predominated insignificantly (by 40%). The ceramics produced on a rotating wheel constituted an absolute majority (over 70%), and there was only about 8% of the poorly-fired ceramics (Figure 98).

The tendencies in the ceramics from Žemaičių Hillock were the same. The ceramics produced on a rotating wheel had been fired the best, whereas the ceramics produced on a slowly rotating wheel and those shaped by hand had been fired well, average and poorly, each by nearly equal percentages (Figure 99).

The same holds true for the ceramics produced on a rotating wheel at the Southern Settlement. It is interesting, however, that the good firing process clearly predominates, as much among the ceramics produced on a slowly rotating wheel as that among those shaped by hand. The well-fired ceramics shaped by hand constitutes an absolute majority, even in the bottom, oldest Horizon 6. There

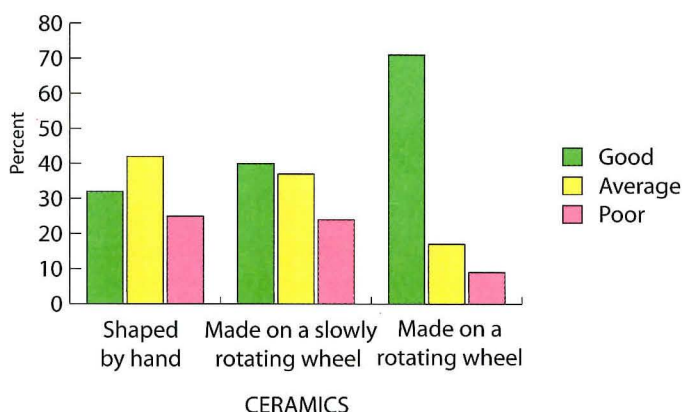


Figure 98. Firing of ceramics in the settlement at the foot of Birutė Hill

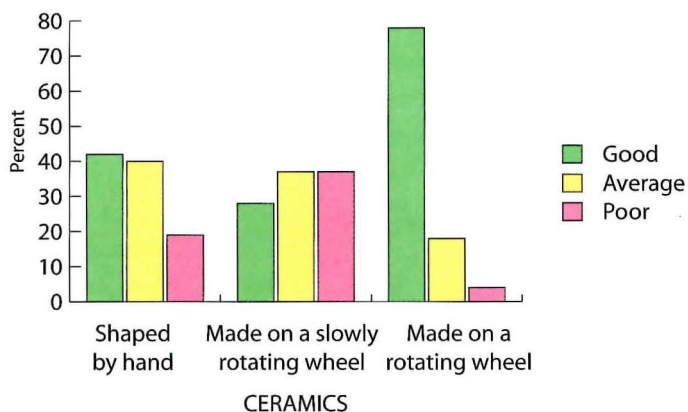


Figure 99. Firing of ceramics at Žemaičių Hillock

were comparatively few ceramics at this settlement; however, the predominance of the well-fired ceramics and the tendency of a decrease of both the average and poorly fired ceramics is clearly more than a mere happenstance (Figure 100).

The same as elsewhere, the firing of pots at Palanga improved. An ever-decreasing number of pots were being fired in an open fire or in kilns that had not been specially adapted for such. Meanwhile an ever-increasing number of pots were fired in continuously improved kilns, ones that only potters

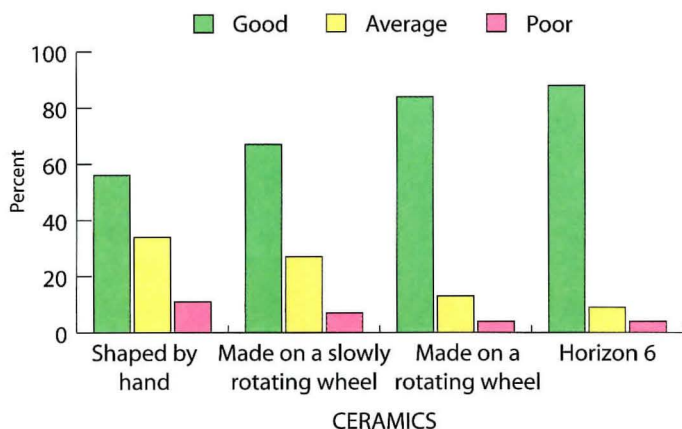


Figure 100. Firing of ceramics at the Southern Settlement

erected. Nonetheless, this general claim does have its nuances. The data from the settlements at Birutė Hill and Žemaičių Hillock permit a claim that more advanced technology for firing ceramics predominated, when the amount of ceramics produced on a rotating wheel increased. The statistics from the Southern Settlement show that the first settlers here, even from the Roman period, already well knew how to fire pots. Palanga dwellers, for all times henceforth, never forgot this either. The local residents had improved the production of ceramics considerably from olden times; they knew how to fire the pots very well. Once the ceramics produced on a rotating wheel appeared, the technology for firing pottery improved considerably.

Linking the discovery of ceramics produced on a rotating wheel with the so-named Baltic ceramics is a natural phenomenon. The quality of the ceramics in Scandinavia worsened during its period of the migration of national groups, and it was not much better during Viking times. The good quality of the ceramics from that period is linked to the imports from the southern shores of the Baltic (Selling 1955: 9).

The color of the break in the pot fragments also indicates the progress of technology. Most breaks in pot fragments from nearly all horizons of a cultural layer were bi- or even tri-colored. A markedly lower number of fragments had one color. It is known that the color of a fragment reflects the environment of the firing process. A red or brown colored fragment means that the pottery was being fired in an area with sufficient oxygen, in an oxidational environment. A blackish or grayish fragment indicates that oxygen was lacking while firing and that the environment was reductive. Finally a multi-colored fragment is a clear indication that the make-up and temperature of the environment fluctuated. This occurs when the ceramics are being fired in an open fire or a primitive kiln. Objectively no account was made of the fragments, which might have been burnt through a second time, for example, in the flames of a blaze.

The pots from the settlement at the foot of Birutė Hill, which had been fired in a mixed environment, did decrease albeit slowly. Meanwhile the number of fragments, fired in an oxidational environment, remained nearly the same in all horizons. (The number is high in Horizon 2 but that could be an error due to the lower number of fragments, used for the investigation.) The fragments fired in a reductionist environment increased evenly from the most ancient times (Figure 101).

The tendencies were the same at Žemaičių Hillock (Figure 102) and the Southern Settlement (Figure 103), but only for the ceramics that were fired in a

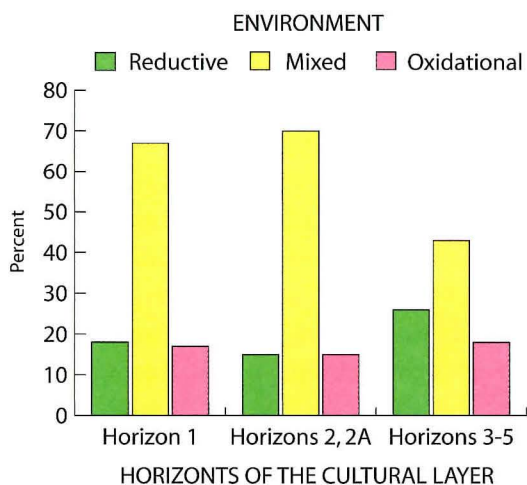
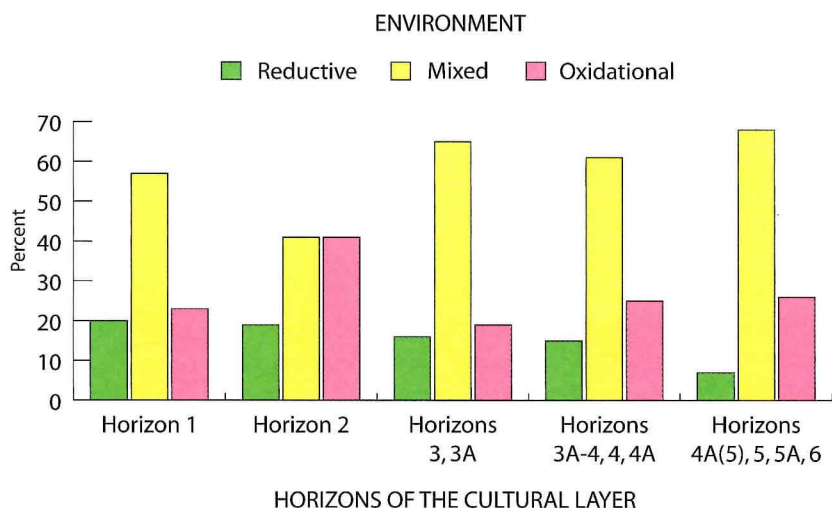


Figure 101. Firing environment for the ceramics in the settlement at the foot of Birutė Hill

Figure 102. Firing environment for the ceramics at Žemaičių Hillock

reductive environment. In the Southern Settlement, particularly at the horizon of the later cultural layer, there is a noticeably greater percentage of such than there is elsewhere.

The evermore frequent ceramics, fired in a reductive environment, is an important sign indicating that the technology for firing pottery continuously bettered. It is possible that Palanga dwellers fired their pottery in a reductive environment, wanting to imbue them with a dark grayish - blackish color.

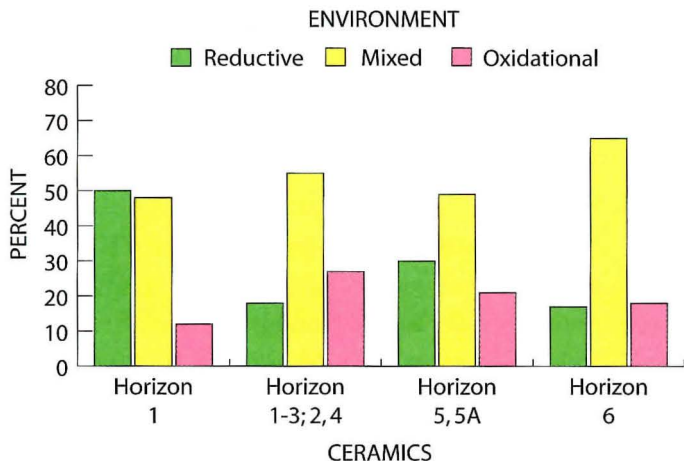


Figure 103. Firing environment for the ceramics at the Southern Settlement

Thusly they were attempting to copy the blackish blue color of the ceramics being imported from western Slavic and Germanic lands, produced in Central and Western Europe. The blackish color was gained by holding the pots in smoke, firing them initially in an oxidational environment and finishing later in a reductive environment (Selling 1955: 26-27).

Ceramics with perforations

There were seven fragments with perforations in the necks or at the rims found in total at Palanga, all of them in the settlement at the foot of Birutė Hill. By far the greatest majority of vessels with perforations were found among Subtype B-1:a ceramics (BK 192, 205, 221, 757 and 843), one among Subtype B-1:b (BK 166) and one among Subtype B-2:c (BK 166). Most, five of twelve fragments, were Type B-1:a ceramics and one of two, Type B-2:c. All the fragments have a profile characteristic of late Slavic ceramics (*Vipperow* and *Teterow* Groups) and all had been produced on a rotating wheel. Ceramics with perforations were found in Horizons 1, 3, 4 and 5 of the cultural layer. The perforations in five fragments were in the necks (one perforation in each); whereas two fragments had perforations in the rim (BK 192 had two perforations). All the perforations had seemingly been punctured in finished vessels, after the clay had already hardened. All except one are wider from the outside and inside and narrower in the middle—these had been punctured from both sides. One had been punctured from the outside

only. The internal diameters of the perforations are from 3 mm to 5 mm, and the external up to 7.5 mm. No Baltic tradition in ceramics is known for puncturing perforations on the top of vessels, except when a vessel was being repaired. In Ryuge Estonia, the making of perforations was widespread during the second half of the year 1000 BC in the local type of ceramics. Some were being made in clay that was still soft and others in hardened clay. Similar vessels had also been part of the Dnieper-Dvina culture and other locales, where the influence of the Finno-Ugric culture is noticeable (Lavi 1980: 365-367. Taf. VIII; Аун 1992: 43). Such ceramics are rare outside Estonia, in eastern Slavic lands. Therefore, it is believed that perforations were an autochthonous feature of aesthetics in ceramics from Ryuge (Седов 2002: 42-43). Vessels in local forms were found with perforations in the Lake Mälaren area of Sweden and the country's southern territory; these were classified with Type A IV:3 a 2 (Selling 1955: 174-190). Danes also made perforations in their traditional, hand-shaped ceramics (Forhistorik Museum Moesgård 1939. CxB. CNM C 5643. K. 22; Liebgott 1978: 23; Nielsen 1980: 206). In the opinion of Dagmar Selling, perforations had already appeared in Scandinavian ceramics during the Roman period, imitating metal vessels with bows. Metal hook clasps have remained hanging from the perforations in certain Swedish vessels (Selling 1955: 175 and 176). Perforations at the top of vessels, in the Middle Age ceramics produced on rotating wheels, are associated with the ceramics of western Slavs. There perforations already appear in the Menkendorf ceramics group, from about the years 800 - 1000 (Schuldt 1956: 14-16. Abb. 8:e; Lampe 1966. 33, 60-66). These disseminated in lands along the Baltic seashore, along with the Slavic or Baltic Sea ceramics, particularly amidst late Slavic ceramics (Gebers 1981: Abb. 4; 7; Kempke 1984: Taf. 37, 40; Corpus. 1973: 283 (28/33:6), 287 (28/49:8); Stoumann 1980: 118. Figure 28:3). This thesis pertains to lands where perforations were not being made in their older, traditional ceramics. It is difficult to say, whether perforations on the rims of pots produced on a rotating wheel in Early Ceramics or even those of the 13th - 15th centuries (Nerman 1958: 230; Лави, Лаул, Соколовский 1981: 413; Аун 1992) appeared only due to the Slavic ceramics example or the influence of local traditions as well. There are various opinions regarding the assignation of the perforations. It is usually believed that these were necessary for hanging the vessels. However, there were pots found in Germany with two perforations pierced only from one side (Dr. Heinz Seyer [Märkisches Museum, Berlin] verbal information to the author, 1996). At times there is indication that the perforations at the tops of pots were pierced to better ventilate the food stored therein. It is also surmised that

such had been no more than a unique sort of ornamentation (Айн 1992: 43). It is difficult to agree with this latter opinion, because there are no known examples where the perforations would encircle the entire top of a pot. A pitted ornament was very widespread in the ceramics of various countries. Sometimes it was being made with rather deep pits, even on the bottom of a pot; however, these pits were not completely perforated (Roesdal 1977: 19, Figure 10:c). It is possible that perforations that had no hangers were necessary for steam to escape from boiling pots, when covers were placed atop them.

Typology

A classification of ceramics can be based on realistically existing characteristics and features or it can be purely formal, based on agreement, devoid of semantic meaning and inadequate for describing the reality. Researchers use the first and second method for classifying ceramics or find a match between the two. Where traditions for research on ceramics already exist, there are publicly accepted, adequate categories of typology. Such methods of typology, which are generally established and understood in the same manner, do not exist for the time being.

Baltic researchers of ceramics almost always distinguish the major groups of ceramics in the same way—ceramics shaped by hand, produced on a slowly rotating wheel and produced on a rotating wheel. The old tradition is to sort ceramics according to highly characteristic, external technical features, for example, hatching, rusticated and isosceles ceramics. Middle Ages ceramics are treated similarly in Germany. These are differentiated by their firing process, as crumbly, fired gray, red and the like. The Slavic ceramics from the Early Middle Ages have been well researched and classified in Germany. The primary types (Menkendorf, Feldberg, Fresendorf, *Vipperow* and others) presuppose stable vessel forms, technological characteristics and a universally understood sphere of appearance. These serve as the basis for classifying ceramics in many countries (Schuldt 1956; Lüdtke 1987; Mangelsdorf 1994). There are also ethnic attributes to ceramics classification. This is generally popular in the western part of Germany and Scandinavia, and its categories include the old Slavic, late Slavic and Germanic or simply western Slavic ceramics as well as frequently, by what is considered its synonym, *Ostseekeramik* or 'Baltic Sea ceramics' (Selling 1955; Gebers 1981: 139-168. Donat 1982: 253-274; Kempke 1984; Ericsson 1984; Watt 1988: 105, 122; Madsen 1991: 217-234). Dagmar Selling classifies the ceramics from the graves at Birka into "prehistoric" (fired at a low temperature),

Western European, southern Baltic seashore, Finnic and local (Selling 1984: 245-247). Form and technology are usually given priority in classifying Late Middle Ages ceramics (Lepówna 1968; Kruppé 1961; Schulz 1990: 163-264; Mangelsdorf 1994; Feiler 1996), and Lithuanian archaeologists usually do the same. Nearly not a single researcher can do without an assignation to groups based on prior agreement, when classifying larger amounts of ceramics. Such groups are later linked to some sort of universally accepted grades or types of ceramics.

A similar path was taken while researching the ceramics of Palanga as well. The ceramics were separated into types, and the effort was to fit them into categories of general Baltic and general European.

Ceramics groups

Ceramics shaped by hand, made on a slowly rotating wheel and produced on a rotating wheel were found in all the Palanga settlements. In Palanga the pots were shaped by placing one clay strip on another. Therefore, identification of hand-shaped ceramics by their characteristic seams, running crosswise or diagonally on the pot linings, is not very complicated. A good many fragments found belong to the ceramics containing marks of production on a slowly rotating wheel. The linings of such pots also contain signs of hand shaping; however, their forms are more precise, the surfaces more smooth and, very often, horizontal grooves characteristic of ceramics produced on a rotating wheel are distinguishable. In nearly all the horizons of settlements, the three kinds of ceramics, hand-shaped, produced on a slowly rotating wheel and on a rotating wheel, were discovered parallel to each other. Therefore, the grooves which are characteristic of pots made on a rotating wheel were also being imitated on hand-shaped pots. This is why it is sometimes quite difficult to distinguish refined ceramics made on a manually rotated wheel or those made on a slowly rotating wheel, especially if the fragments are not large. Thus another characteristic can appear in excavation reports—"roughly produced on a rotating wheel," which usually denotes ceramics made on a slowly rotating wheel. Pot fragments produced on a rotating wheel are sometimes quite rough, and some of them have ornamentation, characteristic of hand-shaped ceramics. However, in these, there are no signs of shaping strips; only elongated technological seams occur randomly at times.

All three ceramics groups were found at all settlements in nearly all horizons of a cultural layer. At Žemaičių Hillock and the Southern Settlement, the percentage of hand-shaped ceramics found in the deeper, older horizons

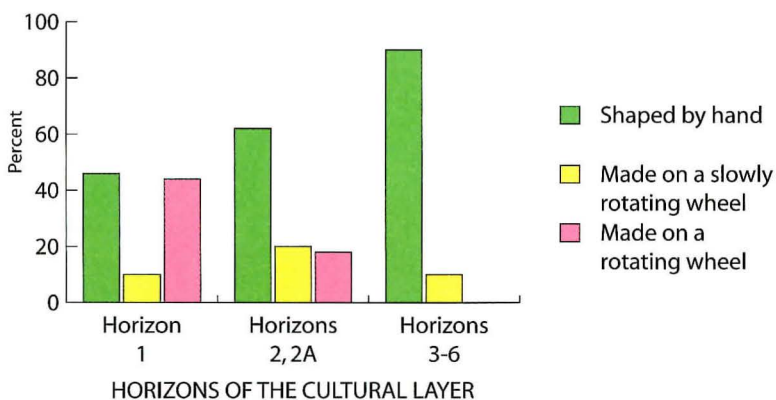


Figure 104. Distribution of ceramics types in the cultural layers of Žemaičių Hillock

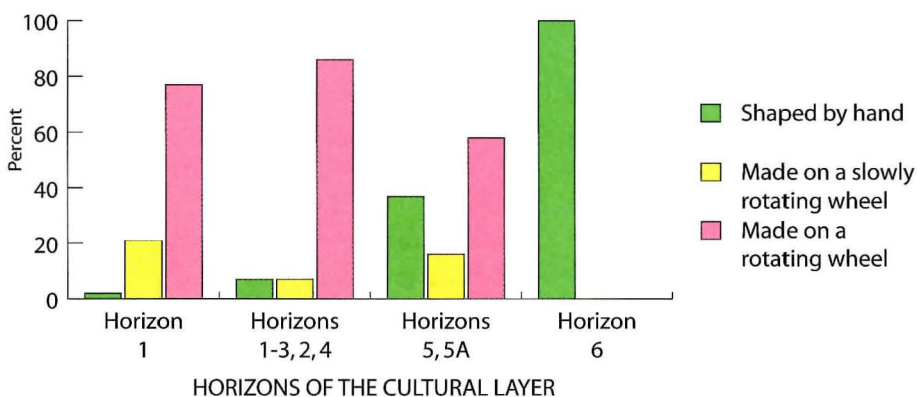


Figure 105. Distribution of ceramics types in the cultural layers of the Southern Settlement

constantly increase, and those produced on a rotating wheel decrease. Meanwhile the amount of ceramics made on a slowly rotating wheel generally fluctuates between the aforementioned, main groups. Still, there was more of the latter in the older horizons. Despite the comparatively small amount of ceramics, which lowers the reliability of the data, such a tendency is still sufficiently clear. There were no ceramics produced on a rotating wheel at all in the bottom layers of the aforementioned settlements (Horizons 3 - 6 of the Žemaičių Hillock layer). Meanwhile, in Horizon 6 of the Southern Settlement, only ceramics shaped by hand were found (Figures 104 and 105). It is otherwise in the settlement at Birutė

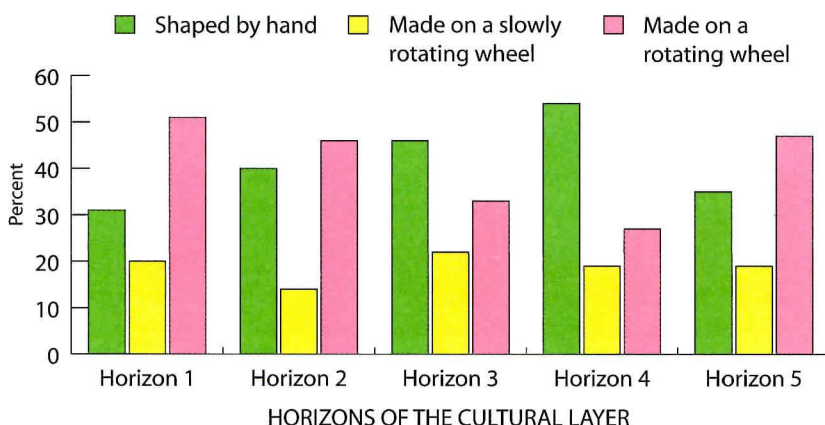


Figure 106. Distribution of ceramics types in the cultural layers of the settlement at the foot of Birutė Hill

Hill. In Horizons 1 - 4, the general tendency of decreasing numbers of ceramics produced on a rotating wheel and increasing of hand-shaped ceramics persists. However, the ceramics produced on a rotating wheel again predominate in the bottom horizons (Figure 106). This fact will be interpreted here later.

In cremation graves of the Curonian burial grounds, hand-shaped ceramics predominated—these comprised 63% of the finds, whereas those made on a slowly rotating wheel, 37% (Bliujienė 2005a: 149, Figure 2).

Early Hand-Modeled Ceramics

Several grades of hand-modeled ceramics were found in Palanga—plain surface, hatched and rugged. In the Palanga settlements, there were not many hatched and mildly rugged (sometimes also referred to as granular) grades. Nonetheless, these grades of ceramics were found together, and the fragments with mildly rugged surfaces were found with ceramics produced on rotating wheels. As such, this supplements the information in Lithuania about the dissemination and chronology of the grades of ceramics under discussion.

Hatching ceramics consist of three small fragments so-assigned, which were found in the bottom, Horizon 6, of the Southern Settlement's Research Area VIII (P 335-337). In addition to the aforementioned fragments, nine pot fragments were found; these were hand-shaped with plain surfaces, and some had roughened surfaces. Five had mildly rugged, granular surfaces. One pot

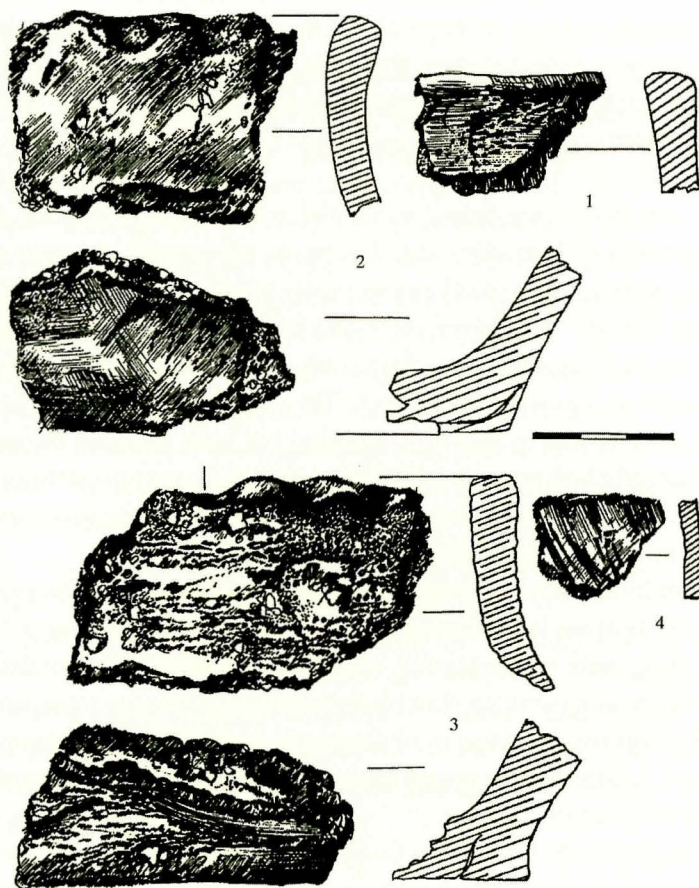


Figure 107.
Rusticated
and hatching
ceramics in
the Southern
Settlement (1 and
4) and the settle-
ment of Žemaičių
Hillock (2 and 3)
1. P 257
2. ŽK 61
3. ŽK 63
4. P 335

fragment had been made on a slowly rotating wheel! This last one could have landed in the bottom horizon by happenstance. Along with the ceramics, there were a small whetstone made of natural stone and several pieces of amber (Finds P318 - 341). All three of the fragments assigned to hatching ceramics are well fired, measuring 5 mm - 8 mm in thickness. Both of their surfaces are brown and burnished with dense hatchings. The fragment is layered, brownish black, made from clay tempered with sand and small, 1 mm - 3 mm, stones (Figure 107). The fragments found are too small to construe the form of the former pots. Five tiny fragments, belonging to a single pot, were found at the western edge of Birutė Hill, above the sterile sand (BK 453 from Horizon 5

of Research Area XI). These ceramics were fired by a medium process, had linings in thicknesses of 7 mm - 10 mm. The clay had been tempered with crumbs of crushed stones, up to 7 mm in size. The exterior surface was vertically hatched (Figure 107). Hand-shaped ceramics with a plain surface were also found with the others.

Rugged surface ceramics were found at all the settlements in greater or lesser amounts. Fragments with mildly rugged surfaces, along with ceramics of plain and roughened surfaces, and small amber pieces were found on Žemaičių Hillock, in Horizon 3 (ŽK 58 - 70 [Figure 107]). The larger fragments show that one pot was large, with bulging sides; it had a mouth, 21 cm - 23 cm in diameter, and a base, about 20 cm in diameter, with a foot. The rim of the pot is high and vertical, and its top is decorated in tiny pits. Another pot with a mildly rugged surface (ŽK 64) had upright linings, a base without a foot and a very pronounced seam for adherence of the linings. Another piece of ceramics in the layer was, seemingly, very similar to the rugged surface form,.

In the Southern Settlement, pot fragments with mildly rugged surfaces were also discovered in the bottom horizons of the cultural layer (Figure 107). In Research Area VII, these were in Horizons 5 - 5A and 6, together with pot fragments of plain and roughened surfaces, flint blades and amber (P 257 - P 264 and P 265 - P 270). In the bottom, Horizon 6, of Research Area VIII, as aforementioned, mildly rugged ceramics were found with hatched and plain fragments, as well as those with roughened surfaces.

The rugged pot fragments had not been fired the same way; some had been fired poorly and others quite well. The fragments had a grayish and brownish color at the break, which indicates an uneven environment during the firing process. The linings are 10 mm - 13 mm in thickness. The clay was tempered with large crumbs of stone, up to 5 mm - 7 mm, sand and stones; coarse sand was used less often (P 257 and P 260). The interior linings of the vessels are plain and contain finger impresses in certain spots. The surfaces are clearly wattled and daubed. The upper layer of the wattled and daubed clay is tempered, as a rule, with sand. The bottom of the base contains tiny adhered stones, the signs of sprinkling.

Chronology of Hatching and Rugged Surface Ceramics

Hatching ceramics are highly limited in the western part of Lithuania (LAA, II. 1975: Map 5), comprising only the so-named local groups (LAA II. 1995: Map 5).

None has been discovered at the seaside to date. These seem to have appeared in western Lithuania from the end of the Bronze Age to the early Iron Age (Danilaitė 1964: 38) and continued being produced up to the 4th - 5th century (LAA, II. 1975: 22-23; Michelbertas 1986: 188). Rugged surface ceramics, in a form of fine ruggedness (granulated), appeared early in the Iron Age. Finely rugged ceramics are most characteristic of the 3rd - 4th century AD layers of western Lithuania, although these are found up to the 6th century. These were the precursors of highly rugged ceramics during the 2nd - 3rd century. Hatching and rugged surface ceramics are found together with pot fragments having a plain surface, everywhere in Lithuania (LAA, II. 1975: 24; Bliujienė 2005: 81-87). Thus, in this way, it is possible to date the hatching and weakly rugged ceramics found at Palanga settlements, most likely at the 2nd - 4th century, possibly later. The appearance of these ceramics coincides with the chronology of the *Baltijos aikštė* 'Baltic Square' burial grounds from the Roman period—3rd century AD (Tautavičius 1968: 123-137).

Types of Ceramics in the Middle Ages

The ceramics from the Birutė Hill Settlement are the basis for this typology. Most of the ceramics are from here, and they are comparatively equally distributed in the horizons of the cultural layer. Additionally, these ceramics are the most varied and encompass the widest time period. The ceramics from the other settlements are interspersed into this classification, thereby expanding it with new types.

Birutė Hill Settlement

The ceramics from Palanga's Birutė Hill Settlement are sorted into types by form, proportion, designation and profile of the rim at the mouth of the vessels.

In the proposed typology, ceramics are sorted into five major types, A - E, which, on their own accord, are further separated into subtypes (Table 12). Hand-modeled pots and those made on a slowly rotating wheel are ascribed to Type A ceramics produced on a slowly rotating wheel. Those made on a rotating wheel are ascribed to Types B and C, vessels with handles to Type D and fragments decorated with wheel-shaped head ornamentation to Type E. It was only possible to sort less than half of all the ceramics. Most of the fragments (fine as well as those from the sides or base of a vessel) were not assigned to any type.

Table 12
Types of Ceramics at the Birutė Hill Settlement

Types	Subtypes	Inventory Numbers of Pot Fragments
A-1	A-1:a	28, 54, 59, 62, 70, 64, 66, 91, 92, 93, 94, 104, 110, 118, 120, 143, 148, 149, 150, 164, 204, 207, 213, 217, 246, 247, 249, 270, 273, 274, 277, 278, 284, 287, 287a, 288, 289, 291, 292, 295, 296, 318, 319, 320, 321, 333, 335, 349, 350, 406, 419, 420, 437, 510, 511, 539, 541, 551, 630, 634, 646, 703, 704, 759, 784, 811, 852, K953, K971, K1039, K1050, K1082, K1085, K1088, K1091, K1095, K1099, K1101, K1102, K1107, G-240
	A-1:b	45, 47, 119, 156, 253, 269, 436, 512, 552, 702, 736, 794
	A-1:d	727, 826
A-2	A-2:a	121, 137, 157, 179, 248, 293, 540, 731, k1092
	A-2:b	44, 55, 222, 436, 723, 793
A-3	A-3:a	49, 216, 425, 438, 636
	A-3:b	69, 87, 151, 174, 254, 260, 261, 427, 734, 742(760,820), 790, k954, k1079, k1083
	A-3:c	123, 134, 143, 147, 187, 214, 235, 506, 705, 713, 726, 727, 829, g-289, k1021
	A-3:d	g-288, 138, 223, 352, 754, 755
	A-3:c	288, k1096
B-1	B-1:a	36, 105, 135, 136, 192, 205, 220, 221, 237,537, 757, 843
	B-1:b	35, 109, 493, 496, 497, 499, 500, 501, 503, 504, 505, 508, 533, 534, 630, 631, 632, 633, 644, 711
B-2	B-2:a	34, 48, 63, 186, 188, 226, 238, 251, 252, 271, 272, 284, 351, 535, 743, 814, k1076
	B-2:C	165, 166
B-3	B-3:a	59, 507
	B-3:b	50, G-225, k1097, k1098
C-1		85, 177, 197, 206, 275, 538
D-1	D-1:a	G-317, 84, 224,643
	D-1:b	42, 198,
E		g-256, 26, 851, K1084

Type A-1

This is the most plentiful type of ceramics by number. The pots and their fragments are shaped by hand or, almost indistinctly, made on a slowly rotating wheel. Type A-1 ceramics were found in all the horizons and everywhere, except in the latest horizon, and these comprised the most ceramics (Figure 108). Two subtypes are distinguished within the main type—A-1:a (eighty vessels and their fragments) and A-1:b (eleven single pieces of ceramics).

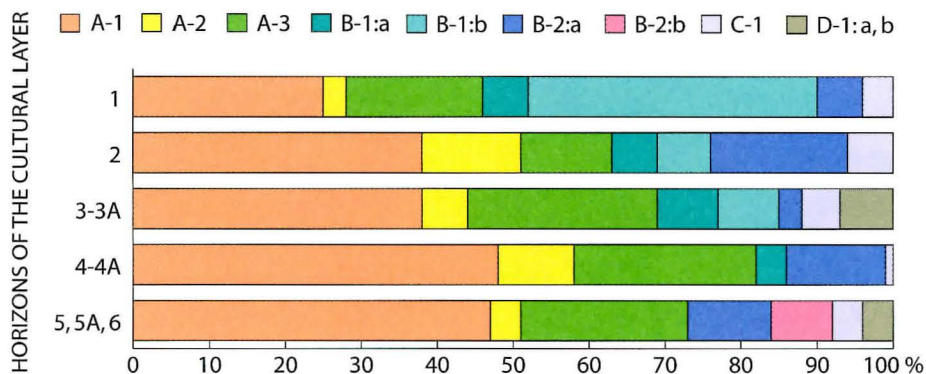


Figure 108. Distribution of major ceramics types in the cultural layer of the settlement at the foot of Birutė Hill

Table 13
Distribution of Main Ceramics Types in a Cultural Layer

Horizons	(by %)						
	A-1	A-2	A-3	B-1:a	B-1:b	B-2:a	C-1
5, 5A, 6	59	3	22	3.5		7	3
4-4A	47	9	22	5	1	8	1
3-3A	37	8	24	7	8	3	3
2	39	11	21	5	5	10	5
1	35	3	16	5	35	5	3

Subtype A-1:a

There are seven pots of a full profile ascribed to this subtype (BK 54, 164, 318, 319, 320, 321 and 349). The main criteria for distinguishing this type are the form of the pot and the rims, which are long and vertical or flared outward that are not profiled nor have a very poor profile (Figures 109 - 114). All the pots have heights that are greater than the diameter of their shoulders, and the diameters of the mouth are larger than those of the bases are and smaller than those of the shoulders, which are placed at the upper third of the vessels. The ratio of pot height to size of mouth is 1.2 - 1.5, and the ratio of mouth to base size is 1.4 - 1.8 (Table 14).

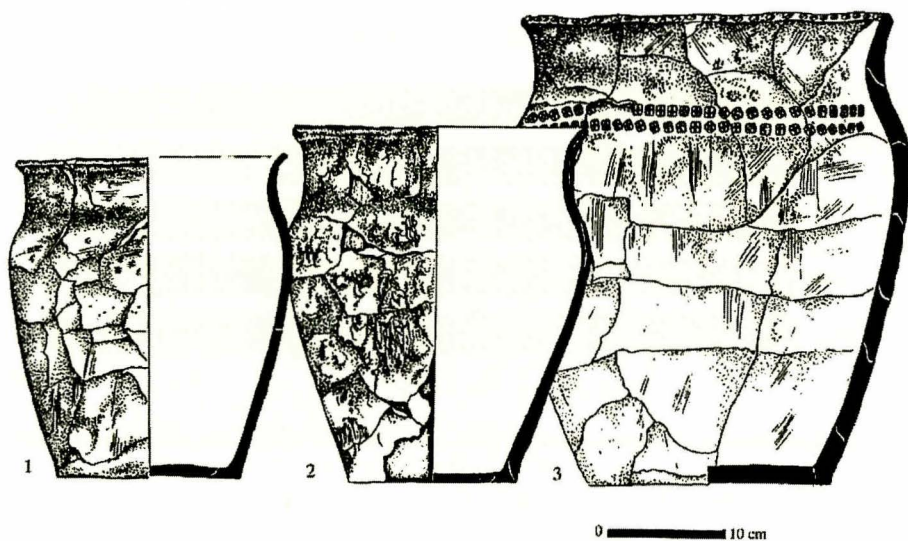


Figure 109. Type
A-1:a pots found
in the settlement
at the foot of
Biruté Hill

1. BK 321
2. BK 320
3. BK 318

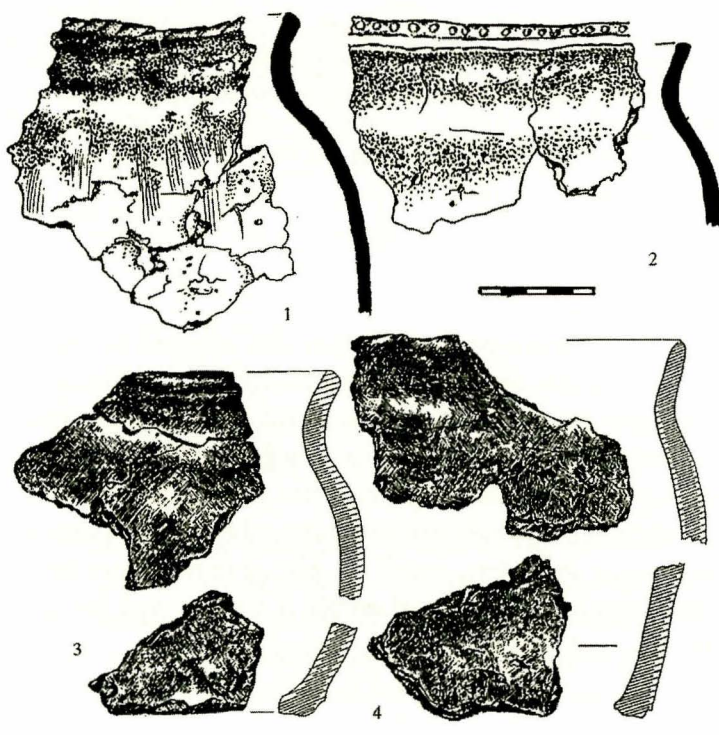


Figure 110. Type
A-1:a fragments
of pots found in
the settlement at
the foot of Biruté
Hill

1. BK 213
2. BK 350
3. BK 708
4. BK 634

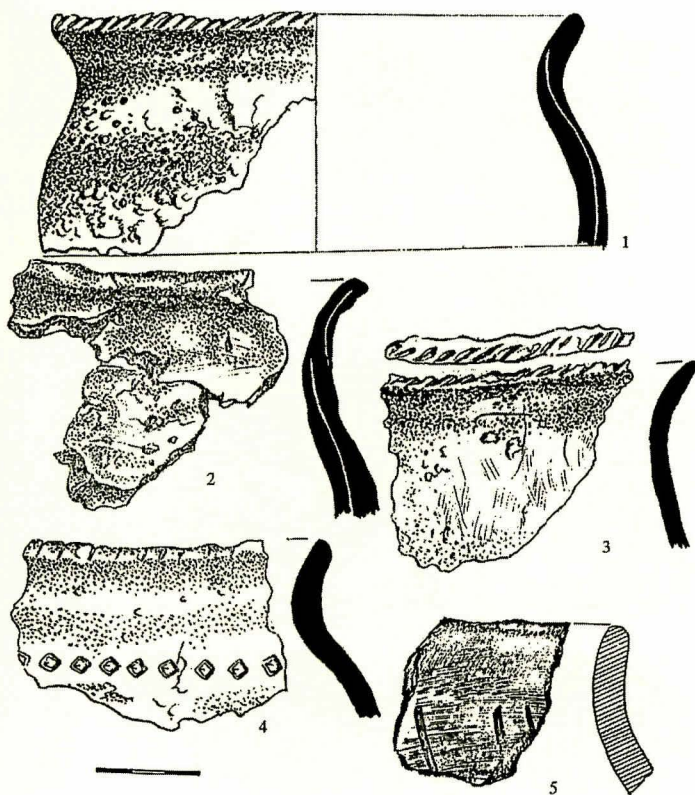


Figure 111. Type A-1: a fragments of pots found in the settlement at the foot of Birutė Hill

1. BK 110
2. BK 64
3. BK 148
4. BK 247
5. BK 437

Table 14
Pot Sizes and Proportions of Type A-1, Subtype A-1

BK No. (Birutė Hill)	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
54	26.5	22	23	14	1.2	1.6
164	29	24	27	14	1.2	1.7
318	38	30	33	20	1.3	1.5
319	34.5	26.5	31	16	1.3	1.65
320	29	24	25	14	1.2	1.7
321	27	22	23.3	15.3	1.2	1.4
349	37	25	28	14	1.5	1.8

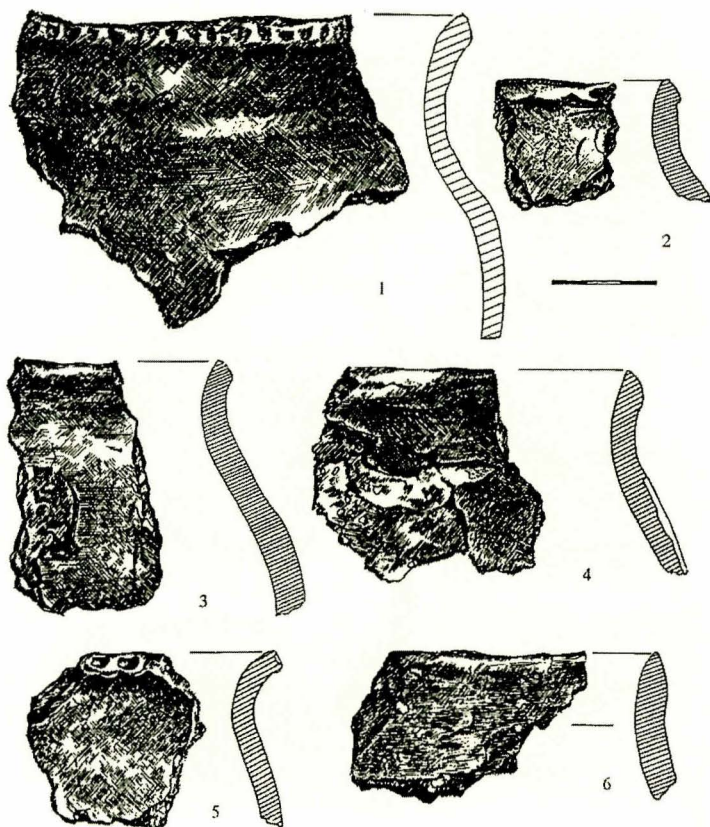


Figure 112. Type A-1:a fragments of pots found in the settlement at the foot of Birutė Hill

1. BK 759
2. BK 511
3. BK 712
4. BK 617
5. BK 646
6. BK 541

Fully reconstructed pots are tall—from 26 cm up to 38 cm in height. These can be divided into several subgroups, based on their heights and the diameters of their mouths. One subgroup would consist of the pots, 38 cm - 34 cm high, with the diameters of the mouths, sized 30 cm - 25 cm (BK 318, 319 and 349); another—29 cm - 26 cm high with mouths, 24 cm - 20 cm in diameter (BK 54, 164, 320, 321) and a third—20 cm - 15 cm mouth diameters. Time is not a variable in these groups. The pots found at Structure No. 12, BK 318 - 321, are in different sizes but, undoubtedly, simultaneous in time. The size of a pot depends on its designated use. Seemingly the large pots were designated to store food.

Among the Type A-1:a pots, about 60% of the fragments have marks of production on a slowly rotating wheel, many contain the crosswise seams that are characteristic of hand-shaped pots and the rest are shaped by hand. Vessels of

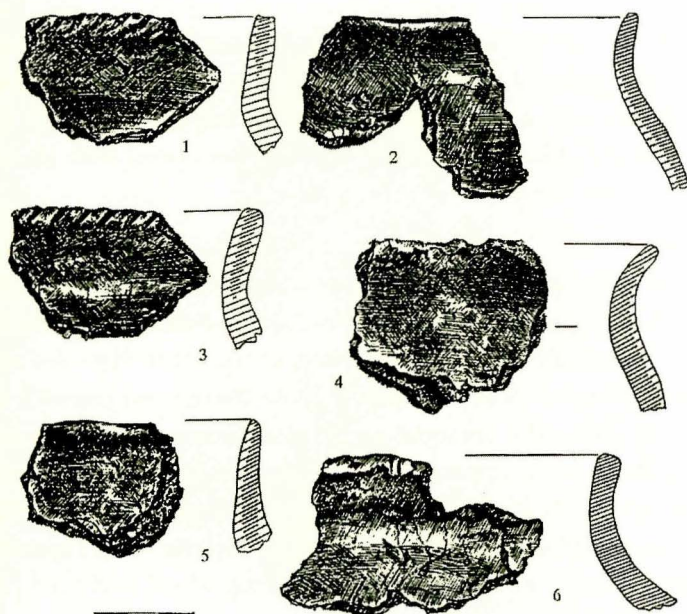


Figure 113. Type
A-1:a fragments of
pots found in the
settlement at the
foot of Birutė Hill

1. BK 784
2. BK 551
3. BK 784
4. BK 539
5. BK 703
6. BK 510

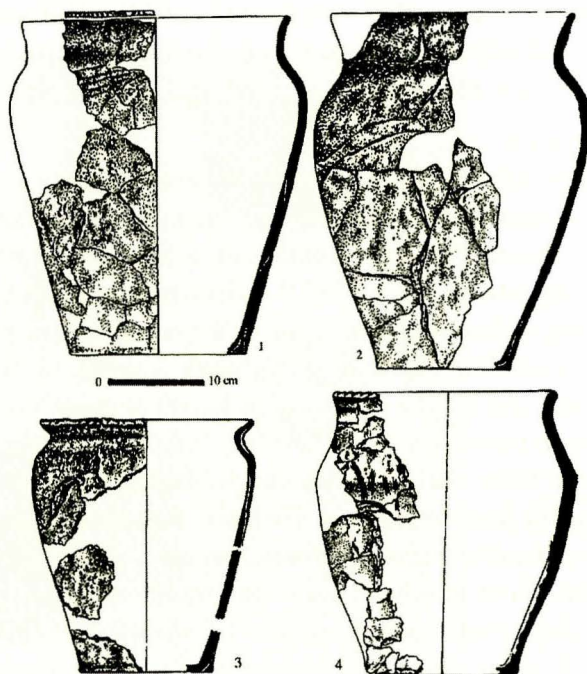


Figure 114. Type
A-1:a pots found in
the settlement at
the foot of Birutė
Hill

1. BK 319
2. BK 349
3. BK 54
4. BK 164

this type are decorated very homogenously, usually at the top of the rims. Two-thirds are decorated. Only two of these pots (BK 247 and 318 found in Structure No. 12) had also been decorated at the shoulders. The first contains a rhombus-formed stamp and the second, a rectangular stamp with a criss-cross in the middle (Figures 109 and 111). About 60% of the rims are decorated with slashes and about 40% with various stamps, most often a claw.

Analogies, chronology

An accurate tracing of the genesis of this, most widespread, type is difficult. The fact that most of the pots found were of this type, all in Palanga settlements and nearly in all horizons could indicate the origin of the local Type A-1 and its Subtype A-1:a. Analogies are more difficult, because there is no research on a more exhaustive level about the seashore settlements during the Early and Middle Iron Age. Hatching ceramic pots from Paplienijis are the western variants, Forms I and III, which are highly related by form and proportions to the type under description, except that these are smaller (Danilaitė 1964: Figures 5, 7 and 8). It seems that ceramics made on a slowly rotating wheel had been produced in analogical forms during the 10th - 12th century. In the maps of Dauguva (Apals, Mugurēvičs 2001: 332, 233 att.), Type A-1:a of the ceramics from Palanga associate by form with 7th - 8th century ceramics that were shaped by hand and made on a slowly rotating wheel from the formerly Prussian, southwestern areas (Chudziak 1991: 66- 67, 74-75, ryc. 16:d, 17: f, 22: a, h, 137).

Subtype A-1:b

There is only one fully reconstructed vessel, BK 794, among the pots and their fragments ascribed to this subtype. The only area, where no pot fragments ascribed to this subtype were found, was in the latest, Horizon 1. Everywhere else these comprised 5% - 10% of all the identified ceramics. Type A-1:b pots are barrel-shaped, widest in approximately the middle. The height of the reconstructed pot is 23.2 cm. The diameter of its mouth is 19 cm, of its shoulders—21 cm and of its base—16.5 cm. The ratios of its height to mouth diameter = 1.2 and of its mouth to its base diameters = 1.15. The rims of the vessels are short and, from the bottoms of them, their shoulders begin sloping (Figure 115).

Of twelve fragments, seven are hand-shaped, whereas the others have more or less noticeable traces of production on a slowly rotating wheel. Seven are decorated, six of which with slashes and stamps. The shoulders of two vessels are also decorated. One (BK 45) has "D"-shaped claw stamps, and the shoulders of one (BK 47) are decorated with a row of two rectangular stamps (Figure 116).

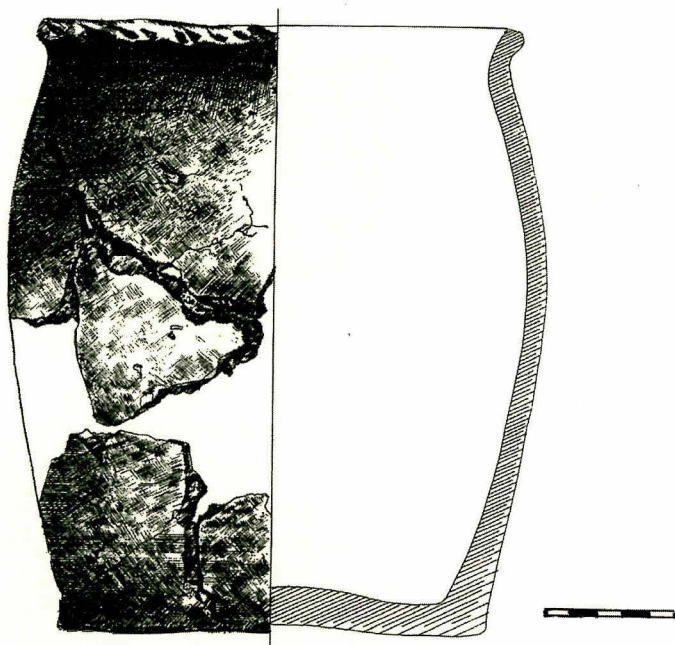


Figure 115.
Type A-1:b pot,
BK 749, found in
the settlement
at the foot of
Biruté Hill

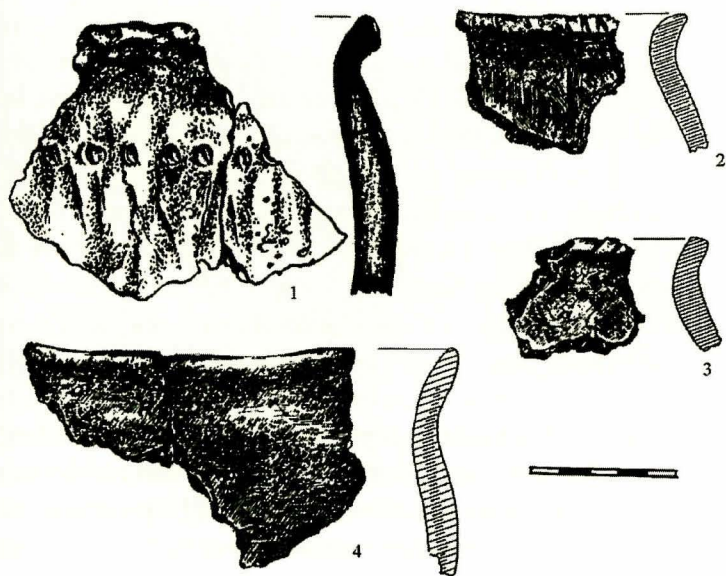


Figure 116. Type
A-1:b ceramics
found in the set-
tlement at the foot
of Biruté Hill

1. BK 45
2. BK 736
3. BK 702
4. BK 552
5. BK 47

Analogies, dating

A fragment of the top of a Type A-1:b pot made on a slowly rotating wheel was found in Grave 69 of the Palanga burial grounds (Sadauskaitė-Mulevičienė 1965: 41-56. P. 43, Figure 1:1). According to the inventory, this grave is dated at the 10th - 11th century (LIIA, b. 183).

Subtype A-1:d

This subtype only contains the fragments of two pots shaped by hand (BK 727 and 826), which were found in Horizons 3A and 4A. These vessels are different in terms of their short, upright rims that are not profiled where, at their bottoms, wide shoulders begin. The tops of both pot rims are decorated with slashes (Figure 117).

Analogies, dating

More such vessels were found at the Žemaičių Hillock and the Southern Settlements where, at the latter, there was one fully reconstructed pot. Therefore, the ceramics of this type is discussed below.

Type A-2

Medium-sized vessels, shaped by hand and made on a slowly rotating wheel, belong to this type. The fragments of these vessels were found in all the horizons of the cultural layer; however, there were more in Horizons 2 - 4a (Figure 108). There are two subtypes with this type.

Subtype A-2:a is the first. The pots classified here are up to 20 cm in height and have high rims that are not profiled, rising vertically from the shoulders. The belly is above the middle of the vessel. Of the nine subgroups, designated for ceramic fragments (Table 14), it seems that as many as six have marks of production on a slowly rotating wheel. Only one pot is fully reconstructed (Figure 118). This pot, BK 731, is 18.5 cm high; the diameter of its mouth is 15.8 cm, of its base—9.6 cm and of its belly—17.8 cm. Thus the proportions of the vessel are close to those of the Type A-1 pots—the ratio of height to mouth is ~1.2 and of mouth to base is 1.6. The ceramics of this subtype are sparsely decorated—only four rims are decorated at their tops with claw stamps. No data is available that would permit tracing the origin of this subtype of ceramics. No similar pot fragments were found at the seashore burial grounds, except for miniature ceramics of the mid-Iron Age (Tautavičius 1996: 269, Figure 129) which, overall, was not notable for its stability of form. It is hardly likely that their origin could be pegged to the Neolithic pots of a similar form from the Pommern-Rzucewo (or Baltic Coastal) culture at Šventoji (Rimantienė 1980: Figures 56, 59, 43 and 48); too much time

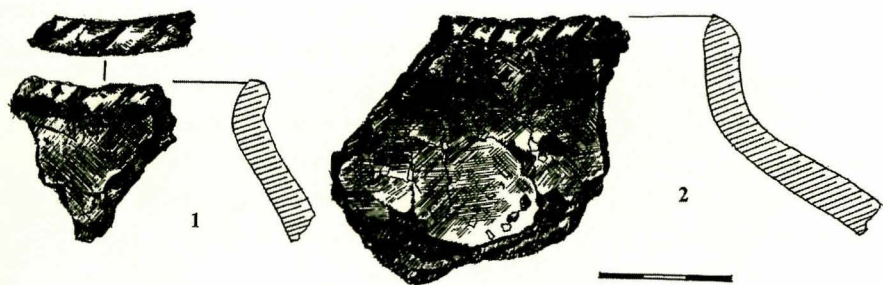


Figure 117. Type
A-1:d ceramics
found in the set-
tlement at the foot
of Birutė Hill
1. BK 727
2. BK 826

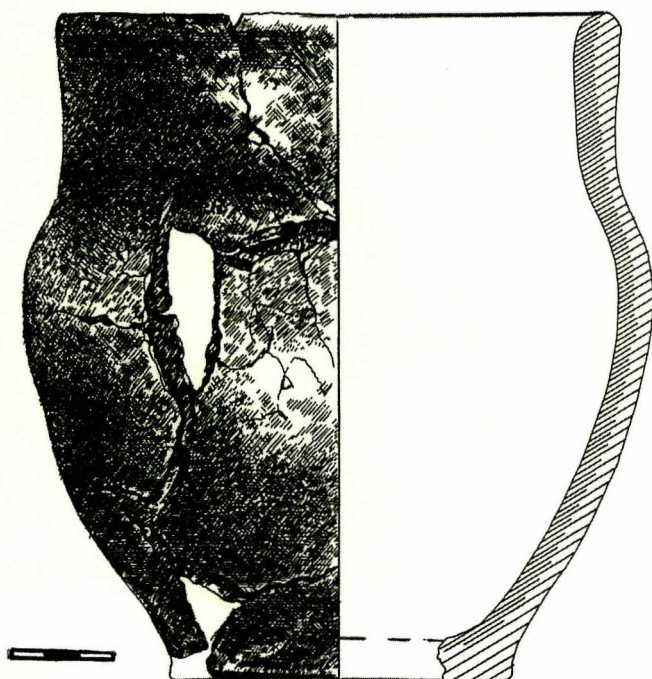


Figure 118. Type
A-2:a pot, BK 731,
found in the set-
tlement at the foot
of Birutė Hill

separates these ceramics. Pots of a similar form, except for their highly accented shoulders and other proportions, had disseminated in western Slavic territories (Lepówna 1968: ryc. 27:I, 31:g); however, there are no direct parallels. There are no analogies of Subtype A-2, not even at the seaside centers of Germany or Poland, although ceramics with a vertical neck (*Gefäße mit zylindrischem Hals*), which

had disseminated in German lands, were considered Slavic (Knorr 1937: Taf. 4). Very similar ceramics made on a slowly rotating wheel were found in different sizes, only in the cultural layers of Gdansk; these are dated at the period of 1115 - 1205 (Lepówna 1968: ryc. 39:d, 41:j, 43:i, k. S. 232, 233, 244 and 256). By their technology and décor, Palanga pots fit well with the other Type A-1 pots, which are considered to be of local origin. The fact that the very close analogies are specifically in Gdansk permits the presumption that the ceramics of this subtype, as much in Palanga as in the eastern part of the Polish Pommern, have common roots with traditional, western Baltic ceramics.

Subtype A-2:b is also very sparse—it only contains six pots (Table 13). Their fragments were found in Horizons 2 - 4 of the layer. Of the six vessels, three had been shaped by hand and the other three have marks of production on a slowly rotating wheel. Two pots have been reconstructed (Table 15, Figure 133). The pots of the subtype are not large, up to 15 cm and less, and the diameter of the mouth is equal or approximate to the height. Their mouths are 12 cm - 15 cm in diameter, the shoulders are sloping and the rims, which are not profiled, are flared outward.

Table 15
Type A-2, Subtype A-2:b Pot Sizes and Proportions

BK No. (Birutė Hill)	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diam- eter	Height / mouth diameter	Mouth diameter / base diameter
723	15.6	13	14	11.5	1.2	1.1
793	14.5	14.8	16	11.6	1	1.3

Décor is not characteristic of this subtype. The top of only one rim (BK 44) is decorated with pierced pits.

Analogies, dating

The closest analogies to these ceramics are plentifully found in the graves of the Kretinga burial grounds. A vessel of full profile was also found there; therefore, an accurate comparison is possible. A small pot, made on a slowly rotating wheel, which has the same size and form as BK 723, was found in Kretinga Grave No. 1. This grave is dated at the 10th century. Pot fragments of very similar proportions and sizes lay in Grave Nos. 43 and 49; these are dated at the 11th and 12th centuries respectively (Jablonskis 1983. Report manuscript).

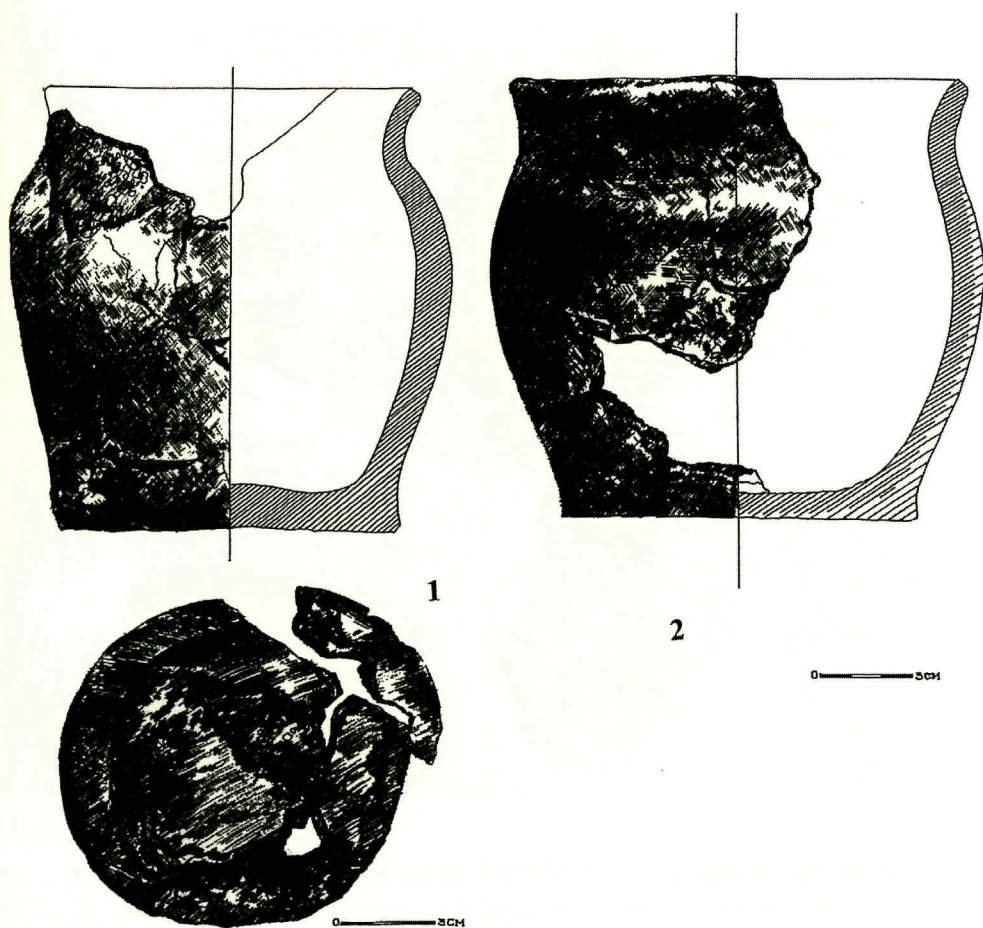


Figure 119. Type A-2:b pots found in the settlement at the foot of Birutė Hill
 1. BK 7234 2. BK 793

Type A-3

Forty medium and small-sized pots are ascribed to this type (Table 13). The diameter of the mouth of each pot is greater than is the height of the respective vessel. Fragments from the vessels in the type under discussion were found in all the horizons of the cultural layer, more plentifully in the older ones (Figure 108). The subtypes are distinguished by size and form—shoulders that are more or less emphasized and rims that are unequally profiled. The small pots are ascribed to the so-called miniature ceramics, which are usually found

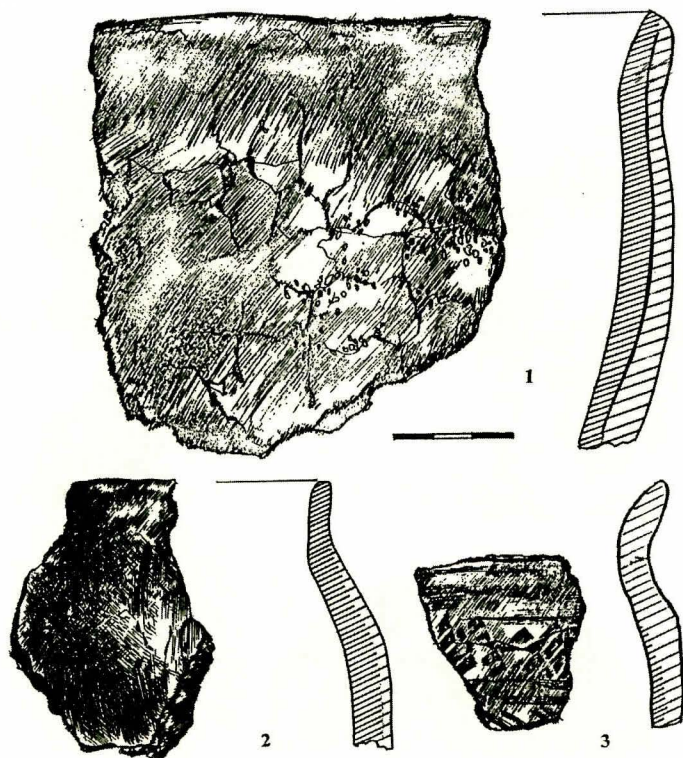


Figure 120. Type A-3:a ceramics found in the settlement at the foot of Birutė Hill

1. BK 425
2. BK 438
3. BK 636

at grave sites. In the 10th - 11th century cremation graves of the Curonians, miniature pots comprised 13% of all the ceramics found at the grave sites (Bliujienė 2005a: 149, Figure 2).

Subtype A-3:a only contains fragments from five vessels (Table 13). These are the largest in the classified type—the mouth diameters range from 16 cm up to 23 cm. The rims are not profiled and flared outwardly. Their shoulders are high. Two pots had been shaped by hand. The others have marks of production on a slowly rotating wheel, and one, BK 216, had been produced on a rotating wheel. Two vessels were decorated at the tops of their rims and shoulders (Figure 120). The shoulders of one were decorated with slashes, and the other with comb ornamentation. Five of the six vessels of this subtype were found in Horizon 2, and only BK 438 was found in Horizon 3.

Subtype A-3:b had fifteen pots assigned to it. None of them is very large. They have wide mouths with upright shoulders immediately beneath the rims. There

is no belly. The rims are not profiled and vertical or flared outwardly (Figure 121). Two of these small pots had been reconstructed in full profile (BK 734 and 742). The vessels are shaped by hand; on only one, questionable marks of production on a slowly rotating wheel were found. The edges of the base are rounded and, at times, there is a random crudely formed foot. There are random impresses of a holder at the bottom of the base. The diameters of the pot mouths do not exceed 15 cm and are usually 10 cm - 11 cm. Décor is not characteristic of this subtype. On only two pots, the tops of the rims are decorated with diagonal slashes and, on the top of the shoulders of one (BK 271), there are claw stamps. The sizes and proportions of the pots are provided in Table 17. The fragments of Subtype A-3:b vessels were found in all the horizons of the cultural layer.

Table 16

Type A-3, Subtype A-3:b Pot Sizes and Proportions

BK No. (Birutė Hill)	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
69	~7	10	13	~6.5	0.7	1.5
734	10.3	12	12.7	7.5	0.85	1.6
742 (760, 820)	10.2	14	14.2	10	0.7	1.4

Analogies, dating

The fragments of small, 5th - 7th century, hand-shaped pots with high, pronounced shoulders, which are very similar to vessels from Palanga of this subtype, were found at the Lazdininkai burial grounds (Bliujienė 2005: 82-83, Figure 2, 6). The same, though dated later, were at the Kretinga burial grounds, for example, at Grave No. 7, dated at the 11th century (Jablonskis 1983: Report manuscript). Seemingly the origins of these small pot are local. Analogies are found at grave sites from the mid-Iron Age in the territories of Western Lithuania, Latvia and Prussia. Amidst the vessels of a plain surface, there is a happenstance of examples, nearly identical by form and size, of Lithuanian ceramics, for example, those found at the Baški barrow (Backs 1988: 83, 85, ris. 5), as well as the 8th - 9th century, small pots from Laiviai (Ozepe 1986: 54, рис. 4: 5; 5: 5). Profiles of vessels of such a type are known in the surroundings of Truso, the Prussian trade center, in layers dated at the 9th - 10th century (Jagodziński, Kasprzycka 1990: 9-49, ryc. 9a:a, d). Ceramics of a very similar form and size are

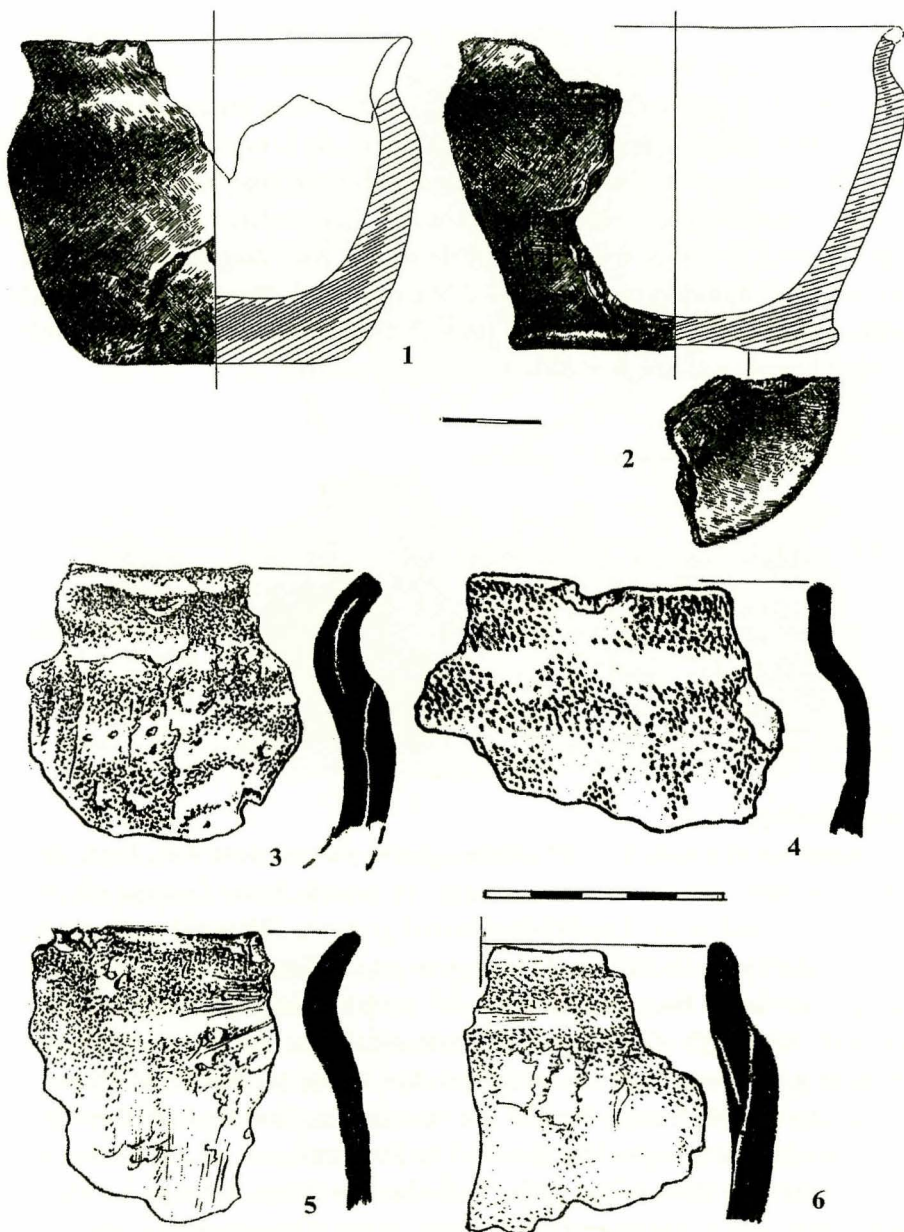


Figure 121. Type A-3:b ceramics found in the settlement at the foot of Biruté Hill

1. BK 734 2. BK 742 3. BK 69 4. BK 87 5. BK 151 6. BK 260

at the Birka graves; however, Palanga pots cannot be considered borrowed, in any way. The fragment of the upper part of a vessel (BK 271) deserves separate mention. Its profile is similar to that of Type B-2:a ceramics, except that it is a significantly smaller pot. There are analogies of a similar form in Germanic and Western Slavic ceramics (see below).

Subtype A-3:c contains fragments of fifteen small pots (Table 13). Their mouths are also wider than they are high; however, their shoulders are sloping, not vertical. There do not contain bellies either. The rims of the vessels are flared outwardly and, sometimes, vertical. These rims are more complex than those of the other subtypes are. Most have a hollow on the internal side and the top is tapered (Figures 122 and 123). Two vessels have been fully reconstructed and one, partially. Of the fifteen vessels, three have marks of production on a slowly rotating wheel; whereas, the others have undoubtedly been shaped by hand. The mouth diameters of the small pots range from 8 cm up to 16 cm. One vessel, BK 187, is entirely miniature (Table 17). The bases contain unpronounced feet, while the base of BK 134 contains the impress of a holder. Pot fragments of this subtype were found in nearly all horizons of the cultural layer; they were only absent in the very oldest horizon.

The décor is very simple—the top of the rim of five of these small pots are decorated with slashes. One vessel, BK 147, additionally has a row of circular stamps atop its shoulders.

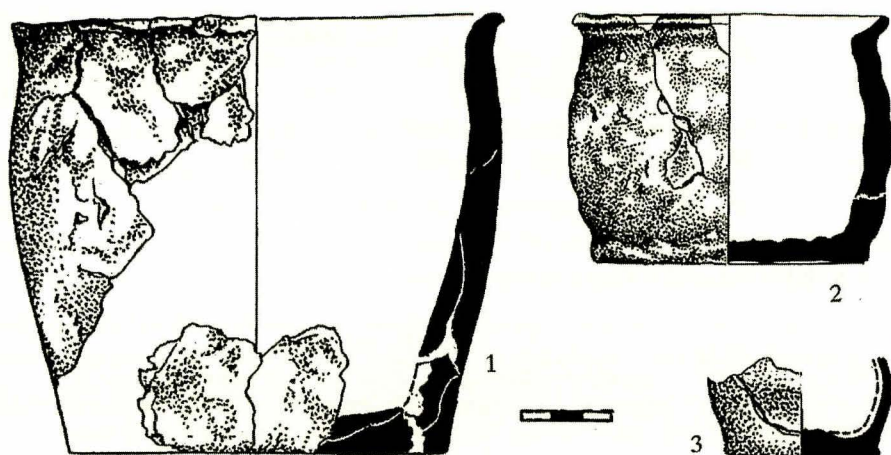


Figure 122. Type A-3:c pots found in the settlement at the foot of Birutė Hill
1. BK 235 2. BK 134 3. BK 187

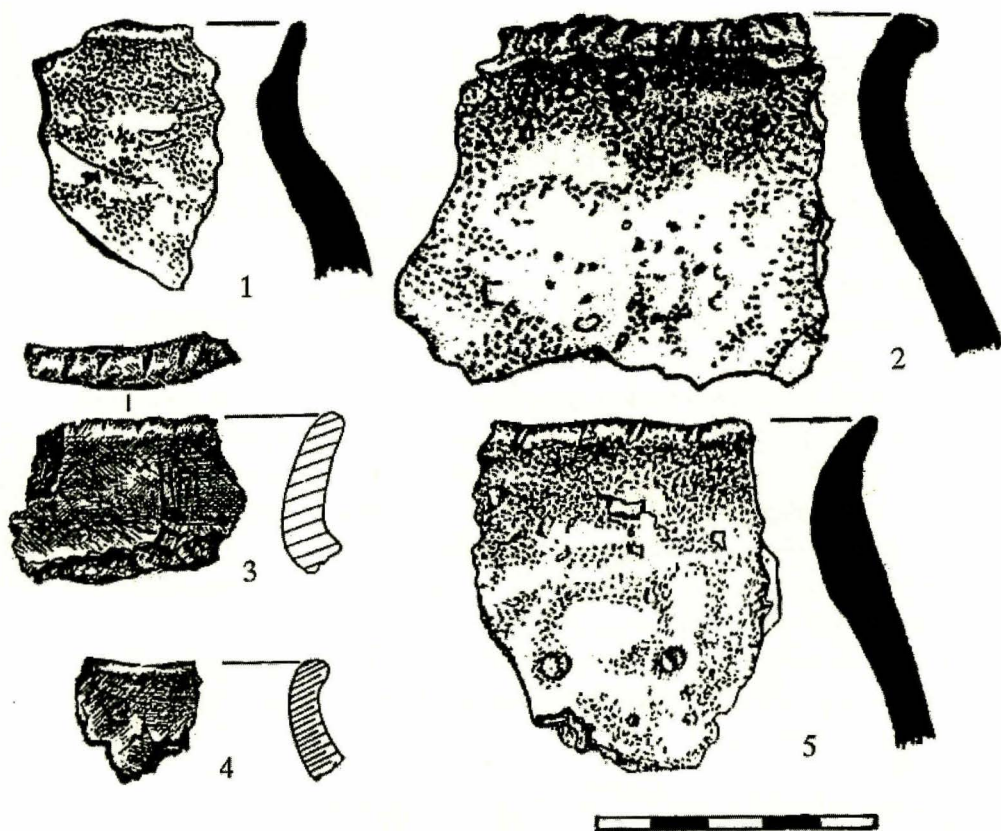


Figure 123. Type A-3:c ceramics found in the settlement at the foot of Birutė Hill

1. BK 123 2. BK 214 3. BK 726 4. BK 713 5. BK 147

Table 17

Type A-3 , Subtype A-3:c Pot Sizes and Proportions

BK No. (Birutė Hill)	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
134	7.8	9.5	10	9	0.8	1.05
235	14	16	16.5	12.5	0.9	1.3
187	4.5		5.7	4.5		

Analogies, dating

Few analogies of these ceramics are found in the western Baltic region. Only small, rimmed pots (cf. BK 187), with a break in the middle of the vessel, are a more frequent happenstance in the early and middle Iron Age cemeteries of western Lithuania (Michelbertas 1968: 118, Figure 3, 4; Michelbertas 1968 a: Senkapis II, 58, Figure 3, 1; Tautavičius 1968: 130, Figure 7, 14; Rimantienė 1968: 202, Figure 14, 3-5). However, there are nearly no other, larger vessels similar to the ones of this subtype being found. Meanwhile, there are numerous analogies of the small pots, BK 134 and 235, at the graves of Birka (Arbman 1940: G. 376 B, 1020, 77, 866, 644, 1073, Taf. 235:6, 236:8, 240:3, 242:2, 245:3, 251:7) and elsewhere in Sweden, which are dated at the 10th - 11th century (Selling 1955: 13, 183 - 186, 191 - 195, Taf. 53:3, 54:6-8, 55:5, 58:6). Therefore, questions arise regarding the local origin of, at least, some of the variants of this subtype. The fact that would also cause doubt is that the small pots, found at certain mid-Iron Age gravesites, had been clearly brought into the locale or produced by copying such; for example, there is the small pot with an uncommon décor in Grave No. 1 at Lazdininkai (Tautavičius 1996: 269, 129, Figure 5), which has its analogy in Birka (Arbman 1940: Taf. 256:1). It must be borne in mind that small pots apparently had more than merely a religious designation or a use as toys; they were used in everyday life for storing spices, medicaments and dyes (Анн 1992: 51; Tautavičius 1996: 270). Therefore, these are also found in the settlements. It is highly likely that Nordic imports were the origin of the vessels under the subtype being discussed. Miniature vessels were very widespread but, it is readily noticeable, these characteristically belong to Baltic people (Kulikauskas, Kulikauskienė, Tautavičius 1961: 272 and 352, Figure 180 and 261; Engel, La Baume 1937: 146 and 150, Abb. 29, 32. Kulikauskas 1982: 81, Figure 50; Седов 1982: 120, таб. XVII, XXII and XXX) and Scandinavians, especially the dwellers in eastern Sweden (Selling 1955: 161, 164, 190-193, Abb. 44, Taf. 59: 10; 60: 7; Stenberger 1977: 466. Abb. 319). These transformed quickly as they took on features that were characteristic of the local ceramics. Nonetheless, this is not sufficient evidence for considering miniature ceramics an attribute of some Baltic tribe (Озеpe 1986: 58). The similarity in the forms of miniature vessels from various countries can also be explained by an equivalent tradition of hand-shaping.

Subtype A-3:d contains vessels characterized by bulging sides and incurving tops. The rims of most vessels are not differentiated at all, whereas the others are short and, almost inconspicuously, flared vertically (Figure 124). Only six pots in all were found of this grade and only one in full profile (Table 18). Vessels were

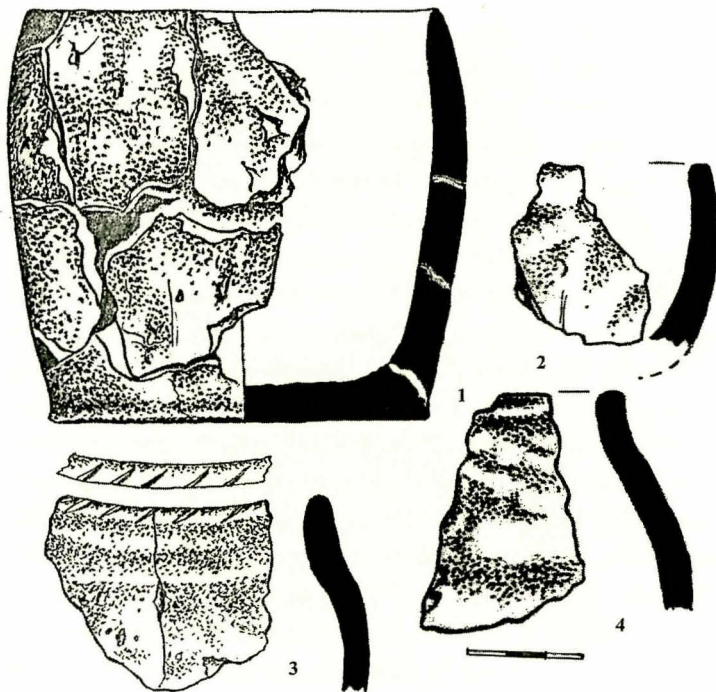


Figure 124. Type A-3:d ceramics found in the settlement at the foot of Birutė Hill

1. BK 352
2. BK 233
3. BK 138
4. G-288

found in the oldest and latest horizons of the cultural layer. Two vessels, G-288 and BK 138, had been large. Their mouths were about 20 cm - 22 cm in diameter, while the mouth diameters of the other, small pots were barely 9 cm - 11 cm. All the vessels were shaped by hand, and their bases were rather coarse, with a foot and without one. Among the larger ones, the rim of one had been decorated with slashes. The proportions of these vessels are close to those of the other pots of this type, as shown in Table 18.

Table 18
Type A-3, Subtype A-3:d Pot Sizes and Proportions

BK No. (Birutė Hill)	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
223	6	9			0.7	
352	10.9	11	11.8	10.2	1	1.1

Analogies, dating

Very few analogies of these ceramics are being found. One or another vessel of a similar form randomly appears at the seaside, in the burial grounds of the first half of Millennium I, for example, at the burial grounds of Vilkų Kampas in the Šilutė region (Bliujienė 2005: 82-83, Figure 2, 7). A vessel of such a shape does not appear even in the known, later material of Lithuania. Nevertheless, it could hardly be substantiated to search for a foreign origin of the Subtype A-3 d ceramics (Žulkus 1997: 209), in 8th - 10th century Denmark (Hvass 1980: 168, Figure 29: 2) or 10th century Sweden (Selling 1955: Gruppe A IV: 3a 1, A IV: 2, 151, 161, 164 and 171, Abb. 44 and 45; Thunmark - Nylén 1995: Abb. 486 c, 497 b).

Subtype A-3:e has the fragments of only two vessels ascribed to it, which were bowls or very similar, especially low, vessels with wide mouths (Table 13). Neither of the two vessels of this subtype has been reconstructed to their full height. Thus it is not possible to describe them in greater detail. The sizes of these vessels are not clear. Their vertical linings merge into their respective bases at once. There is no rim, or it is barely distinguishable. The top of the protrusion of one vessel is decorated with slashes. These ceramics were found in Horizons 1 (K 1096) and 4 (BK 288).

Type B-1

Ascribed to this type are the fragments of pots, produced on a rotating wheel, which were found in Horizons 1 - 4A of the cultural layer (Figure 108). A total of twenty-nine pot fragments, characteristic of this type, are known (Table 13). Two subtypes have been distinguished by the form of the vessels and the shape of the rims.

Subtype B-1:a contains characteristic fragments from twelve pots (Table 13). One vessel has been reconstructed in full, and the greater part of another has as well. The height of these pots had been greater than their respective area. The shoulders are at the upper third of the vessel, their necks are short and the rims are flared outwardly, with the top either ending up vertically or profiled almost indistinctly (Figure 125). The mouths of the pots have diameters of 17 cm - 22 cm (Table 19).

Table 19

Type B-1, Subtype B-1:a Pot Sizes and Proportions

BK No. (Birutė Hill)	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
105	21	18.7	20.5	13	1.2	1.4
192		17	19			

All the pots have distinct marks of production on a slowly rotating wheel (Figure 126). Horizontal grooves in six fragments begin immediately beneath the rim or the neck. The necks of three pots, BK 192, 205 and 221, have perforations, which had been pierced into the vessels after they had been thoroughly fired. Two perforations had remained in BK 192, one next to the other. This latter pot had been abundantly decorated—in addition to grooves, the bottom of its neck and shoulders are decorated with small incised waves and, between them, stamps in the shape of an ellipse. At the top of the rim of one vessel, there are diagonal slashes (Figure 126). Two more pots, BK 757 and 843, have small perforations at the bottom of their necks. Compared to other vessels, their necks are more stretched out and the shoulders slope more.

Analogs, dating

A great many analogies of the rim form and decor of this subtype can be found. The greater part of the Subtype B-1a pot fragments are either identical or very similar to the *Vipperow* (BK 105, 135, 136, 192, 205, 220, 221 and 237) and *Teterow* (36 and 135) types of ceramics, which have a western Slavic origin. These are the terms for Late Slavic ceramics (*Jungslawische Keramik*). According to these analogies, Subtype B-1a ceramics of Palanga would be dated at the end-10th - end-12th century (Knorr 1937; Schuldt 1956). It had disseminated beyond the areas, settled by Slavs in western Poland (Chudziak 1991: 84, 94, ryc. 31, 38) and Germany, into Jutland and the islands of Denmark and Sweden. In Scandinavia

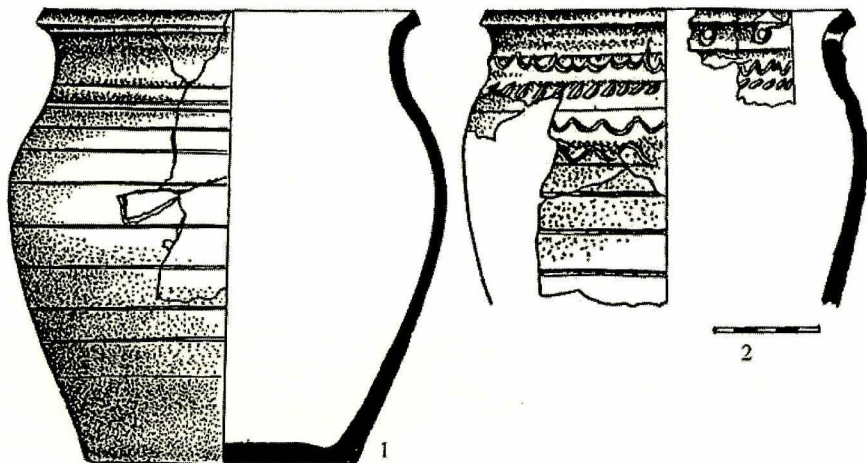


Figure 125. Type B-1a ceramics found in the settlement at the foot of Birutė Hill

1. BK 105 2. BK 192

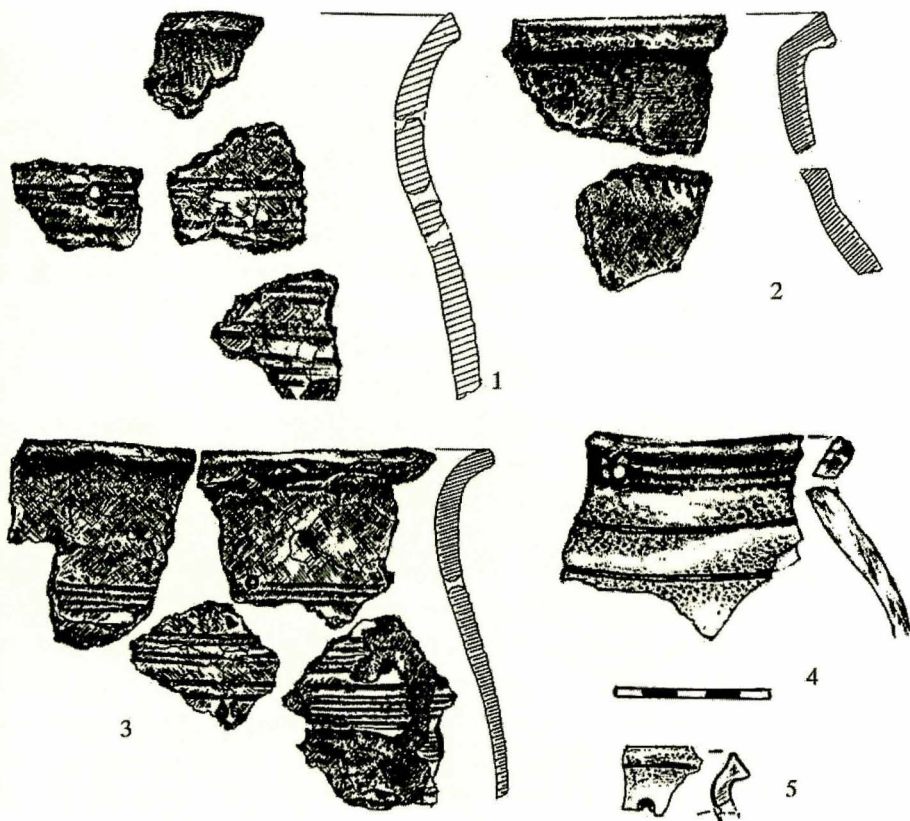


Figure 126. Type B-1:a ceramics found in the settlement at the foot of Birutė Hill

1. BK 757 2. BK 537 3. BK 843 4. BK 205 5. BK 221

it is usually ascribed to the so-named Baltic ceramics (Selling 1955; Liebgott 1979: 134-169). Sometimes more accurately dated analogies to the fragments of ceramics from the Birutė Hill Settlement are also discovered. BK 105 and 205 have analogies in Germany, where they are dated during the interval of the 11th - 12th century (Liebgott 1979: Abb. 76:a, c; 79:a, 87:g; Schmidt-Thielbeer, Bartels 1982: 189. Abb. 1, b; Kohn 1982: 146-148. Abb. 5, r; 7, c; Lampe 1982: 129. Abb. 2, s; 3, g). In Gdansk analogies to BK 105 are known between the years 1140 - 1180 and, to B 205, the years 1160 - 1180. These, the same as the piece from Palanga, have two small perforations on the rims (Lepówna 1968: 168, 238, 239, 244, 247, ryc. 26, 40, 41: g, 42: c). Pots with rims of the BK 205-type rim were in 11th century Denmark (Nielsen 1980: 173-208. S. 208. Figure 32: 1). The BK 221-type rim of the *Vipperow* ceramics is dated at

the years 1050 - 1200 (Schuldt 1956: 49, 136 and 220. Abb. 76:c, 87:g, 88:a). A precise analogy of the rim, also with a perforation, is in Jutland (Denmark), where it is dated at the 11th century (prior to the year 1100). The actual form of the vessel is characteristic of traditional Danish ceramics (Stoumann 1980: 117 and 118. Figure 28:3). Meanwhile BK 186 differentiates by the wavy ornamentation at the edge of the rim. Such an ornament on the rim is characteristic of Slavic ceramics, in Silesia and Gniezn (11th - 12th century), but unknown in Scandinavia (Selling 1955: 136). BK 136 has an analogy in Kołobrzeg, dated at the 10th century (Leciejewicz 1962: 153, ryc. 52). The fragments of a pot, which herein would be assigned to Subtype B-1: a, were found in Grobina (Latvia), where they are dated at the 11th century. One fragment, the same as B 237, has the top of its rim decorated in slashes. B. Nerman considers such ceramics as "customary for the eastern Baltics" (Nerman 1958: 170. Taf. 59: 419). Ceramics similar to BK 757 and 843 were in Grave No. 45 at Kretinga, which is dated at the 10th century (Jablonskis 1983). The pot fragment of the type under discussion, with the tiny perforation in the neck, was randomly found at the Gintarai burial grounds in the Kretinga region amidst other finds, dated at the 11th - 12th century (Jablonskis LIIA No. 1360). The fragments from two pots produced on a rotating wheel which are not precisely dated, found at the Bandužiai burial grounds in Klaipėda, are also ascribed to this subgroup (Stankus 1995: 85, 72 Figure 2, 6). Wheel-made Prussian ceramics with similar rims are dated at 2nd Millennium AD (Ефремов 2006: 50, 53, 56).

Subtype B-1:b consists of twenty pot fragments (Table 13), but not a single vessel has been reconstructed entirely (Figures 127 - 129). Therefore, the form of the former pots can only be surmised from the upper part of the vessels. Pot fragments of this subtype were found in the upper, Horizons 1 - 3, mostly in Horizon 1 (Figure 108). These pots were apparently similar to the Subtype B-1:a vessels, except that most of their necks were shorter and some did not have one at all - instead the outwardly flared rims blended nicely into the shoulders. The actual rims are profiled more widely at the top with a hollow on the internal side. The mouths of the pots are 15 cm - 17 cm, 19 cm - 22 cm and 24 cm - 26 cm in size. These are decorated with horizontal grooves and tiny waves on the shoulders; the rim of one, BK 35, is additionally decorated with slashes.

Analogies, dating

The ceramics have characteristic profiles of the upper parts of the pots, which are ascribed to the late Slavic ceramics groups, *Vipperow* and *Teterow*. Pots with the BK 109-type of rims are generally dated at the 12th - 13th century (Kohn 1982: 146 and 147, Abb. 7: b, f). In Gdansk such a profile was characteristic of the

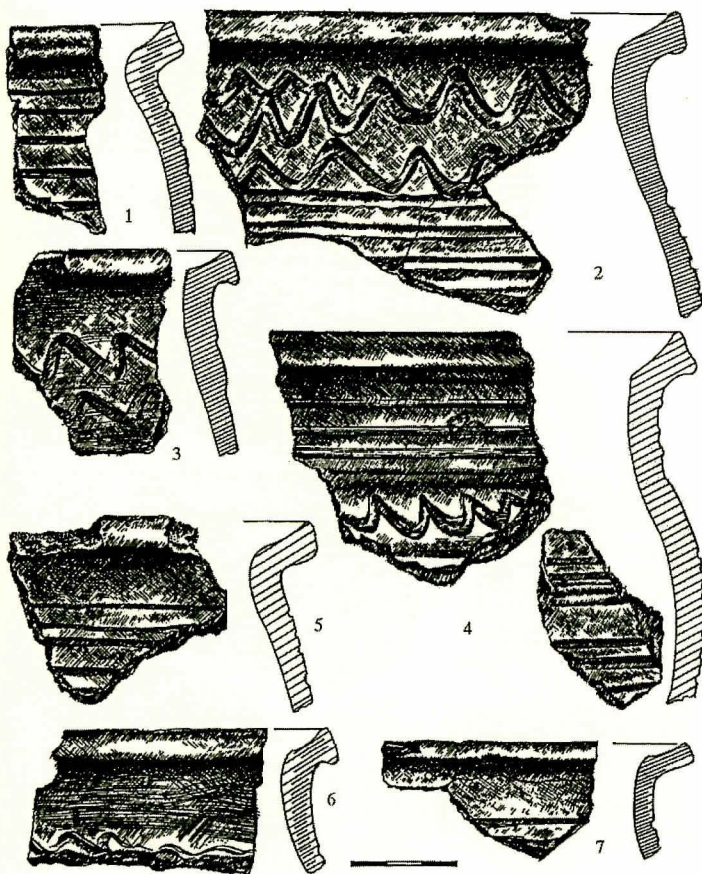


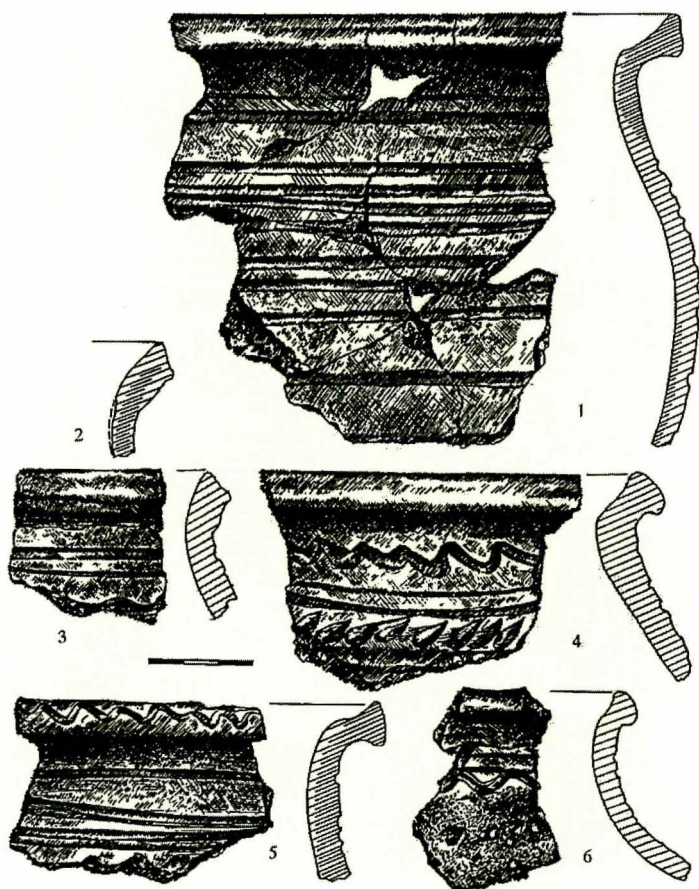
Figure 127. Type B-1:b ceramics found in the settlement at the foot of Birutė Hill

1. BK 632
2. BK 501
3. BK 493
4. BK 644
5. BK 533
6. G-497
7. BK 496

pots used during the years 1180 - 1205 (Lepówna 1968: 168, ryc. 43:c). An analogy from Jutland is dated at approximately 1100 (Stoumann 1980: Figure 28: 3). There were pots in Wolin with rims like those of BK 631 and 633, dated at the period between the years 1000 - 1075, the same as pots BK 493, 497, 503, 534 and 535, which are dated at the period of 1075 - 1180. Analogies of BK 501 were found in layers, dated 1075 - 1250 and of BK 496, dated 1180 - 1250 (Wilde 1939: Typ. 15₂, 16₂, 19₄, 22₄). Then there are BK 493, 497, 631 and 632 which are very similar to the ceramics found in Starigard/Oldenburg, dated at the end of the 10th century - 1100. Meanwhile BK 500 and 508 are dated at early 12th - mid-12th century (Kempke 1984: 28. Taf. 17:3, 6, 7; 22; 25). Pots with rims that are less profiled, BK 35, 631, 632 and 500 and 711, are also ascribed to this subtype and have their

Figure 128. Type B-1:b ceramics found in the settlement at the foot of Birutė Hill

1. BK 508
2. BK 633
3. BK 630
4. BK 500
5. BK 503
6. BK 711



analogies in Baltic ceramics. BK 35-type rims were found at Lund, in southern Sweden, in layers that were dendrochronologically dated at the years 1030 - 1200 (Vandrup 1992: Pl. 2: c. Pl. 4, 7). Of interest is that analogical fragments were found in Grave Nos. 167 and 329 in the Palanga burial grounds (Sadauskaitė-Mulevičienė 1965: 43, 1 Figure 2, 4). These were respectively dated at the 11th - 12th century and the 11th - 13th century (IIA, 182 and 183). The form of the BK 711 rim and its décor are similar to the pot fragments, found in Grave No. 244 at Palanga, which additionally had claw stamps decorated on the top of the rim (IEM. K.244: 1925). Grave No. 244 is dated at the 10th - 11th century (IIA, 182, 183). The rims of BK 497 and 501 are identical to the pot, found in Grave No. 35 at the Girkaliai burial grounds (Volkaitė-Kulikauskienė 1970: 76, Figure 6). Subtype

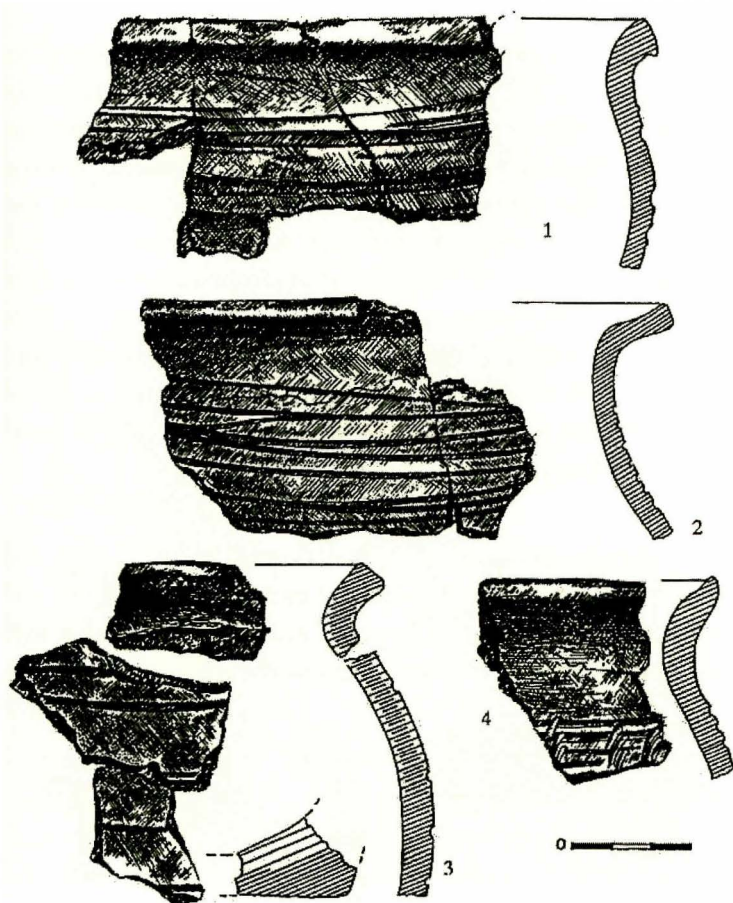


Figure 129. Type B-1:b ceramics found in the settlement at the foot of Birutė Hill
 1. BK 505
 2. BK 534
 3. BK 628
 4. BK 503

B-1:b ceramics were at the Žardė Settlement by Klaipėda, in a layer dated at the 11th - 13th century (Genys 1995: 121-123), as well as the neighboring Bandužiai burial grounds (Stankus 1995: 85, 72 Figures 1, 3, 5 and 9). There are analogies of BK 500 in Denmark, in the Scandinavian variant of *Vipperow* ceramics, dated at the years 1000 - 1200 (Gebers 1981: 163. Abb. 7:3; Moesgard Museum, 1393 CTC). Rather unexpected analogies of ceramics, BK 631, 632 and 644 from Palanga, are the English, Torksey type ceramics of 1035 - 1040, discovered in Lund (Vandrup 1992: 21, 23. Pl. 3:b, c, d, h). These ceramics differentiate by the firing process and vessel form; however, the profiles of the rims surprisingly coincide.

Subtype B-2:a pots were found in all horizons, distributed quite unevenly (Figure 108). Characteristic of vessels in this subtype are long, vertical necks

and rims flared outwardly (Figures 130 and 131). The necks are 2 cm - 3.5 cm high. There is not a single reconstructed vessel available for the researchers here; therefore, this subtype, which contains seventeen pieces of ceramics (Table 13), is only distinguishable by the upper part of the pots. The diameters of the mouths are quite varied, ranging from 15 cm up to 24 cm. Only one vessel, BK 271, has a mouth with a diameter of about 12 cm. Among the existing fragments, eleven belong to pots produced on a rotating wheel, whereas the other six, on a slowly rotating wheel. Most of the vessels are decorated with shallow grooves and, more rarely, with waves (two units). BK 186 has a rim with a wave decorating its edge. Finger indented pits or half-moons at the top of the shoulders with slashes decorating the tops of the rims are characteristic of the pots of this subtype, which are made on a slowly rotating wheel. The neck of one vessel seems to have been decorated in comb ornamentation.

Analogies, dating

There are analogies of these ceramics in the burial grounds of Palanga and Kretinga. A pot fragment with a rim nearly identical to that of BK 186, 188 and 238 was in Grave No. 175; meanwhile the profiles of BK 252, 351 and 743 and K 1076 are the same as for the ceramics in Grave No. 244 (Sadauskaitė-Mulevičienė 1965:

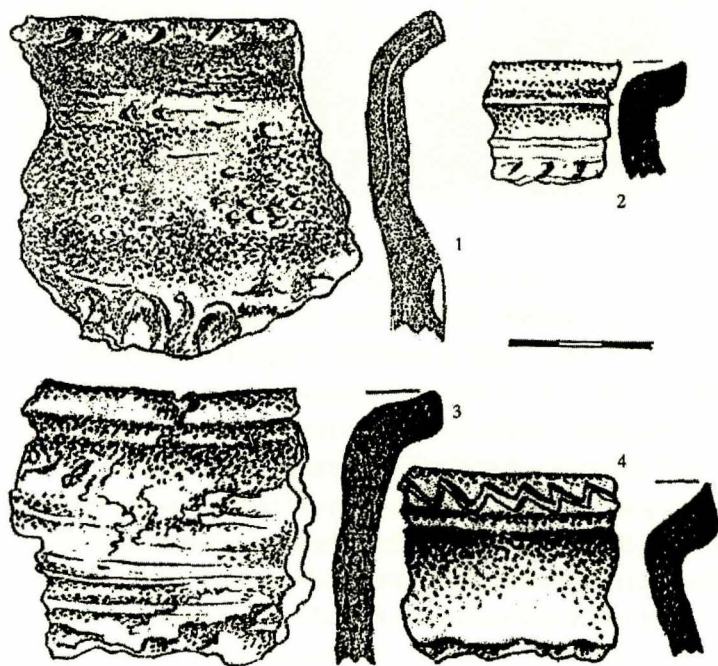


Figure 130. Type B-2:a ceramics found in the settlement at the foot of Birutė Hill

1. BK 48
2. BK 238
3. BK 188
4. BK 186

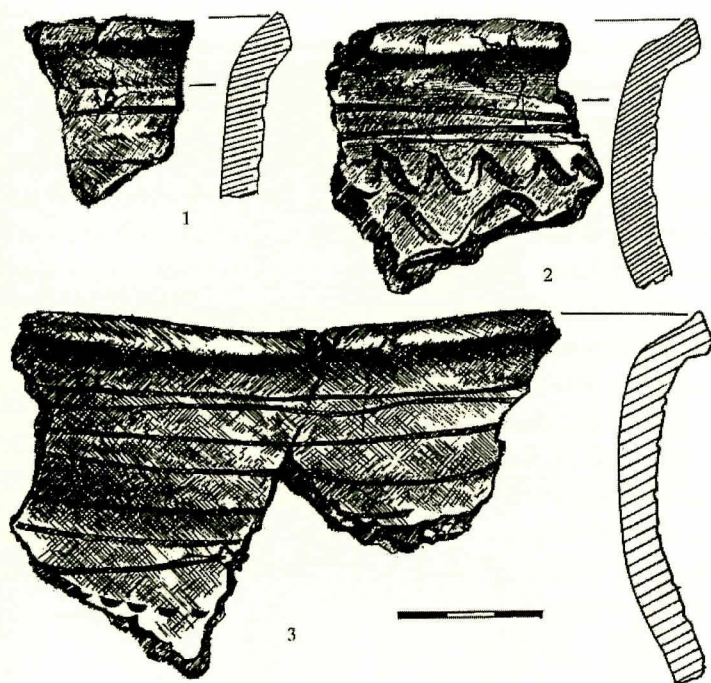


Figure 131. Type B-2:a ceramics found in the settlement at the foot of Birutė Hill
1. BK 814
2. BK 535
3. BK 743

Figure 3, 3 and 5). According to their inventory, the graves are dated at the 11th - 13th centuries and the 10th - 11th century (IIA, 182 and 183). There is a corresponding profile to that of BK 271 in Grave No. 41 at Kretinga, from the end 11th - early 12th century (Jablonskis 1983). Similar ceramics were also found in the 11th - 12th century graves in Joniškis by Klaipėda (Hoffman 1941: Taf. 14th, f 2). While excavating at the Kaunas castle (Mekas 1959: KVIM, inv. kn. 1, apr. 3, No. 766) and the Žardė Settlement, dated at the 11th - 13th century (Genys 1995: 121-123), a fragment of a B-2:a profile was found at the Šatrija Settlement, in the Telšiai region (Valatkienė 1985: LIIA, No. 1210, p. 144). There are many analogies of Subtype B-2:a in the late Slavic, *Teterow* ceramics (Schuldt 1956: Abb. 53, 56: c, 75: a) as well as the vessels that appeared due to their influence from Scandinavia. These ceramics, found in Visby of the Middle Ages, are termed “Venden pottery” (Forsström 1976: 63. Figure 7:1). Many pieces of ceramics have been found with rim profiles that are identical to those found in Palanga, except they are more vertical. The Haithabu group (Hb B₃) appeared around the beginning of the 12th century; it was still known even during the 13th century. It arrived from the western Slavs—these ceramics are known in Old Lübeck, up to the middle of the 12th century (Hübener 1959: 45, 143 and 146.

Taf. 8: 218). The analogue of BK 271 in Germany is dated at the 11th century (Knorr 1937: Abb. 35), cf., Kretinga Grave No. 41. The edges of pots of this profile, also analogical to BK 743, were found while excavating at Starigard/Oldenburg (Kempke 1984: 28. Abb. 8; Gabriel, Kempke 1991: 123-148. S. 142. Abb. 23:2). The profiles of the tops of pots, BK 48, 252, 271, 272 and 814, are the same as those of the ceramics found in Wolin, in 1150 - 1250 layers (Wilde 1934: Tab. II, 21:1). The same sorts of ceramics are more accurately dated in Gdansk, ascribed to the period of 1115 - 1140 (Lepówna 1968: 232, ryc. 39:f), and in the lands of Chelm, to the 11th - 12th / 13th centuries (Poliński 1996: 25, ryc. 4a, 74a, 74b). Ceramics with rims of an analogical profile in Prussian lands are not dated to any greater accuracy (Ефремов 2006: 50, 56).

Subtype B- 2:c contains only two vessels (Table 13), which are very similar to Subtype B-2:a pots, except that they differ by their technology and ornamentation. The pots also have tall necks and nearly vertical, outwardly flared rims (Figure 132). They are thinner (about 5 mm) and well-fired. The necks and shoulders are decorated with grooves and a comb ornament. A small perforation has been drilled into the neck of one pot. Both vessels were found in the stain of Structure No. 5, in Horizon 5.

Analogies, dating

Two fragments with such a profile were found in Grave No. 336 at the burial grounds of Palanga, which were not dated to any degree of accuracy (Sadauskaitė - Mulevičienė 1965: Figure 3, 1). In Germany these sorts of ceramics are ascribed to the group of late Slavic ceramics and dated at the 12th - 13th century (Schuldt 1956: Abb. 53: b, 56: b).

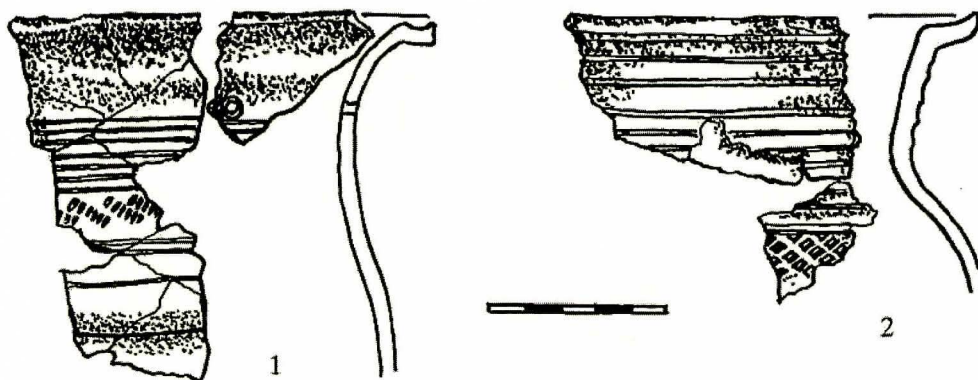


Figure 132. Type B-2:c ceramics found in the settlement at the foot of Birutė Hill

1. BK 166

2. BK 165

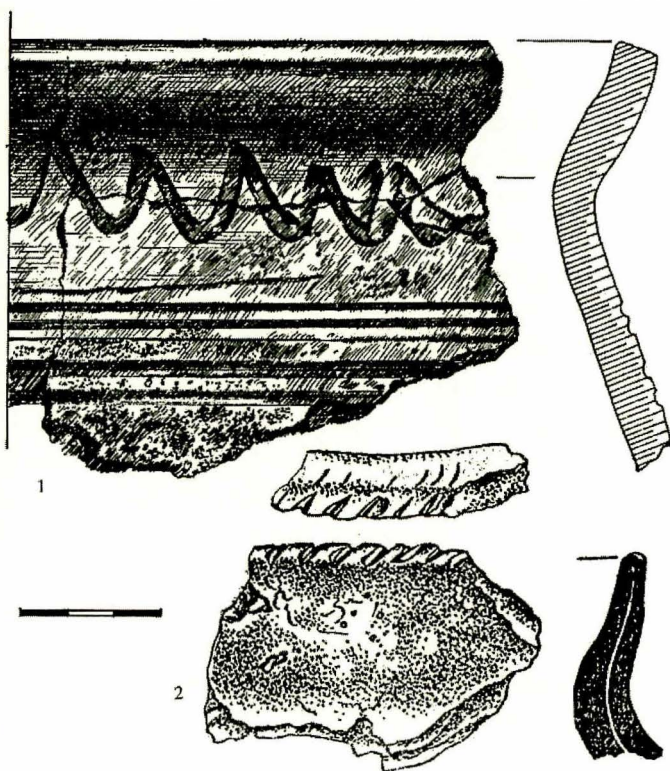


Figure 133. Type B-3:a ceramics found in the settlement at the foot of Birutė Hill
1. BK 507
2. BK 59

Type B-3

The fragments of eight pots that did not fit with any other types were designated to this type. The attribute that is common to vessels of this type is the long, not profiled and, more or less, outwardly flared rims. All the pot fragments produced on a rotating wheel contain pronounced marks of production on a slowly rotating wheel. Two subtypes are differentiated (Table 13).

Subtype B-3:a contains fragments from the tops of two pots, with rims that are high and flared outwardly, having a hollow inside (Figure 133). The diameters of the mouths are 23 cm (BK 59) and 19.5 cm. The top of the rim of the first pot, made on a slowly rotating wheel, is decorated with slashes; whereas the other has waves on its neck and grooves on its shoulders. Both fragments are among the finds from the first horizon.

Analogies, dating

There are not many analogies of this subtype of ceramics. One such fully reconstructed pot, produced on a rotating wheel (having a height of 17 cm and

a 16 cm diameter of the mouth, 17 cm of the shoulders and 9 cm of the base), was found in Grave No. 340 at Palanga (IEM K. 340: 2525. Volkaitė - Kulikauskienė 1970: 80, Figure 7). This one is not more accurately dated. Analogies are found in the late Slavic ceramics group, *Vipperow* (Schuldt 1956: Abb.79:e). The fragment of a pot produced on a rotating wheel of such a profile, dated at the end of the 10th century - 1100, was found in Starigard/Oldenburg (Kempke 1984: Taf.17:4, 81). Actually there are many similar rims in Jutland of the traditional ceramics, made on a slowly rotating wheel, during the "Viking Times" of Scandinavia; however, the vessel forms of those times are entirely different (Moesgård Museum, Denmark, 1393 CFM, 1393 CGH). It is possible that rims of such a profile originated from traditional Curonian ceramics, once the technology for production on a slowly rotating wheel was launched.

Subtype B-3:b consists of fragments from the tops of four pots (Figure 134), which have rims of a simple form, very close to the pot rims of Type A-1. However, all the vessels of this subtype under discussion are produced on a rotating wheel. Not a single full pot has remained; therefore it is difficult to ascertain how similar the Subtype B-3:b vessels might be to the Type A-1 pots. Possibly, as the tradition of production on a rotating wheel was becoming entrenched, some of the pots were made with an eye to the traditional, hand-shaped Type A-1 pots, which were the most widely disseminated in this settlement. All four fragments were found in Horizon 1 of the cultural layer. These are decorated with grooves and a wave, and the top of one rim is with slashes.

Type C-1

Six fragments (Table 13) have rims that are short and upright or nearly inconspicuously flared outward; from the bottoms of the rims, very sloping and sharply widening shoulders proceed. An effort to reconstruct a vessel in full profile was not successful, so the form of the pots can only be surmised. The very characteristic profile of the upper part indicates that these pots were comparatively short and had bellies towards the middle; they had been in a bi-conical shape. The mouths of the pots had been 20 cm - 24 cm in diameter. Five pots of this grade had been made on a slowly rotating wheel, and

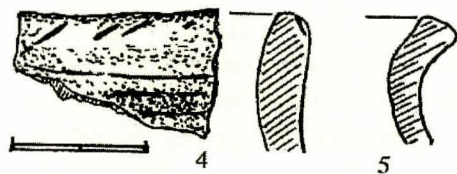


Figure 134. Type B-3:b ceramics found in the settlement at the foot of Birutė Hill

1. BK 1097 2. BK 1098

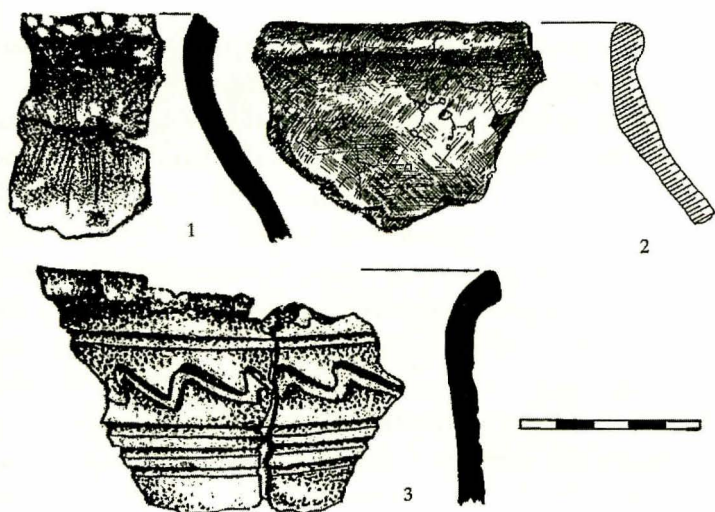


Figure 135. Type C-1 ceramics found in the settlement at the foot of Birutė Hill

1. BK 206
2. BK 538
3. BK 177

only one, BK 177, on a rotating wheel. The latter was decorated with an ornament of grooves and waves. The tops of the rims of three, amidst those made on a slowly rotating wheel, are decorated—one with finger-pressed stamps, another with slashes and the third with indentations by a crook. Though the fragments of the vessels of this type are not abundant, they were found in all the horizons of the cultural layer, except the very oldest one (Figure 108).

Analogs, dating

Earlier the ceramics of this grade was being linked to the so-called bi-conical pots, characteristic of Slavic ceramics (Žulkus, Klimka 1989: 49). Nevertheless, this claim should be corrected. Since there is not a single, fully reconstructed vessel, the form of the pots in this subtype cannot be determined. Besides, the so-named *Groß Raden* Ceramics of the middle period are dated at the 9th - start of the 11th century (Gabriel, Kempke 1991: 130, 138. Abb. 15, 21); these fragments had also been in later horizons of the cultural layer. Analogs of the ceramics of a rather simple profile, which is very similar to that of Palanga, are not only at the fire places of the Palanga burial grounds but at other cemeteries of Lithuania as well, such as at Purvynai and Radikiai (Sadauskaitė - Mulevičienė 196: Figure 2, 7-9, 10; Figure 5). It is possible that pots of this subtype originated from the local ceramics. Only the ornament, characteristic of pots produced on a rotating wheel, has been borrowed. The similarity to the aforementioned type of Slavic ceramics is merely coincidental.

Type D-1

There are barely five vessels of this type, but they are separated into two subtypes. Fragments of vessels with handles are ascribed to this type.

Subtype D-1:a contains fragments of four jugs (Table 13), which were found in Horizons 3, 3A and 5. One of them, G-317, has traces of a handle, which had been about 3 cm in width, at the top of the rim. The rest have a characteristic form and decor (Figure 136). The mouths of the jugs had been wide, at diameters of 17 cm - 19 cm, and the rims high, merging into the neck. The edge of the exterior rim of BK 643 is profiled with grooves. The shoulders of the jugs are made pronounced and, moving downward from the shoulders, the sides of the vessels narrow sharply. The bases of all the jugs were smaller than the mouths were. These do not differentiate from among the other ceramics by a good firing process, but the fragment is thinner—the linings of the jugs had been 5 mm - 8 mm. All the jugs had been decorated with grooves, waves, a comb ornament and stamps, while the neck and shoulders of BK 643 additionally contain vertically striated rows.

Analogies, dating

No direct analogies are in possession. Only one jug, BK 643, contains décor of vertical striae, which invokes the decorating method characteristic of western Slavic pots and jugs. Vessels decorated in this way are also in the Slavic ceramics of the 7th - 12th century, middle and late time periods (Schuldt 1956: Abb. 4:a, 8 b; Corpus 1973: 203 and 223. N. 24/35:2, 26/47:21; Kempke 1984: Taf. 40). These randomly appear in Scandinavia as well (Arbman 1940: Taf. 219, 551, 597), where the décor of this nature is associated with the 8th - 10th century Tating type jugs, brought in from Western Europe (Madsen 1991: 227 and 228. Figure 20).

Subtype D-1:b has been assigned only one pot for the time being (Table 13). This vessel, BK 42, was crudely produced on a rotating wheel and has a mouth of about 19 cm in diameter. It has a flared rim that is not profiled and, on top of it, there had been a handle, some 3 cm in width (Figure 136). It was found in the third horizon of the cultural layer. The fragment of a handle, BK 198, was also found in that same horizon; however, it is already characteristic of 16th - 17th century ceramics. Thus it will have ended up in that layer by chance occurrence.

Type E vessels are decorated with wheel-shaped head (and stamp ?) ornamentation (Figure 160). The ornament is very similar—rectangles are laid out in various patterns of horizontal strips. The ornamentation is at the sides of the vessels, which are 7 mm - 9 mm in thickness. Additionally, in the K 1084 fragment, the bottom of the vessel, right by the base, had been thusly

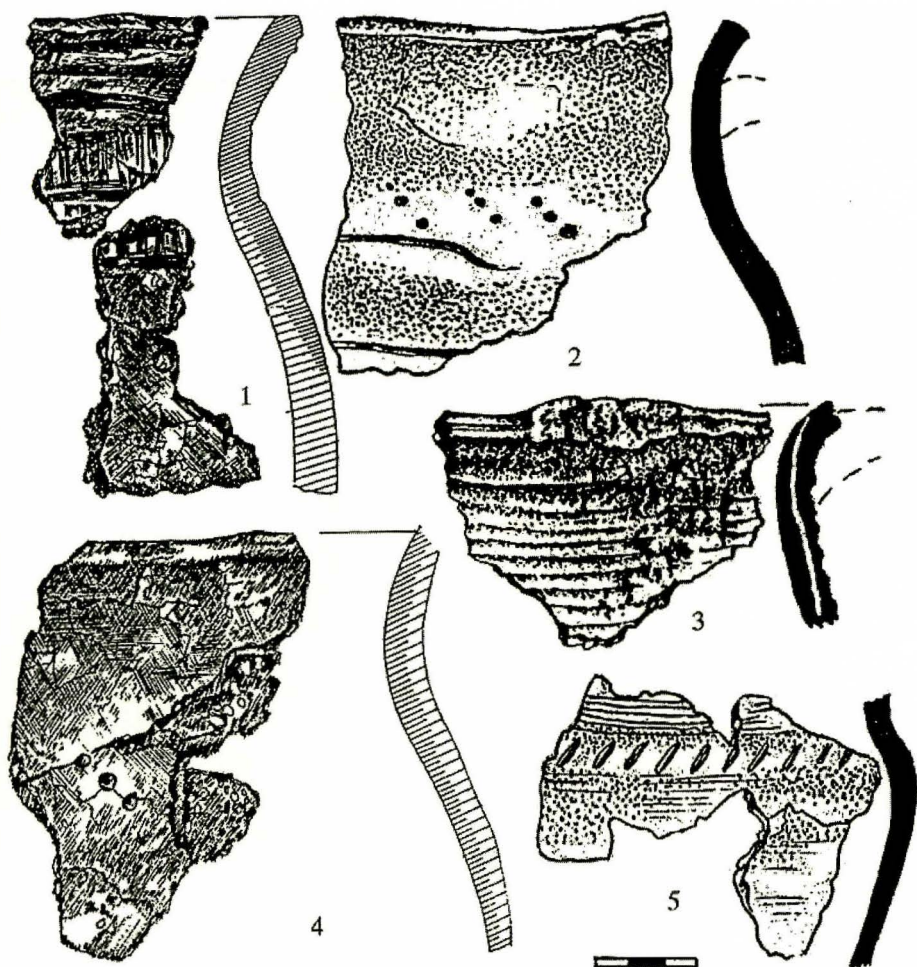


Figure 136. Types D-1:a and D-1:b ceramics found in the settlement at the foot of Birutė Hill
 1. BK 643 2. G-137 3. BK 42 4. BK 179 5. BK 84

decorated as well. Ceramics of this type were found in Horizons 1, 2, 3 and 5. Ornamentation is discussed in greater detail in subsection, *Ceramics Décor*.

Žemaičių Hillock

In comparison with the ceramics found at Birutė Hill, there were significantly fewer pot fragments found here. Regardless, the fragments from Žemaičių Hillock were just about as varied. The major ceramics types and many subtypes were found here, and some of the pot fragments even had original profiles (Table 20).

Table 20
Ceramics Types at the Žemaičių Hillock Settlement

Types	Subtypes	Inventory Numbers of Pot Fragments
A-1	A-1:a	29, 30, 43, 45, 72, 85, 93, 107, 108, 116, 124, 136, 137, 157, 166, 167, 171, 180
	A-1:b	49
	A-1:d	4, 5, 78, 181
A-2	A-2:a	39, 77
	A-2:b	
A-3	A-3:c	7, 50
B-1	B-1:a	57, 72, 92
	B-1:b	84, 152
	B-1:c	3
B-2	B-2:a	2, 115
	B-2:b	105, 114, 130
B-3	B-3:b	1
D-1	D-1:a	179
E		112, 117

The distribution of ceramics types in the different horizons of Žemaičių Hillock is entirely different. There were only Type A-1:a ceramics in all the horizons. In Horizons 4 and 5, no other ceramics were found at all. Merely two fragments were ascribed to Horizon 3 of which one is Type A-1:a, and the other is Type B-1:c. All the varieties of the ceramics were in the upper Horizons 1, 2 and 2A (Figure 137).

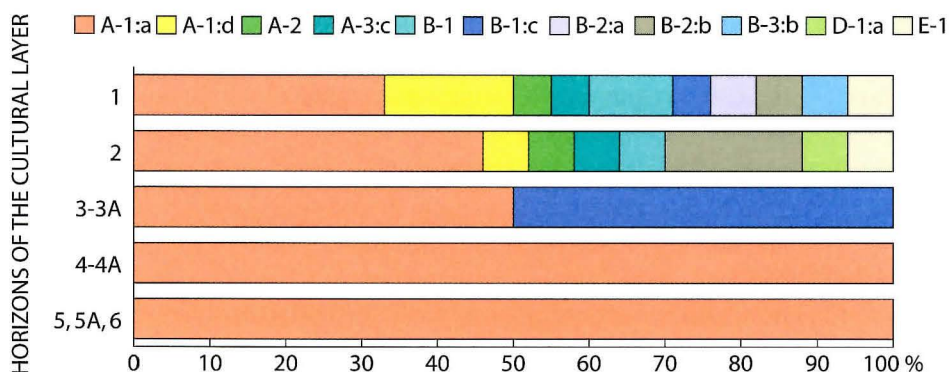


Figure 137. Distribution of ceramics types in the cultural layer of Žemaičių Hillock

Subtype A-1:a

These pots did not differ from the vessels of the same subtype. found in the settlement at the foot of Birutė Hill (Figures 138 and 139). One, fully profiled vessel actually did have an uncommonly small base, the diameter of which was as much as two times smaller than the diameter of the mouth was (Table 21).

Table 21

Type A-1, Subtype A-1:a Reconstructed Pot by Size and Proportions at Žemaičių Hillock

ŽK No.	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
180	35	28.5 (average)	29.5	14.6	1.2	2

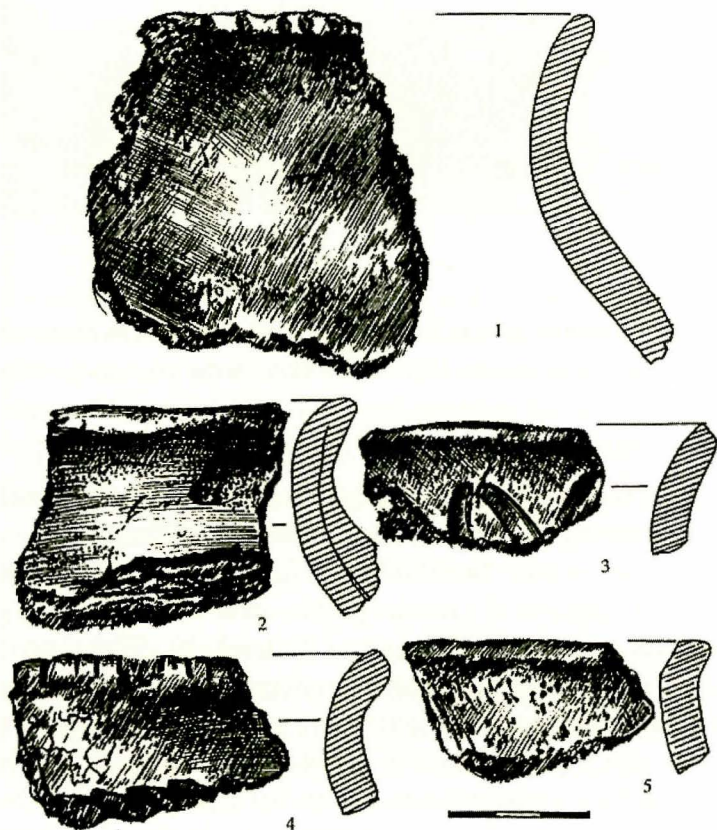


Figure 138. Type A-1:a ceramics found in Žemaičių Hillock

1. ŽK 43
2. ŽK 72
3. ŽK 85
4. ŽK 93
5. ŽK 116

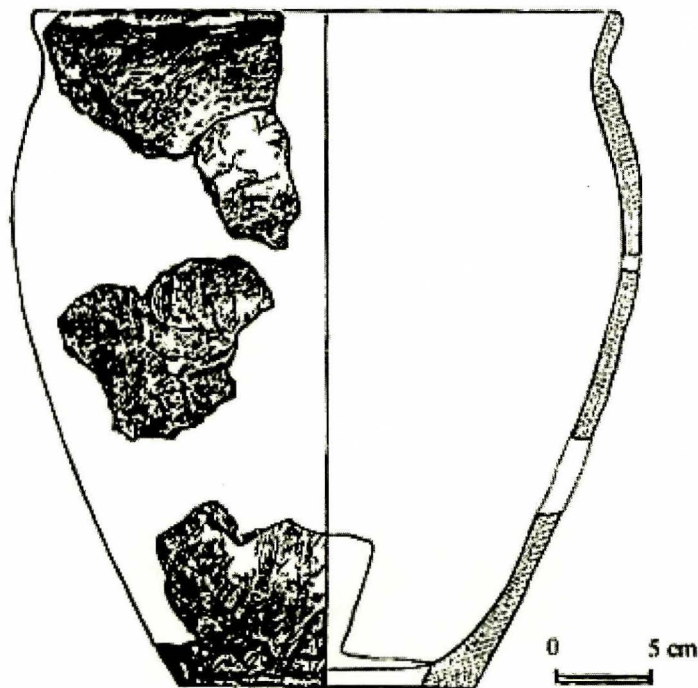


Figure 139. Type
A-1:a pot found
in Žemaičių
Hillock—ŽK 180

Subtype A-1:d

The fragments of only four vessels were found (Table 20). One was in Horizon 2A, and the other was in the uppermost, Horizon 1. There were no vessels fully profiled (Figure 140).

Analogies, dating

Such pots, in addition to those found in the settlement at the foot of Birutė Hill, were also found in the layers of the Southern Settlement. One was even dated at the 16th century (see below). There had been such vessels in the burial grounds of Palanga. A pot fragment of a similar profile, made on a rotating or a slowly rotating wheel, was discovered in Kiauleikiai (Sadauskaitė - Mulevičienė 1965: Figure 2, 2; Figure 5). This type of a crudely produced vessel on a rotating wheel was found in Varniai and dated at the 15th - 16th century (Genys 1987: 42, 43. Figure 4). Although this type of ceramics is not amply known, it highly disseminated in a geographical sense and across time. For this reason it can be asserted that Subtype A-1:d ceramics had a local origin and developed because

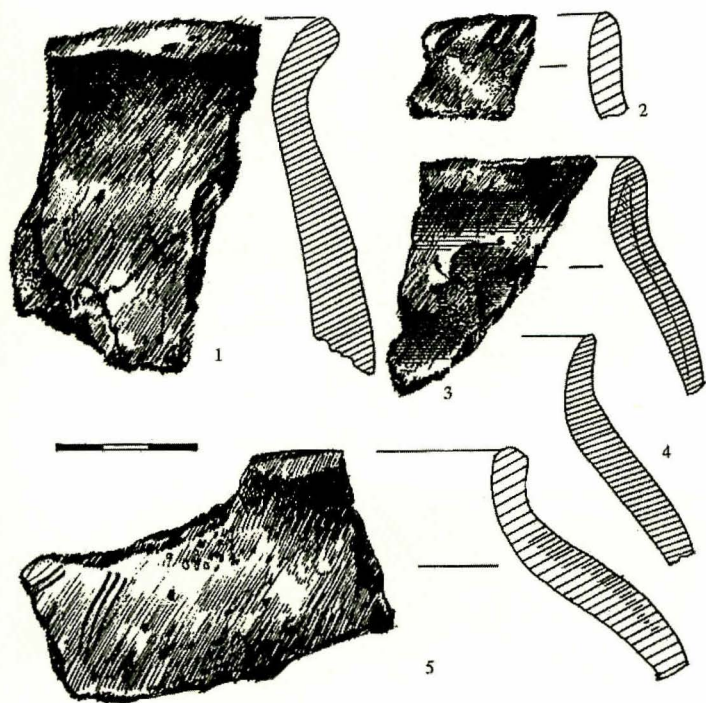


Figure 140. Types A-1:b (No. 1 here) and A-1:d ceramics found in Žemaičių Hillock
 1. ŽK 49
 2. ŽK 4
 3. ŽK 5
 4. ŽK 78
 5. ŽK 18

of local traditions. The finds from Prussian dwelling areas substantiate such an assumption. While excavating the ceramics in the surroundings of the Truso trading center, which were also characteristic for western Slavs, there were local pot fragments found as well, dated at the 9th - 10th century (Jagodziński, Kasprzycka 1990: Ryc. 9b: d, g). Here, these are ascribed to Subtype A-1:d.

Subtype A-2:a

These pots did not differ from the vessels of the same subtype, found in the settlement at the foot of Birutė Hill (Figure 141).

Subtype B-1:b

Only two pots, ŽK 84 and 152, had rims that are characteristic of this subtype (Figure 142). Both are similar to the pots of this subtype found at the Birutė Hill Settlement; however, just as with BK 711, their analogies are in German but not Slavic ceramics. According to G. Mangelsdorf, German ceramics with rims of this type appeared in the region of western Elbe during the 11th century and disseminated during the 12th century (Mangelsdorf 1994: 54 and 55. Taf. 7:8; 9:1; 13:11).

Figure 141. Type
A-2:a ceramics
found in Žemaičių
Hillock
1. ŽK 39
2. ŽK 77

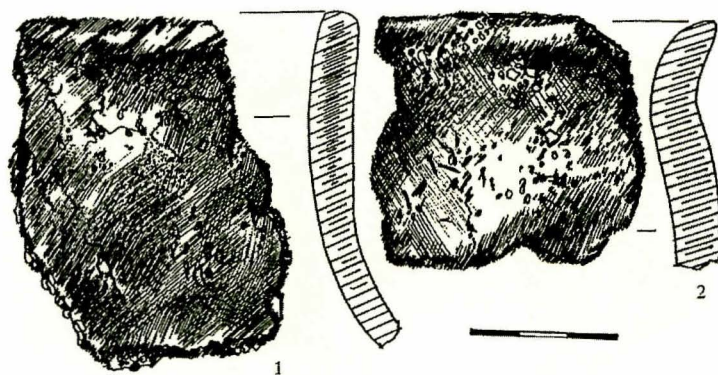
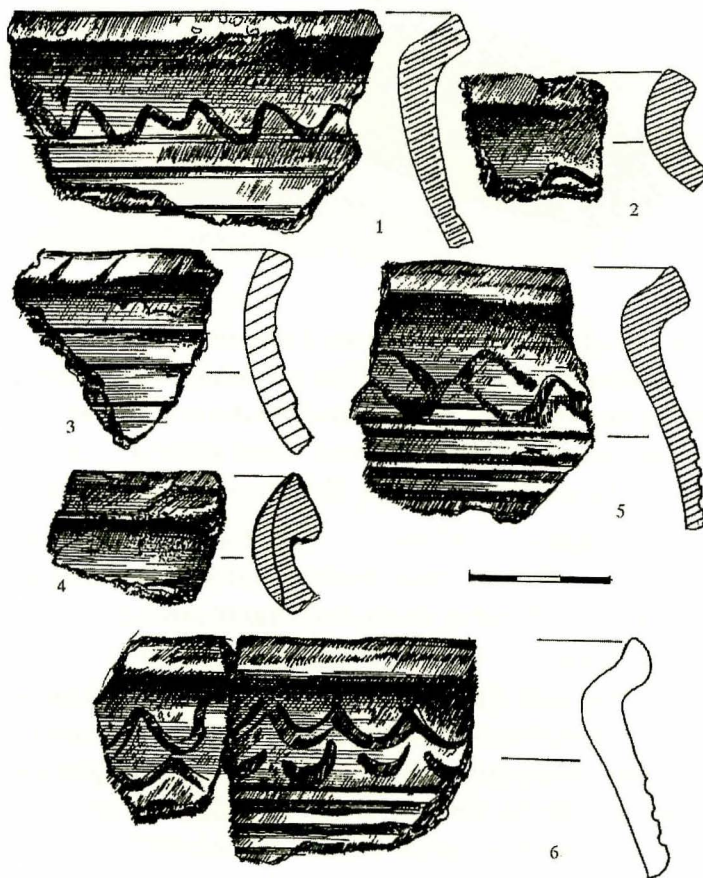


Figure 142. Types
B-1:a (Nos. 1 - 3
here), B-1:b (Nos.
5 and 6) and B-1:c
(No. 4) ceram-
ics found in
Žemaičių Hillock
1. ŽK 92
2. ŽK 57
3. ŽK 71
4. ŽK 3
5. ŽK 84
6. ŽK 152



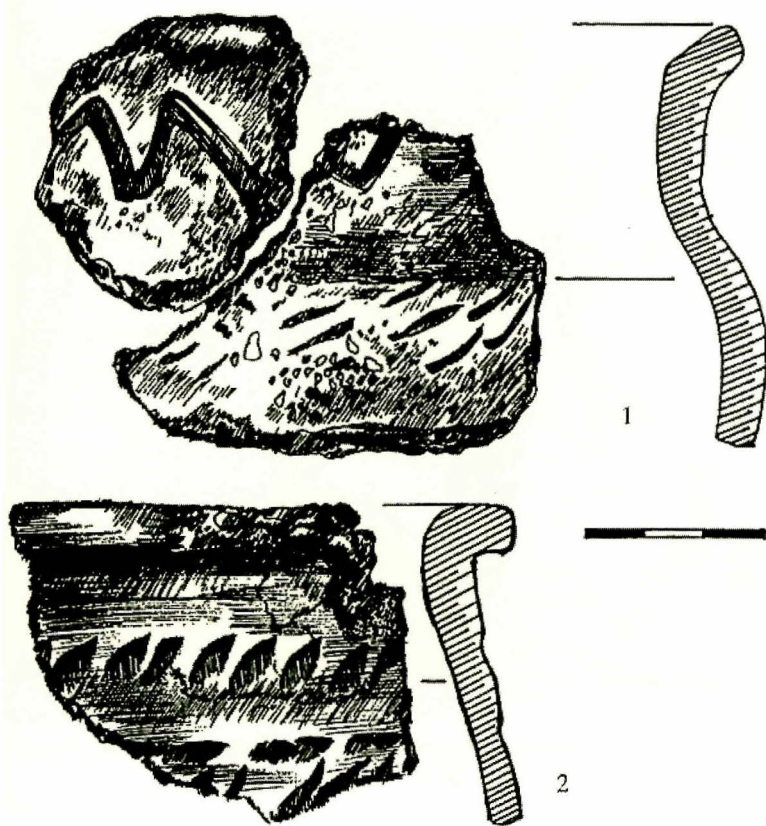


Figure 143.
Type B-2:a
ceramics found
in Žemaičių
Hillock
1. ŽK 115
2. ŽK 2

The ceramics in Lübeck with rims of such a profile are dated at the middle of the 12th - the middle of the 13th century (Gläser 1992: 188-189, 224, 226, 231 and 244, Abb. 7:14; 9; 14:8, 15; 27:5; Schalties 1992: 313, 3165, 341 and 343, Abb. 5:11; 7:4, 6). South of Jutland there were German pots, the upper parts of which had analogical profiles, found in 13th - 14th century layers as well (Ericsson 1984: 99-101, Taf. 17:8, 9). Despite the analogies in profiles of the upper part of the pots, not a single pot with a rounded base that is characteristic of German pots was found, not even in Palanga.

Subtype B-1:c

There is but one fragment, ŽK 3, here. It had been found in the uppermost, first horizon (Figure 142). This pot had once had a highly widened, outwardly flared rim at its bottom. Rims of such a type have a German origin, found in the 13th - 15th centuries (Mangelsdorf 1994: 58-61. Abb. 31:1) and later. At the castle site

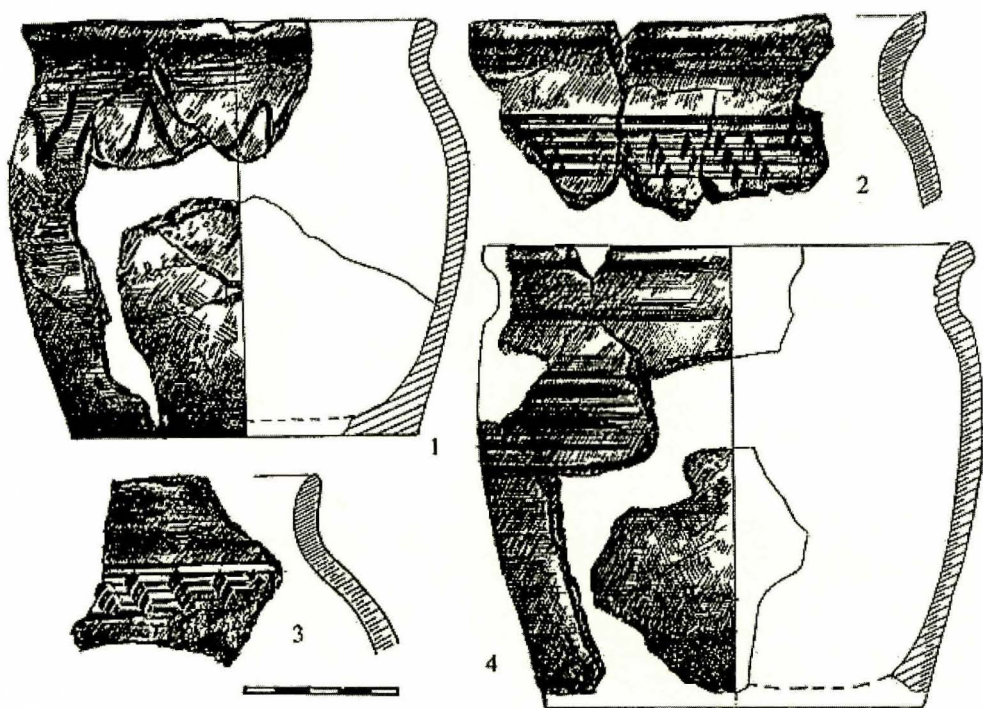


Figure 144. Types B-2:b (Nos. 1 - 3 here) and B-3:b ceramics found in Žemaičių Hillock
1. ŽK 130 2. ŽK 105 3. ŽK 114 4. ŽK 1

in Klaipėda, pots of such a profile had been in 14th - 16th century cultural layers (Žulkus 1991: 12, 28, 40; Žulkus 2002).

Subtype B-2:a contains ceramics (Figure 143) that are entirely analogical to those found at the Birutė Hill Settlement.

Subtype B-2:b includes three vessels ascribed to this subtype (Table 20) of which two are fully reconstructed (Table 22 and Figure 144). There were no such vessels in the Birutė Hill Settlement. The fact is that entirely analogical vessels from the settlement at the foot of Birutė Hill, except that they are hand-shaped or have very inconspicuous marks of production on a slowly rotating wheel, are ascribed to Subtype A-2:b. Apparently the Subtype B-2:b pots from Žemaičių Hillock evolved from small, hand-shaped pots, which have analogical forms and proportions. The rims of small, hand-shaped pots do not differ much from those produced on a rotating wheel. The latter are simply more profiled and, additionally, the internal side of ŽK 114 has two grooves.

Table 22

Type B-2, Subtype B-2:b Pot Size and Proportions at Žemaičių Hillock

ŽK No.	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
114	15	15.5	16	12	1	1.3
130	13.3	13	14.5	11	1	1.2

Analogies, dating

Analogies of the vessels, ascribed to the subtype under discussion, were not found by this author in Baltic material. Externally the rims of Subtype B-2: b have analogies amid the Slavic ceramics in Germany. At least one example, dated at the 11th century, can be indicated (Knorr 1937: 28, Abb. 25).

Type D-1 is represented by the fragment of just one jug. Actually there are no traces of a handle. Nevertheless, the profile of this vessel is characteristic and has the same décor as the vessels found in the settlement at the foot of Birutė Hill. This permits ascribing fragment ŽK 179 to jugs (Figure 136).

Subtype E-1 contains two fragments decorated in an ornament with a wheel-shaped head. Both were found in Horizon 2. This subtype is discussed in greater detail in the part about the décor of ceramics.

Table 23

Ceramics Types at the Southern Settlement

Types	Subtypes	Pot Fragment Inventory Numbers
A-1	A-1:a	16, 25, 50, 72, 247, 248, 253, 265
A-2	A-2:b	246, 253
A-3	A-3:a	255
	A-3:c	247
B-1	B-1:a	15, 78, 79, 235, 275
	B-1:b	70, 284
	B-1:d	192, 225, 226, 228, 286, 287, 294
	B-2:b	4, 45, 48, 65, 77, 242
B-3	B-3:b	205, 224, 236
	B-3:c	288, 314, 315, 316
C-1	C-1:a	191

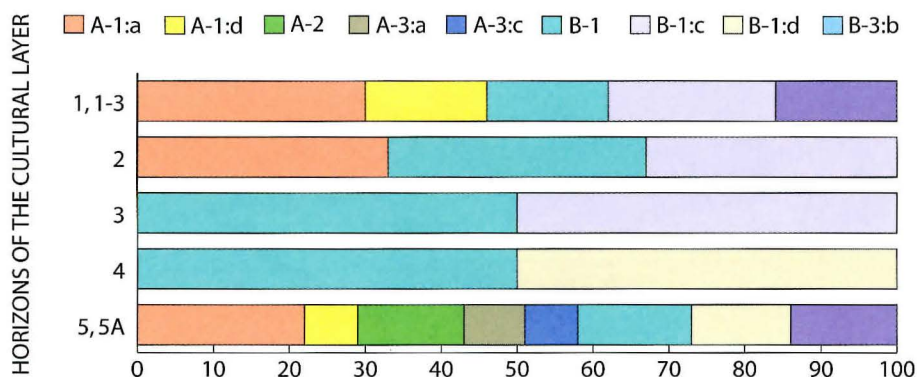


Figure 145. Distribution of ceramics types in the cultural layer of the Southern Settlement

The greater portion of the ceramics types from the Southern Settlement are identical to those, distinguished in the settlements at the foot of Birutė Hill and on Žemaičių Hillock. Among all the ceramics, only one pot, P 225, was reconstructed to its full height. Comparatively there were not many pot fragments in the Southern Settlement. Therefore, their distribution in different horizons of the cultural layer is quite uneven and not very reliable in terms of statistics (Figure 145). For this reason it can only be asserted that one or another ceramics type (Figures 146 - 152) had been in one or another horizon, but no objective discussion about their distribution is possible. Actually the ceramics of Subtypes A-2, A-3:a and A-3:c were only in the bottom, Horizons 5 and 5A of the cultural layer. The pot fragments, sorted into Subtype B-1:c (Figure 147), were in Horizons 1 - 3; none were found in the older layers.

Table 24

Type A-1, Subtype A-1:d Reconstructed Pot by Size and Proportions at the Southern Settlement

P No.	(by cm)					
	Height	Mouth diameter	Shoulders diameter	Base diameter	Height / mouth diameter	Mouth diameter / base diameter
225	23.5	16.2	25.6	19.2	1.45	0.8

Subtype B-1:d contains the rims of pots, which are similar to Subtype A-1:d vessels, found in the settlements at the foot of Birutė Hill and on Žemaičių Hillock. Their rims are just as short, and the shoulders are high. The difference

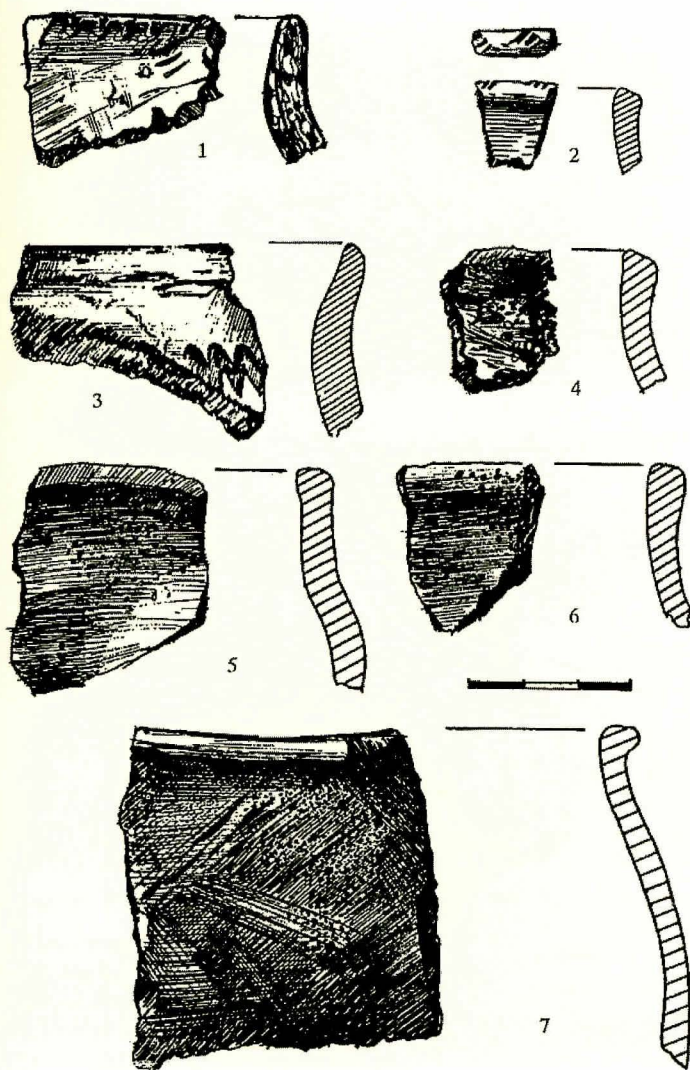


Figure 146.
Types A-1:a
(Nos. 1 - 5 and 7
here) and A-2:b
ceramics found
in the Southern
Settlement

- 1. P 25
- 2. P 50
- 3. P 72
- 4. P 272
- 5. P 247
- 6. P 246
- 7. P 265

is that the vessels ascribed to Subtype B-1:d are produced on a rotating wheel (Figures 148 and 149). Apparently, even after production on a rotating wheel had disseminated, the old pot forms were still vital. The only vessel of this subtype that was fully reconstructed, P 225, might be something akin to a link in the chain between analogical pots, which are hand-shaped and those produced on

Figure 147.
Types B-1:a
(Nos. 1 - 4 here)
and B-1:b (No. 5)
ceramics found
in the Southern
Settlement

1. P 78
2. P 79
3. P 235
4. P 275
5. P 70

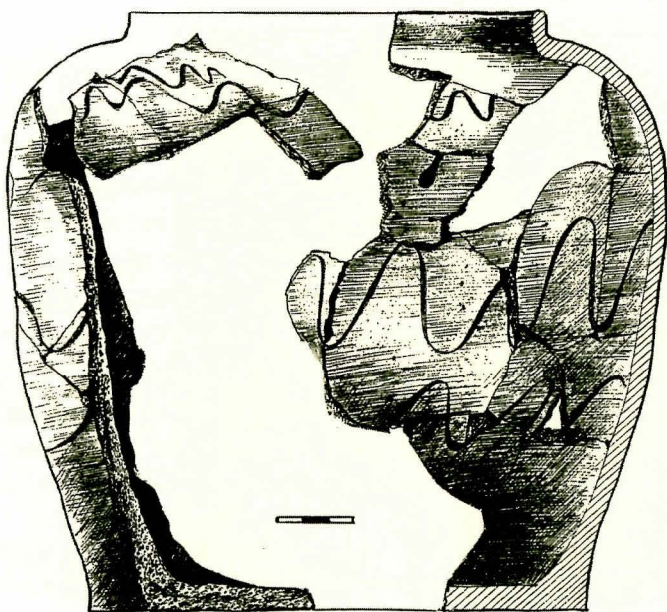
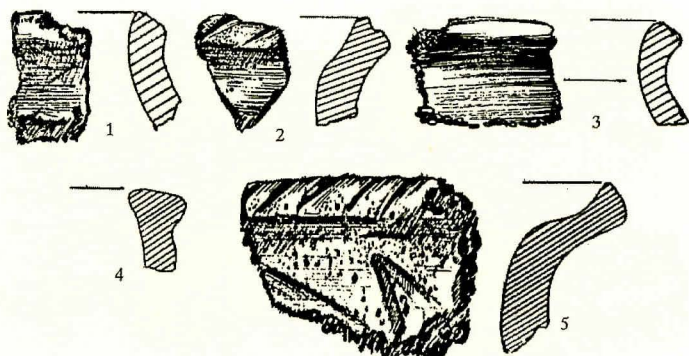
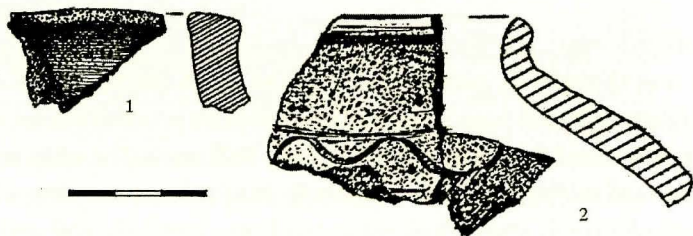


Figure 148. Type
B-1:d pot, found
in the Southern
Settlement—
P 225

Figure 149.
Type B-1:d
ceramics found
in the Southern
Settlement

1. P 192
2. P 226



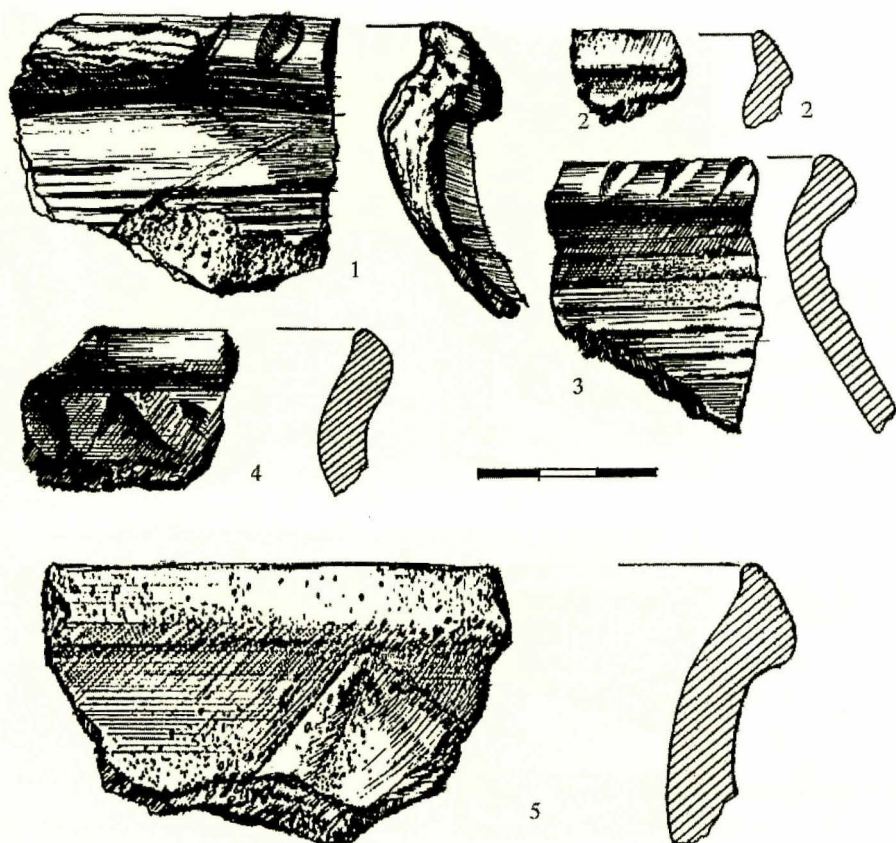


Figure 150. Type B-2:b ceramics found in the Southern Settlement

1. P 4 2. P 65 3. P 48 4. P 45 5. P 77

a rotating wheel. This pot is both hand-shaped and made on a slowly rotating wheel. It is very crude and poorly fired. Its shoulders are high and wide. This pot type differentiates from the rest by the diameter of its base, which is larger than the mouth is (Table 24).

It is also the latest among the vessels of this grade. It was found together with a coin minted in 1533 (P 230), which could have ended up in the ground during the middle of the 16th century (Žulkus 1990: 41).

Subtype B-2:b has the fragments of six vessels (Figure 157) from the Southern Settlement allocated to it. All of the pot rims were found in the upper horizons of the cultural layer. The analogies and chronology of the ceramics of this subtype were discussed earlier.

Figure 151. Type
B-3:c ceram-
ics found in
the Southern
Settlement
1. P 228
2. P 314

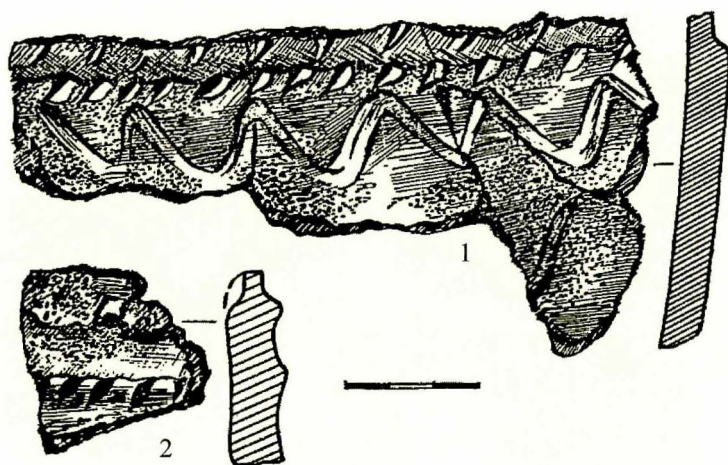
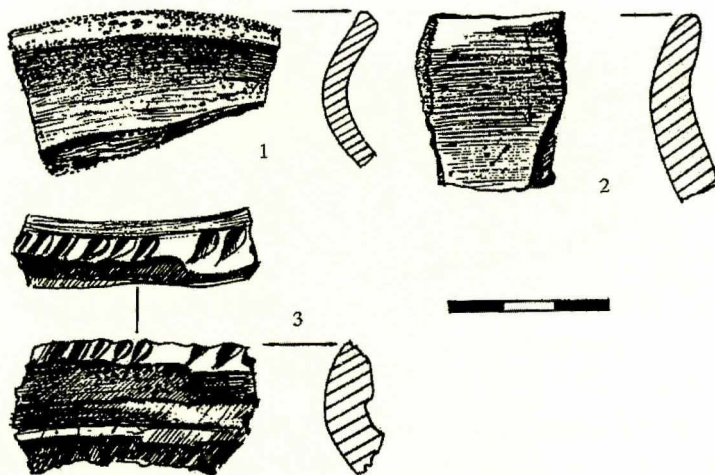


Figure 152. Types
B-3:b (Nos. 1
and 2 here) and
C-1:a (No. 3)
ceramics found
in the Southern
Settlement
1. P 205
2. P 224
3. P 191



Subtype B-3:c contains four pot fragments (Table 23) and only one rim of a vessel, P 314. The rim is high, vertical and massive; the top is rounded. There are small cylinders, decorated with deep slashes, at the top and bottom of the rim. The shoulders of the vessels had not been emphasized; they are just clearly separated from the vertical rim. The cylinders with slashes had also been in the place, where the shoulders differentiate from the rim. There are incised waves below the cylinders (Figure 151).

Analogies, dating

The vessels with shoulders that are separated by small cylinders or a rim and decorated with a wave are characteristic of Slavic *Teterow* and *Weisdiner* ceramics, from the latter half of the 10th - beginning of the 12th century (Knorr 1937; Gabriel, Kempke 1991; Andersen 1980: Taf. 23, 24; Lepówna 1968: 168, ryc. 36-46; Weinkauff 2002: 154 and 159).

Roužě Settlement

There were very few finds that included ceramics excavated from one research area at this settlement (Table 25). The ceramics types are the same as those at the other Palanga settlements. All the ceramics of the Middle Ages were in one layer (Figure 153). An effort to reconstruct at least one pot to its full height from the fragments found at the Roužě Settlement did not prove fruitful.

Table 25
Ceramics Types at Roužě Settlement

Types	Subtypes	Inventory Numbers of Ceramics
A-2	A-2:b	22
B-1	B-1:b	23, 24, 27
	B-1:d	29

Irrespective that the ceramics of this settlement fit well into the general classification (these are ascribed to Slavic ceramics), they do contain a new element—a sharp rim towards the shoulders (R 23) or a small, prominent wave at the top of the shoulders (R 24). A sharp, usually ornamented rim with separated shoulders is also similar to the ceramics of this kind having a profile which, in Gdansk, is dated at the time period from the year 980 up to 1080 (Lepówna 1968: 26, 28, 180, 192, 200, 212, 217, 223, ryc. 27, 31, 33, 35, 36, 37), in other words, approximately up to the 12th century. In Starigard/Oldenburg late Slavic ceramics of such a nature were found in the horizon, which is dated from the second quarter of the 11th - the end of the 12th century (Gabriel, Kempke T. 1991: 139-142. Abb. 22, 23). In general such edges and shoulders that a rim separates, frequently decorated with a small wave, are characteristic of the Slavic *Teterow* and *Weisdiner* ceramics groups, which are dated at the 11th - start of the 12th century (Schuldt 1956: 40, 44. Abb. 58, 68).

Ceramics Décor

About 56% of all the ceramics of Palanga were decorated in one way or another. The most rarely decorated ceramics were those shaped by hand, at all

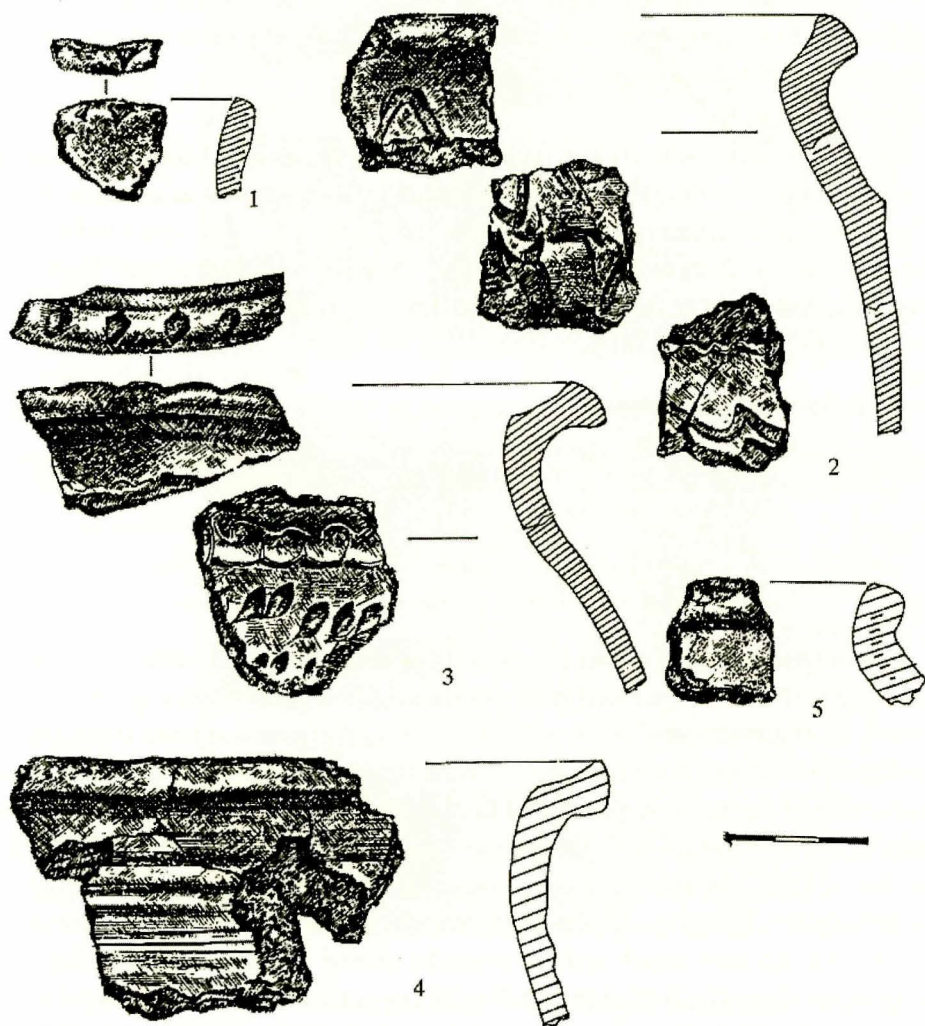


Figure 153. Types A-2:b (No. 1 here), B-1:b (Nos. 2 - 4) and B-1:d (No. 5) ceramics found in the Roužě Settlement

1. R 22

2. R 23

3. R 24

4. R 27

5. R 29

the settlements of Palanga—only some 20% - 30% of all the fragments found. This percentage was significantly higher for the ceramics made on a slowly rotating wheel—from 58% up to 72% had been decorated—and those produced on a rotating wheel—from 70% up to 80%. In fact the pots produced on a rotating wheel are often decorated only with grooves, which could also be considered an attribute of the technology. The percentages indicated for decorated ceramics varied little at the different settlements (Figure 154).

The place of the décor on the pots also differed, depending on the ceramics group. Additionally it appeared that the selection for the place where the ceramics would be decorated also varied somewhat at the different settlements. In the settlements at the foot of Birutė Hill and on Žemaičių Hillock, the rims and necks and the vessel shoulders and sides would often be decorated, though differently (Figures 155 and 156). In the Southern Settlement, the hand-shaped ceramics were not decorated at all, and those produced on a rotating and those on a slowly rotating wheel contained no décor on the necks (Figure 157). The reason for this difference will be discussed later.

The ornamentation was the most modest on Types A-1, A-2 and A-3 ceramics, which were both shaped by hand and produced on a slowly rotating wheel. The largest Type A-1 pots would be decorated exclusively on the tops of the rims, almost without exception (Figure 158). Slashes were the predominate ornamentation, about 45% of it (Figure 159). The slashes were usually diagonal, irregular and sliced, apparently with a knife or some other tool made or adapted especially for this purpose. About 5% of the ornaments would be formed in the shape of

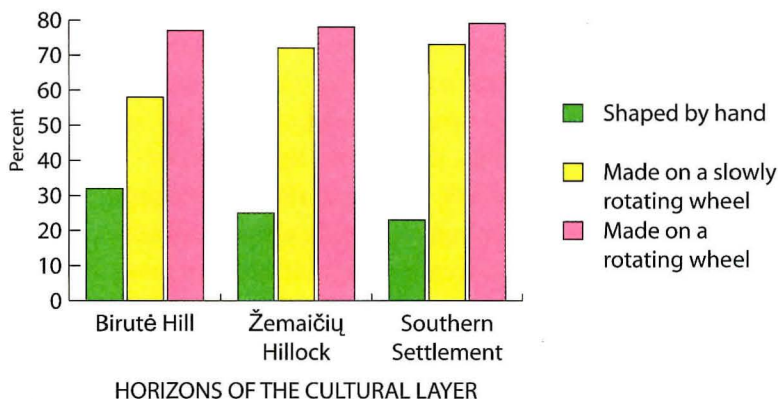


Figure 154. Percent of decorated ceramics by different kinds of ceramics at Palanga settlements

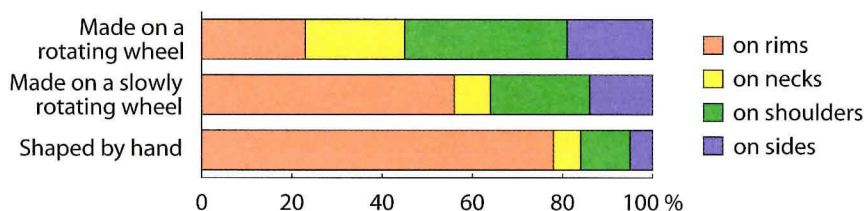


Figure 155. Decorated places on ceramics in the settlement at the foot of Birutė Hill

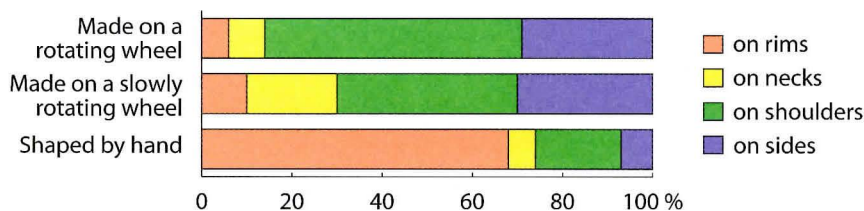


Figure 156. Decorated places on ceramics in Žemaičių Hillock

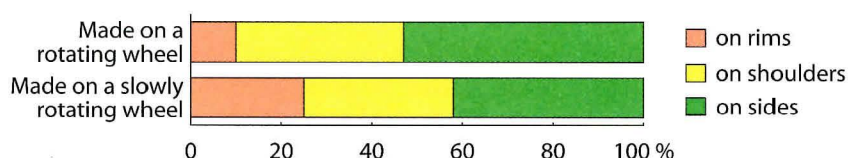


Figure 157. Decorated places on ceramics in the Southern Settlement

a “V” or “\”, in a similar way. The second most frequent ornament, comprising some 25%, was a stamp in the shape of “()”, which was made directly with a claw on the pot rims (Figure 159). This ornament was not always correctly formed; it was often a stamp in the shape of a half-moon. Related to this is the ornament of circular, small pits used as décor on about 16% of the fragments. The pits would be poked with a wooden or bone (possibly also metal) crook, however not always in a regular form. Stamps in a rectangular or triangular form appeared on rims even more rarely (Figure 112, 1 and 5; Figure 123, 3). Type A-3 small and miniature pots were rarely decorated on the rims.

Type A-1 vessels did not always contain shoulders, and only some 6% of all the vessels have ornamented necks. The sides of Group A vessels were not decorated in Palanga.

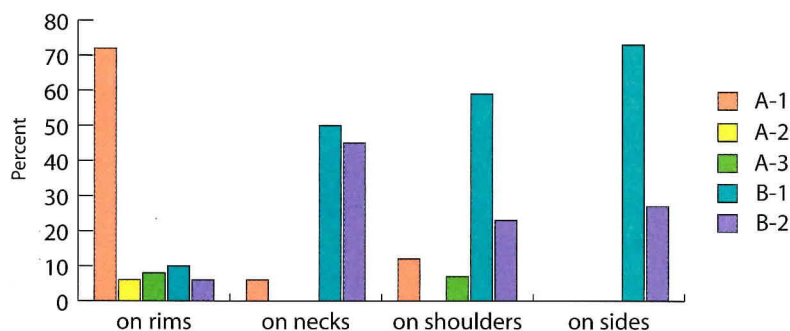


Figure 158. Decor place on the major ceramics types

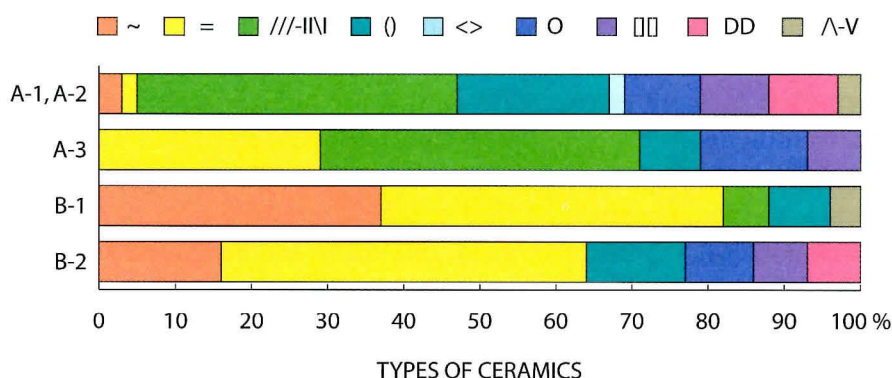


Figure 159. Ornamentation on ceramics at Palanga settlements

Shoulder ornamentation is not complicated—BK 437 contains rare, incised vertical striae (Figure 111, 5). The tops of the shoulders of BK 511 and 512 are decorated with a claw stamp in the shape of “ (” (Figure 112, 2). The shoulders of BK 147 are decorated with a row of small, circular pits. Only three vessels, BK 47, 247 and 318, have a stamp ornament. The first one has a rectangular stamp, laid out in two rows (Figure 160, 7). The second has rhombi indented on the shoulders (Figure 111, 5) and the third has a circular ornament with a criss-cross (Figure 109, 3).

Ornaments of the most primitive slashes, claw stamps and rectangular and triangular stamps have roots in ancient Baltic ceramics. These appeared in the ceramics of late Neolithic cultures in Lithuania, on hatching and rugged surface ceramic pots and on the ceramics of the burial grounds in western Lithuania. These are also known on the ceramics found in the hill-forts of Lithuania

(Rimantienė 1984: 219-233; LAA, II. 1975: 9-25. Kulikauskas 1982). Ceramics decorated with a rectangular stamp, from the Vedgu Settlement by River Lielupė in Latvia, is dated at the middle of the Iron Age (Graudonis 2003: 22-23). The ornament of primitive stamps had also disseminated into many countries at the same time; therefore, it cannot have ethnic attributes (Selling 1955: 38).

It is otherwise with the ornament of a stamp containing a rhombus, rectangle or triangle which was found on the ceramics of the early Middle Ages. Some of these could have appeared due to the influence of local traditions. This author holds an opinion that, at times, there is no reason to search for analogies of ornamentation in neighboring countries. For example, there is room for argument regarding the opinion of German researchers that the 9th - 11th century pot from Ekritten (formerly East Prussia), decorated with a triangular stamp, reflects Danish traditions for embellishing ceramics (Mühlen von zur. 1975: 50, Taf. 20: 3, 5 and 6). Foreign influence needs to be sought when the stamped ornamentation is found in compositions that are not characteristic of Baltic ceramics traditions. Therefore, prototypes and analogies can be sought in ancient, local Baltic ceramics for the BK 47 vessel, which has features of traditional ceramics, with shoulders that had been ornamented with a rectangular stamp (cf. Selling. 1955: 39). On the other hand, this stamp had disseminated broadly, even if not abundantly, on ceramics produced on a rotating wheel during the Early Middle Ages. It is known in Joniškis in western Lithuania (Hoffmann 1941: Taf. 14th: g₄), Rudamina in eastern Lithuania (Kulikauskas 1982: 84, Figure 72:7), western Russian territories, Poland, Gotland and Denmark, and it is sometimes associated with influences from western Slavic ceramics (Малевская 1971; Selling 1955: 39; Hübener 1959: 5). However, the truth is that ceramics ornamentation by means of a rectangular or hollow stamp or a rhombus-shaped stamp has not been found in any large Slavic center, such as Starigard/Oldenburg (Kempke 1984: 31). Such ornamentation is not characteristic of Slavic ceramics from the northeastern territories of Poland either (Poliński 1996: 47 and 49, ryc. 8, 9; Weinkauff 2002: 94, ryc. 13; Janowski 2002: 203, ryc. 22).

The ceramics of Palanga, decorated with an ornament of a rectangular stamp and a wheel-shaped head, which have unknown profiles at the top (Figure 160), are considered the ceramics of the Teutonic Order. There are a great many such analogies in all German cities and castles of the Order, including Klaipėda, where it is dated at the 14th - 16th century (Žulkus 1991: 12, 28). The oldest, known ceramics of this kind are dated, in Germany, at "around 1300." However, as E. Schirmer notes, only the shoulders of vessels were so decorated in German

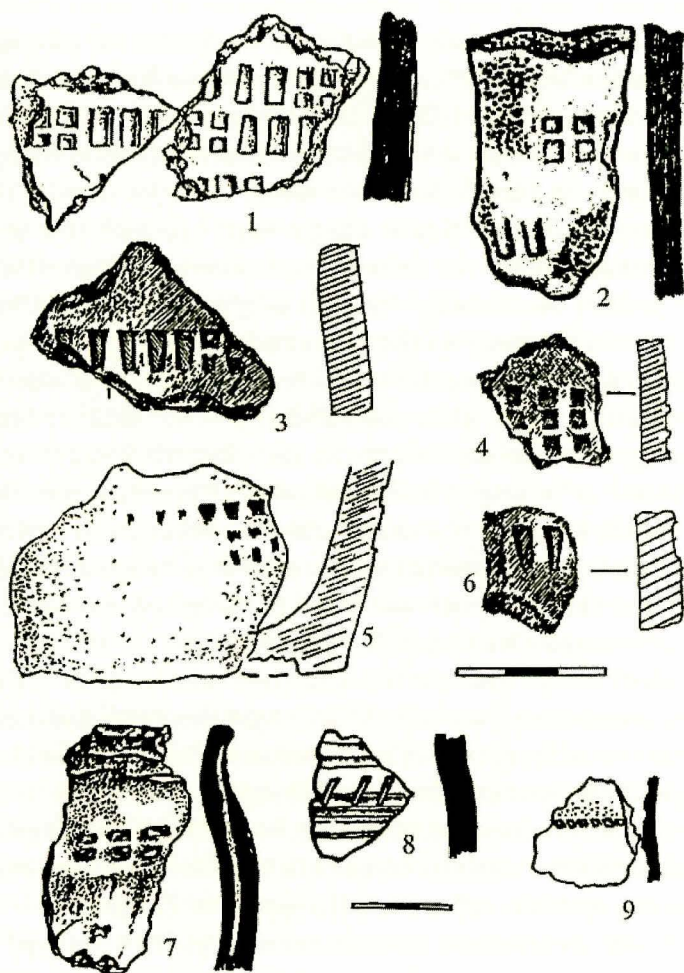


Figure 160.
Type E ceramics
decorated in a
rectangular stamp
found in Palanga
settlements

1. BK 26
2. G-256
3. ŽK 117
4. BK 85
5. K 1084
6. ŽK 112
7. BK 47
8. BK 194
9. BK 196

ceramics, and not a single vessel is known to be completely decorated in wheel-shaped head ornamentation (Schirmer 1939: 58 and 73). One so-decorated fragment from the Birutė Hill Settlement, BK 1084, is from the area of the base, whereas another, G-256, from the sides. Only one fragment, BK 26, from the area of the shoulders, which was found in the surface horizon could possibly be characteristic of the Order, and it is dated at the 14th century. The stamp and the wheel-shaped head of the rectangular ornament, which had adorned a vessel completely, is known among the Badorf-type ceramics. The production centers

for these were by the Rhine and in the surroundings of Köln and Bonn. Badorf ceramics are known in Denmark, usually according to the finds from Ribe and Hedeby (Haithabu), dated at the 8th - 9th century (Hübener 1959: Taf. 11: 277, 278; Madsen 1991: 226, 227, Figure 17), and Birka (Arbman 1940: Taf. 222; Selling 1984: 32.). German yellowish ceramics, decorated entirely in rectangular stamps, were produced later as well—in Lübeck these were found in a layer, dated at the early half of the 13th century (Gläser, Kruse, Laggin 1992: 249-286. Abb. 11:4). Technologically the German Badorf-type ceramics and yellowish fragments and those found in Palanga differ considerably. Thus it is only possible to talk about an indirect Badorf ceramics influence on the ceramics from Palanga. The pots from Palanga, decorated with a rectangular stamp ornament, are most akin to pots characteristic of western Slavs, when compared to 9th - 10th century finds from Truso surroundings (Jagodziński, Kasprzycka 1990: Ryc. 9 b:f) and Polotsk ceramics, dated at the 9th - 10th century (Szafranski 1983: 147, 152. Ryc. 140). This is the same as the pot made by people of Palanga under the influence of western Slavic ceramics, with shoulders decorated in regular rows of rectangular stamps or a wheel-shaped head ornament, which was found in Novgorod and dated at the latter half of the 12th century (Малевская 1971: 34, рис. 5:2).

The rhombus-shaped stamp had not disseminated into ancient Baltic ceramics, and its appearance during the early Middle Ages should be associated with foreign influences. Actually, pots were being decorated with the rhombus-shaped stamp in neighboring Sweden, prior to the Viking era (Selling 1955: 37). It was known in western Slavic ceramics and, from there, it could have disseminated into neighboring lands (Hübener 1959: 50). Meanwhile it persisted within actual Slavic territories as late as up to the 14th century (Kruppé 1961: ryc. 37:1).

A large pot, BK 318, with its ornament holds an exclusive place in this type of ceramics. Its shoulders are decorated with a rectangle that has rounded corners, reminiscent, in certain places, of an irregular circle, a stamp ornament with criss-crossing inside. The shoulders of this pot are ornamented with two strips of such a stamp. This stamp is about 9 mm x 9 mm in size and pressed into various situations; for example, the criss-cross is either straight or crooked (Figure 109, 3). The top of the pot's rim is decorated with a claw stamp. A good analogy of this pot by the proportions of its form and its décor is a vessel from the surroundings of Wismar Germany (Menkendorf ceramics group, dated at the latter half of the 8th century - the year ~1000 [Schuldt 1956: 14-16. Abb. 3; a]). Ceramics decorated in this fashion are rare in the Baltics and neighboring countries. Only one such example, found in 11th - 13th century layers, was in Grodno (Воронин 1954: 40-42, рис. 5:11). Analogies of this

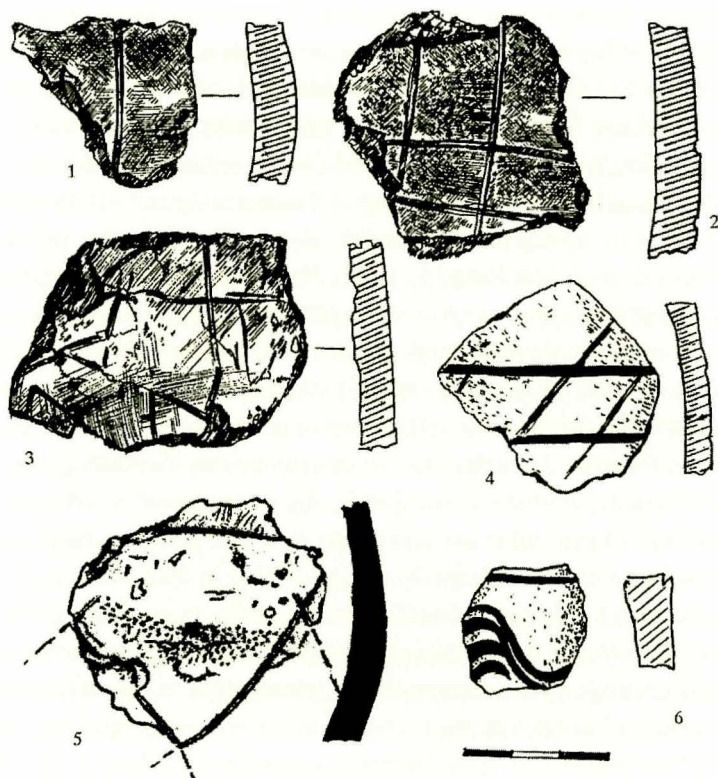
interesting stamp with criss-cross décor are found in many places, such as Gotland, Sigtuna, other areas in southern Sweden, Finland, Denmark, Hollstein, Mecklenburg, Pommern and the Saxon - Friesian area. Only isolated and rare examples of ceramics so-dated are found in the area of the Danube. The ceramics so-decorated, found in Sweden, are considered imports. These appear in Denmark during the 7th - 8th centuries; they are come upon, up to the end of the 10th - beginning of the 11th century (Selling 1955: 37-38). On the Danish island of Bornholm, a pot decorated with such ornamentation was found in Grave No. 139, at Baekkegård Cemetery, which is dated at the year, 530 - 600 AD (Jørgensen 1990: 27, 131, Pl. 19:4).

Ceramics so-decorated at the W. Hübener Haithabu center are dated at the latter half of the 10th - middle of the 11th century and associated with Slavic (western Slavic) ceramics (Hübener 1959: 49-50, 74-75, Taf. 11 and 12). The P. Donat is considered characteristic of northwestern Germany, the Netherlands and, particularly, western Slavic lands. This ornament is dated at the 7th - mid-10th century (Donat 1982: 255-267, Abb. 6, 7 and 9). A comb decorated with such a stamp was found in Lübeck, in a layer that is dated "up to 1044" (Hübener 1959: 13-38, Abb. 9-18). Heiko Steuer, who specially researched ceramics decorated with a stamp, clearly defined the area of its greatest dissemination, which reaches the surroundings of Groningen (the Netherlands) to the southwest, Kiel to the east, mid-River Vesser (Germany) to the south and encompassing Jutland to the north. In other words, the area defined is between the Rhine ceramics in the west and the area to the east where western Slavic ceramics had disseminated. This stamp is usually found on hand-shaped ceramics of northern Germany. The stamp ornament characteristic of this region is laid out in two and, more rarely, three rows. Meanwhile, in Denmark, this stamp is often matched with a grooved ornament and laid out more densely, or comprises several rows. The stamp is also a frequent happenstance in Slavic areas, such as Vagria and Mecklenburg, where it is smaller and, the same as in Denmark, usually appears with some other ornament and several rows. The pottery of northern Germany, decorated in a stamp with a criss-cross, is usually dated at the 9th - 11th century, whereas the most widespread were 9th - 10th century Slavic ceramics. Additionally, the "grate ornament" in a circular or quadrangle stamp is more characteristic (Steuer 1974: 122-123, 190-194, Taf. 38, Karte 6). No ceramics with such a stamp were found in Palanga; however, these are analogical to one on a fragment, which was found in a layer, dated at the 14th century, on Bekešas Hill in Vilnius (Tautavičius 1960: 42, pieš. 71).

The sides are also decorated on pots, BK 553 and BK 640, which are shaped by hand and made on a slowly rotating wheel (?). On the sides of the first one,

Figure 161.
Ceramics
decorated with
vertical and
intersecting
lines and a
vertical and
quadruple wave

1. BK 535
2. BK 640
3. ŽK 81
4. G-326
5. BK 225
6. K 1086



there are vertical grooves, whereas the sides of the second contain horizontal along with vertical grooves—the “net” ornament, which seemingly imitates the ceramics produced on a rotating wheel. A similar, albeit more chaotic, “pattern” of lines is on fragment ŽK 81, from Žemaičių Hillock (Figure 161).

Only one fragment, ŽK 85, is decorated on its neck, where an ornament of small waves is incised in a shallow and irregular fashion; this appeared due to imitations of the décor on ceramics produced on a rotating wheel.

The nature of the décor on Types B-1, B-2 and B-3 ceramics produced on a rotating wheel changes considerably - only about 10% of all the fragments had decorated rims. Far more frequently, the necks, shoulders and sides were ornamented (Figure 158).

The necks are decorated on about 50% of the Type B-1 pots, the shoulders on about 60% and the sides on over 70% of all the decorated vessels - these contain grooves or some other ornamentation. The grooves, as an element of décor, predominate in pots of this type (in about 45% of all the cases). Nearly 40% of

the decorated pots contain small waves. Less frequently, slashes and ornaments of other kinds appear on the tops of the rims (Figures 158 and 159).

Subtype B-1:a pots are the most simply decorated - grooves predominate. Two vessels (ŽK 57 and 92) contain waves on the necks along with grooves. Meanwhile one fragment, BK 192 from Birutė Hill, differs by its more complex composition. Beneath the small waves on the neck, there is an “()” type (“oat kernel”) ornament and, underneath it, there is again a double wave and grooves (Figure 125). The rim of this vessel also contains small perforations.

There is also one Subtype B-1:b vessel, BK 500, decorated in this way (Figure 128). A third of the pot fragments have incised waves on the necks and shoulders. One, BK 503, contains a wave on the top of the rim, and the rim of another is decorated with stamps. Pot fragment, ŽK 23, contains the “oat kernel” ornament and an incised, protruding wave. The shoulders of BK 499 are decorated with narrow grooves and, across them, vertical rows of diagonal engravings.

Gdansk ceramics have contained the “oat kernel” ornament, incised waves and horizontal grooves since the middle of the 11th up to the 13th centuries. A pot decorated in this way with coins, in the areas of central Dresden (Lepówna 1968: 168, ryc. 28-48), is dated at the 11th century (Knorr 1937: 28, Abb. 25). All in all, no doubts arise that elements and compositions of ornamentation, such as those on Type B-1 vessels, are characteristic of late Slavic ceramics during the end-10th century - 12th century (Schuldt 1956: 40-48, Abb. 53-85; Gabriel, Kempke 1991: 139, 140, Abb. 22-23; Weinkauff 2002: 94, ryc. 13). The “oat kernel” ornament is known in the eastern Baltic lands during the 10th - 13th centuries. It appears that it is encountered, for example, in the Lauksola burial grounds, which is of a mixed culture. There the basic elements identified as characteristic of the Vendic culture < . . . > are also encountered in the culture of the Livs (Zariņa 2006: 144. Att. 1, 4, 310, 320 and 427).

The décor of Type B-2:a ceramics is more varied in terms of its elements than the ornamentation of Type B-1 is and differs from it—the tall necks and shoulders of the vessels are more often decorated with claw stamps or small pits rather than grooves (Figure 131, 3). As mentioned, these have close analogies in the *Teterow*, late Slavic ceramics group in terms of their form. Exactly the same can also be said about the decor. This sort of rather primitive ornament was characteristic of pots, having an analogical form, produced in Wolin, at Polish seaside centers (Wilde 1934: Taf. II: 20-21) and Gdansk, where they are dated at the years, 1090 - 1230 (Lepówna 1968: 168, ryc. 38:k; 39; 44:m).

Subtype B-2:c not only substantiates the form of vessels but also the dependency on the influence of late Slavic ceramics. The comb ornament

was not only on this subtype but also on other vessels from the foot of Birutė Hill and Žemaičių Hillock; though, in truth, it is not frequent. Only 3% of all the decorated pots from the settlement at the foot of Birutė Hill and only 4% from Žemaičių Hillock contained the comb ornament. One vessel, BK 438, is classified with the Type A-3 ceramics of local forms, and the other fragments are produced on a rotating wheel. The greater portion of fragments decorated with a comb ornament (six of seven) from the settlement at the foot of Birutė Hill were found in Horizons 3 - 5 of the cultural layer, and one was from Horizon 2. Both, so-decorated fragments from Žemaičių Hillock were in the uppermost, first horizon (Figure 120, 3; Figure 132, 1 and 2 and Figure 144, 2 and 3).

The comb ornament appeared in the late western Slavic ceramics during the 7th century (Donat 1982: 255, 261-263. Abb. 5-7) and it survived throughout the entire Early Middle Ages (Poliński 1996: 47 and 49, ryc. 8, 9; Weinkauf 2002: 94, ryc. 13; Janowski 2002: 203, ryc. 22) whereas, in Teutonic colonized lands, all the way up to the middle of the 13th century when German ceramics became entrenched (Knorr 1937: 58, Abb. 38; Kohn 1982: 143 and 148. Abb. 5; Wilde 1939: Taf. II). The comb ornament was a happenstance in the local ceramics of Sweden during the Early Middle Ages; however, it disseminated universally along with Slavic ceramics during Viking times (Selling 1955: 39). It later occurs rarely, even in Slavic territories themselves—there was no longer any such ornament on pots in Warsaw during the 14th century (Kruppé 1961: ryc. 16-37).

Ceramics P 244, 288 and 314-316 and R 23 and 24, respectively found in the Southern Settlement and Roužė Settlement, had shoulders decorated with a notch or a small cylinder with a plastic wave in addition to the usual ornament of a wave or grooves (Figure 153). Such an ornament, just like the pot profiles as well, are characteristic of late Slavic ceramics (Knorr 1937; Gabriel, Kempke 1991; Andersen 1980: S. 39-50. Taf. 23 24; Lepówna 1968: 168, ryc. 36-46).

Among the pot fragments that are not designated to any type, there are quite a few decorated ones. Three are distinguished with a more rare ornament. One, G-326, contains incised horizontal and diagonal lines that intersect. Another, BK 225, has intersecting lines in a triangle and the third, K1086, has double grooves and, in places, an additional ornament of doubled waves (Figure 161). All the fragments have marks of production on a slowly rotating wheel. The mentioned ornaments are more characteristic of early Slavic ceramics, dated at the beginning of the 9th century, ~ the year 1000 (Schuldt 1956: 14-16. Abb. 3-8; Donat 1982; Andersen 1980: 44-46, Taf. 14 and 15).

Western Slavic or Baltic ceramics?

In the ceramics of Palanga, especially Types B - E, most profiles of the upper parts of vessels and the elements and composition of décor have analogies in the ceramics of western Slavs. For this reason publications on the Palanga excavations, especially about those at the settlement located at the foot of Birutė Hill, write about the finds of western Slavic and "Slavic or Baltic Sea" ceramics (Žulkus 1997). Taking command of a significantly greater quantity of ceramics from various Palanga settlements and twenty full profile vessels, there can be another look taken at these definitions.

First there can be a comparison of the proportions of the primary dimensions of the pots (ratios of mouth diameter and height, mouth diameter and base diameter) in Palanga and western Slavic ceramics. The ratio of the diameters of the mouth and base of the Palanga pots is between 1.4 and 1.7; in other words, the bases of the pots are only about 1.5 times smaller than are their mouths. Only one pot, ŽK 180, is an exception. Its base is two times smaller than its mouth. Meanwhile, in Slavic ceramics, the mouths of the pots with profiled linings are always two, and sometimes more, times larger than the bases of the pots, and the shoulders are widened considerably more than the mouths are. Slavic pots, which have analogical profiles of the upper parts to the ones from Palanga, had been shorter; the ratio of their height to mouth diameter is considerably smaller. Besides this, a more thorough comparison of the existing, larger fragments of Palanga ceramics with the Slavic ones indicated that proportions of the upper parts of the pots differ (Knorr 1937; Schuldt 1956: 14-16. Abb. 3-8; Donat 1982; Lepówna 1968; Hübener 1959; Chudziak 1991: 66-67). The same sorts of features are also characteristic of the northwestern and eastern Slavic regions. There western Slavic influences are highly pronounced on the traditions for constructing dwellings and ceramics, during the 8th - 10th century (Седов 2002: 39 and 42). Therefore, it can be asserted that not a single, full profile pot in the ceramics of Palanga settlements can be indicated as identical to Slavic vessels. Merely a few fragments, which are exceptional for their better quality and thinner composition (BK 165 and 166 of Birutė Hill), could be actual imports from western Slavic regions during the Early Middle Ages. The greatest similarities to Slavic ceramics are found in the ornamentation; thus an impression forms that there had been a great deal of Slavic ceramics in Palanga.

A discussion on the imports of Slavic ceramics and their influences, as well as the adaptation of ornamentation in various regions, caused appearance of the term, "Baltic Sea ceramics" or simply "Baltic ceramics". This term is often

identified with the term, "Slavic ceramics". This latter term is used, as a rule, by Polish archaeologists when speaking about the ceramics that are being found in Scandinavia. Wilhelm Gebers attempted to reply to the question of whether Slavic ceramics in Scandinavia are the same as Baltic ceramics. He considered that his main research assignment was to discover an answer to the question about the direct or indirect influence of Slavic ceramics on Baltic ceramics while, at the same time, differentiating these concepts. Slavic ceramics ended up in Scandinavia as packaging ("honey pots"), which were produced by Slavic potters in trade centers. More than one hundred find spots of Baltic ceramics are known on the Danish islands. Gebers, having analyzed the forms and décor of the ceramics, first defined the chronology of Baltic ceramics more specifically and indicated that the chronology of Slavic influence on Baltic ceramics lasted for approximately 1,000 - 1,200 years. In his opinion, Baltic ceramics is not a replication of Slavic ceramics; however, Slavic elements had entered into Scandinavian ceramics by direct contacts, possibly by an intermingling of dwellers, but not as copies of Slavic ceramics. The researcher emphasizes the great influence of local ceramics and local specifics involved in the formation of Baltic ceramics in Scandinavia (Gebers 1981).

The observations and conclusions of W. Gebers coincide with the data held by this author. Therefore, it can be asserted here that the so-called Slavic ceramics, found in Palanga and, very likely, other Baltic lands are "Baltic ceramics" for the most part, which appeared on the basis of local ceramics and Slavic influences. This usually occurs, it seems, by a covering of Slavic décor methods on the forms and technologies of local ceramics. In this sense, the ceramics found in Grobin are interesting. These ceramics are not accurately dated and they contain décor characteristic of the Menkendorf type of Slavic ceramics (combs, ornament of incised, ever-crossing lines). However, the forms are not at all characteristic of the Slavs (Petrenko, Urtāns 1995: Figures 9 and 10).

The dissemination of Baltic ceramics in Baltic territories has still not been investigated. Dagmar Selling indicated their find spots in Prussia (the surroundings of Viskiautai, Bledau, Schuditten and Truso) and Tanisa-kalns in Latvia (Gaerte 1929: 326-328; Mühlen von zur. 1975; Selling 1955: 70). Of course, there had been more. The current data is that Baltic Sea ceramics are found, in addition to Palanga, in Lithuania at Apuolė (Nerman 1958), Aukštakiemis, Daubariai (Daugudis LIIA, No. 455), Gintarai (Jablonskis LIIA No. 1360), Girkaliai (Volkaitė-Kulikauskienė 1970: 76, Figure 6), Joniškis near Klaipėda (Hoffmann 1941: Taf. XIV: f, 2), Kretinga (Jablonskis 1983), Žardė (Genys 1995), Bandužiai near

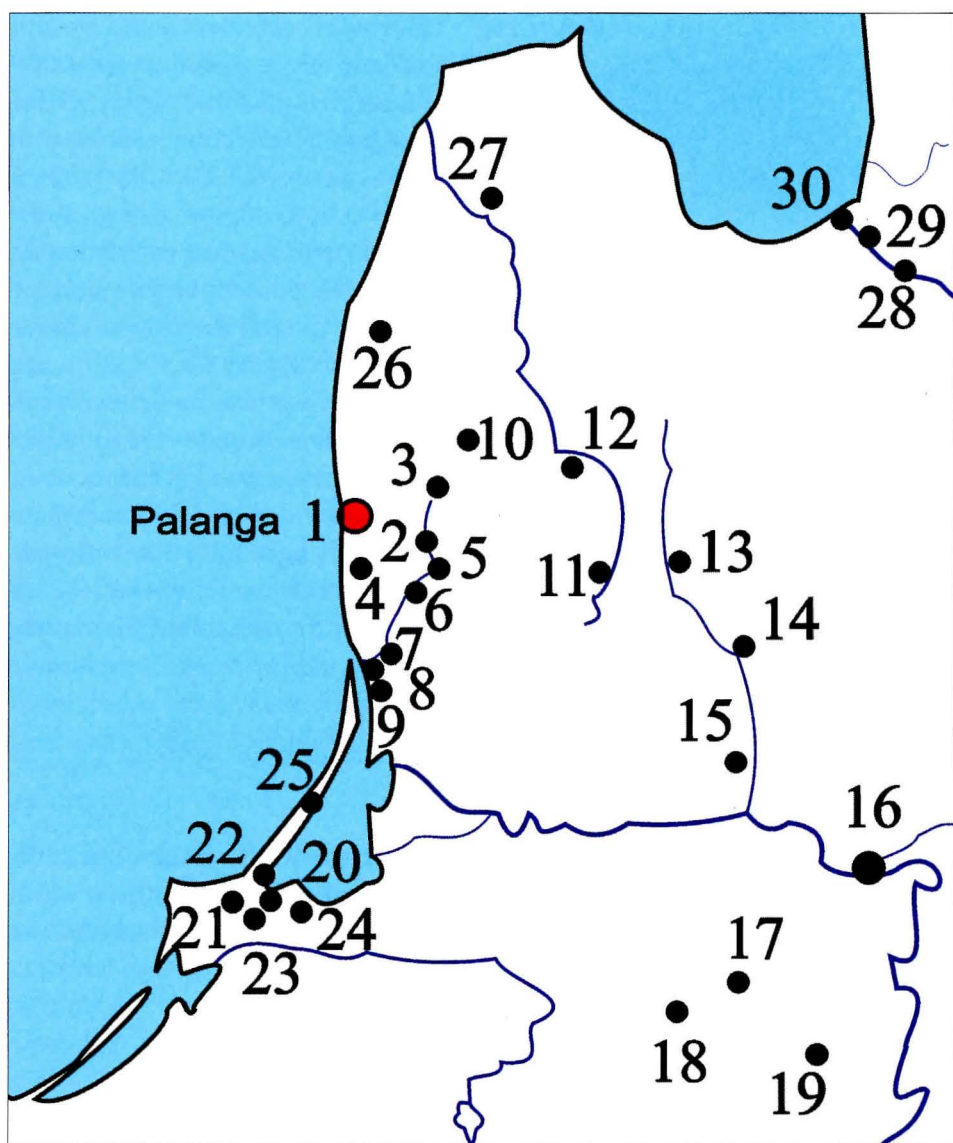


Figure 162. Dissemination of Baltic ceramics in Baltic territories

- | | | | | |
|-------------|----------------------|------------------|----------------|-------------------|
| 1. Palanga | 2. Kretinga | 3. Gintarai | 4. Girkaliai | 5. Anduliai |
| 6. Eketė | 7. Joniškė | 8. Žardė | 9. Bandužiai | 10. Apuolė |
| 11. Džiugas | 12. Daubariai | 13. Šatrija | 14. Bubiai | 15. Darbutai |
| 16. Kaunas | 17. Kumelionys | 18. Piliakalniai | 19. Kaukai | 20. Irzekapinis |
| 21. Kovrovo | 22. Viskiautai | 23. Muromskoje | 24. Volnoje | 25. Korallen-Berg |
| 26. Grobiņa | 27. Zlēku Priednieki | 28. Daugmale | 29. Martiņsala | 30. Rīga |

Klaipėda (Stankus 1995: 85, Figure 72), 12th - 13th century settlement at Džiugo Hill-fort (Valatkienė 1994: 79-84) and Šatrija (Valatkienė 1984 tyrinėjimų ataskaita)—both in the Telšiai region—10th - 14th century Bubiai in the Šiauliai region (KVIM, Photo negatives Nos. 1990-1993; LAA, II. 1975: 43), 12th - 14th century Darbutai in the Raseiniai region (KVIM, Photo negatives Nos. 2008-2014; LAA, II. 1975: 50), Kaunas (Mekas 1959) and Užnemunė (Kulikauskas 1970: 18 and 21, Figure 2:2; Kulikauskas 1982: 79 and 84). These are known in Grobin (Nerman 1958; Petrenko, Urtāns 1995), Laukskola and Riga (Šnore, Zariņa 1980: 60; Mugurevičs 197), the Prussian Irzekapiny and Suvorovo (both by Viskiautai) and Kovrovo (Кулаков 1990: 119 таб. XXV: 11; Кулаков 1994: 122, рис. 69) – see Figure 162.

The ceramics produced on a rotating wheel from western Baltic territories and the ornament characteristic of these, which appeared under the influence of Slavic ceramics during the Early Middle Ages, first appeared at the more important seaside trading centers due to direct contacts and spread from there into the region. The traditional forms of local ceramics changed under the influence of ceramics produced on a rotating wheel. On the other hand, however, the traditional vessel forms survived unchanged, even after the technology for making pottery on a rotating wheel became predominate, well up to the Late Middle Ages (Type B-1: pots).

COMMERCE AND CRAFTSMANSHIP

The finds at the Palanga settlements reflect comparatively little of the olden crafts and commercial ventures, including spinning and weaving, except pottery, which is discussed separately. The finds also tell little about agricultural ventures and food preparation.

Food preparation and storage

Only one find from Horizon 3 of the Southern Settlement, P 95, transmits information about the processing of agricultural products—a saddle quern stone. It has an irregular, disk-shaped form and measures some 9 cm in diameter. A natural stone surface has survived in three places; elsewhere there are numerous worn planes (Figure 163).

There are eleven pits relevant to food storage, which were discovered in the bottommost, Horizon 6 of the settlement at the foot of Birutė Hill. These pits were at the southern edge of the settlement, along its terrace. The pits had precisely circular forms, 0.8 m - 1.1 m in diameter; certain of them enjoined, one

with another. Their depths were up to 1.2 m; although some of them were only a few centimeters deep (the surfaces had been blown away by the wind). The half-rounded bases of the pits were in precise cylindrical forms, or pear-shaped, and certain pits widened downwardly. Bands of decayed matter marked the linings of the pits. Nothing was found inside them. Furthermore, there were no traces found of more pronounced organic material, only darker sand. Only Pit No. 10 con-

tained charcoal bits and animal bones. This pit remained after wicker baskets had rotted into the sand. The people of Palanga had used wicker baskets, which were natural refrigerators, to store food reserves. This sort of food retention had not been widespread in Lithuania during the Early Middle Ages, although it was employed at times. Such food pits have been found in Latvia, as well as eastern and western Slavic territories (Žulkus, Klimka 1989: 38).

Spinning

Stone spindle whorls, the only finds that reflected the craft of spinning, were discovered in the settlement at the foot of Birutė Hill. None of the wooden spindle parts had survived, and no remains of any distaffs were found either. Eight small spindles in total were found, and of these three were ornamented (Figure 164). Spindle whorls were distributed unevenly in the dwelling (Figure 165). They were discovered by the place for a domestic fire (two were found in fire places beneath clay oven hearths) and in the northwestern corner of the structure, closer to the door. Most of the weaving weights, such as BK 12 and 19, were found in these same places, closer to the northern wall or the corner of the structure, as well. It would appear that weaving looms usually stood in those places, and the spinning was done there as well.

Five whorls were made of sandstone and three from field stones, burnished sand and water. All the whorls have a short, cylindrical form; only BK 326 is lens-shaped. The diameters of the spindle whorls range from 5 cm up to 7.2 cm. Their thicknesses are 1.4 cm - 2.1 cm. Their perforations are 0.7 cm - 1.1 cm in diameter,

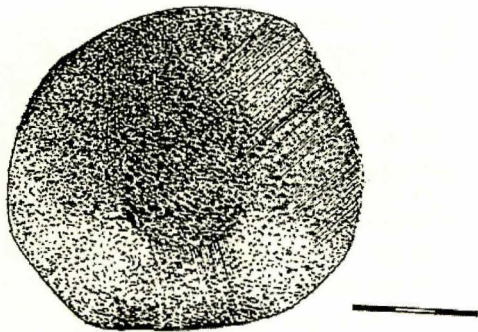


Figure 163. Stone of a saddle quern, P 95, in the Southern Settlement

Figure 164. Stone
spindles found in
the settlement at
the foot of Birutė
Hill

1. BK 562
2. BK 124
3. BK 622
4. BK 364
5. BK 73
6. BK 325
7. BK 662
8. BK 326

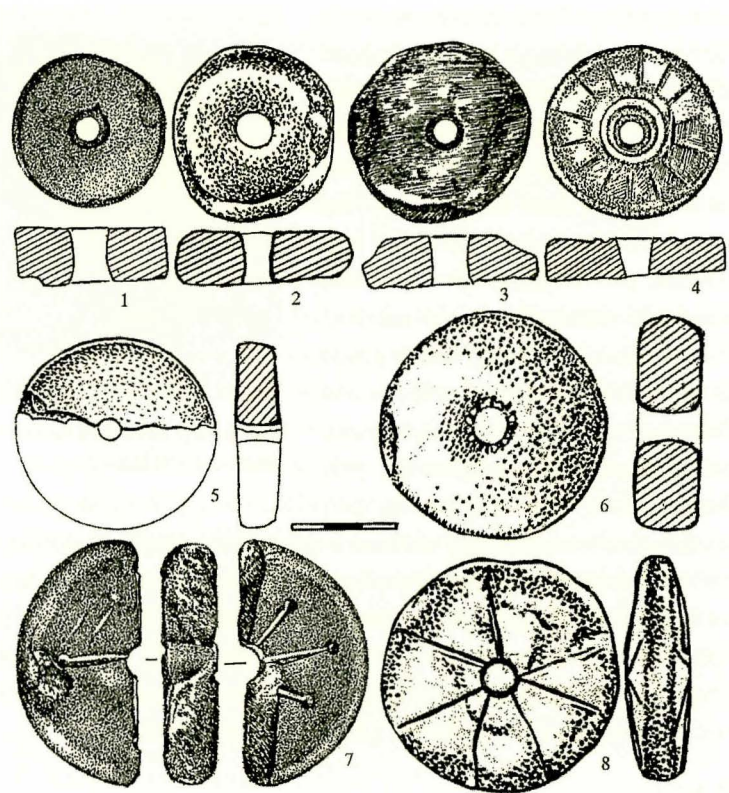
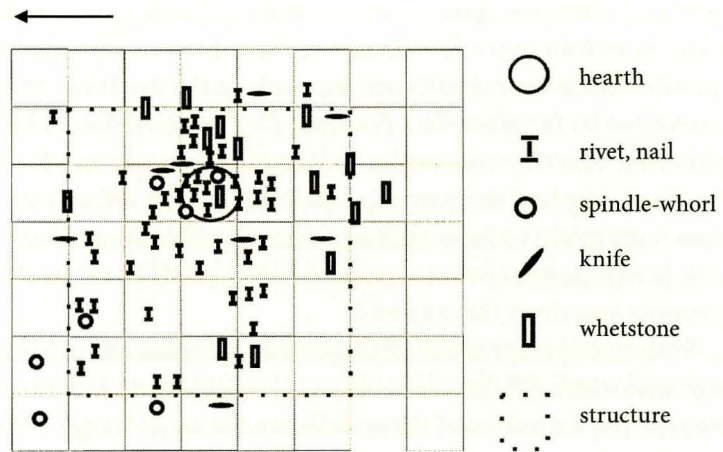


Figure 165.
Distribution
of finds in
the stains of
structures in the
settlement at the
foot of Birutė
Hill



drilled from both sides. One, BK 325, contains interesting drilling marks. On one side the stone has been crumbled with tiny, finely hammered dents, having the same perimeter as the perforations. All three of the ornamented whorls had been decorated on both sides. The ornamentation is not complicated—rays were scratched from the center, and on one, BK 364, circles were additionally incised around the perforation. The symbolism of the décor on the spindle whorls has been little researched to date. In general this sort of absolutely predominating décor on spindles in Baltic territories could have symbolized the Sun. L. Klimka noticed that, on one of the spindle whorls from Palanga (BK 326), the area on both sides is divided in seven, increasingly larger segments. In the opinion of this researcher, such a division could symbolize the sequence of work over the seven days of the week (Žulkus, Klimka 1989: 38). Spindle BK 662 did not contain the same number of rays on its different sides. There were, it seems, four on one side and six to seven on the other. Ornamentation of spindles with Sun signs was characteristic of Baltic people. For example, Semigallians had decorated the one found in Mēžotne with a swastika (Zemītis 1998: 108, 110, Abb. 4:9).

Weaving loom weights

Weights of weaving looms were found in all the Palanga settlements. There were two kinds, one of stone and the other of clay. Stone weights were found in all the settlements and nearly in all the layers. The only places these were not found were in the bottommost horizon of Žemaičių Hillock and the Southern Settlement, where there were hatching and rugged surface ceramics. At the Southern Settlement, weights from weaving looms comprised 3% (twelve stone weights) of the total number of finds; at Žemaičių Hillock—5% (eight stone and two clay weights) and in the settlement at the foot of Birutė Hill—about 7% (thirty-seven stone and twenty-six clay weights). There were no stone weights in the Roužė Settlement, where the remains of only one structure had been uncovered. However, clay weights comprised as many as 25% of the finds (fragments of ten weights) that, overall, were not very plentiful. There were also ornamented weights in the settlements at the foot of Birutė Hill and the Roužė Settlement.

The weights were found in the stains of the structures or next to them. They were not distributed at all equally in the horizons of the cultural layer; this is especially true of the clay weights (Figure 166).

Stone weights. The lengths of the fifty-two stone weights found at the Palanga settlements are 13 cm - 8 cm, the widths—9 cm - 5 cm and the thicknesses—3 cm - 1.5 cm. The weights were usually made from field stones burnished by water or

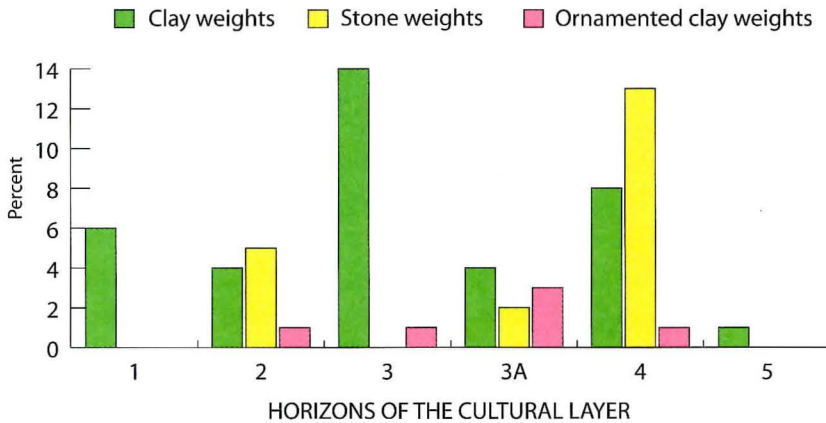


Figure 166. A weaving loom weights in the settlement at the foot of Birutė Hill

sand (Figures 167 and 168). Only one weight, BK 571, was made from a piece of flint. Through the middle, all the weights have at least one deliberately split side; sometimes both sides had been split. Stones used for weights, such as BK 524, which were interfiled by nature itself, were much rarer, isolated finds. Only one weight, BK 523, additionally has a shallow hollow, hammered out on the side plane.

The form of the stone weights is not unusual. It has survived unchanged since the Stone Age. Opinions regarding their designation sometimes differ. The small stones, split at the sides, which are found in actually Neolithic, seaside settlements are considered weights for nets. They could have been used for other purposes as well (Rimantienė 1980: 13; 2005: 239, Figure 104, 338; Figure 215, 380 and Figure 266). For the time being, there is no data on weaving in Baltic lands during the Late Neolithic period. However, weaving appeared here, the same as in Scandinavia, during the end of the Stone Age and gained greater significance during the Bronze Age (Brazaitis 2005: 275). Then vertical weaving looms may have appeared in which stone or clay weights were used to stretch the heddles. Such looms were used in Scandinavian territories even during the Viking times. Slavic tribes had already been using them since the middle of Millennium I AD. For the horizontal weaving looms used later, the same as in certain other lands, the heddles no longer had to be stretched by weights (Herrmann 1982: 135; Lindström 1976). Stone weaving weights were widely used for a long time in places that lacked clay. During the Early Middle Ages, perforations were drilled in stone weights at Norman settlements in Greenland and, at times, the weights were incised or hammered with various cultural modifications (CNM.

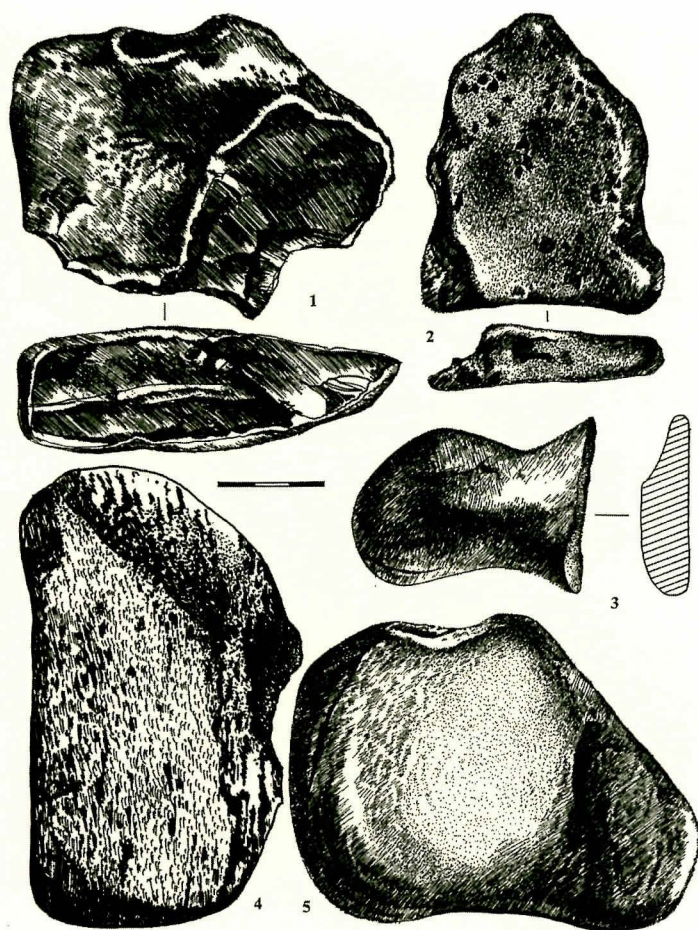


Figure 167. Stone weights from the settlement at the foot of Birutė Hill
 1. BK 571
 2. BK 564
 3. BK 524
 4. P 60
 5. BK 525

Rum 127, exposition). Stone weights with perforations were also found in Karelia (Кочкуркина 1981: 132, таб. 6: 15). Those small stone weights seem not to exist in Lithuanian archaeology of the Bronze and Iron Ages. For now it is not clear why this happened. Perhaps they were not used everywhere; otherwise it is possible that archaeologists never paid any greater attention to them.

The opinion here is that, already by the Late Stone Age, the stone weights being found could have been employed both for weaving and for sinking nets.

Clay weights. Thirty-eight clay weaving weights were found in all the Palanga settlements; of these, nine were ornamented. These are all in the form of a short cylinder with rounded corners, and only one, ŽK 24, is lens-shaped

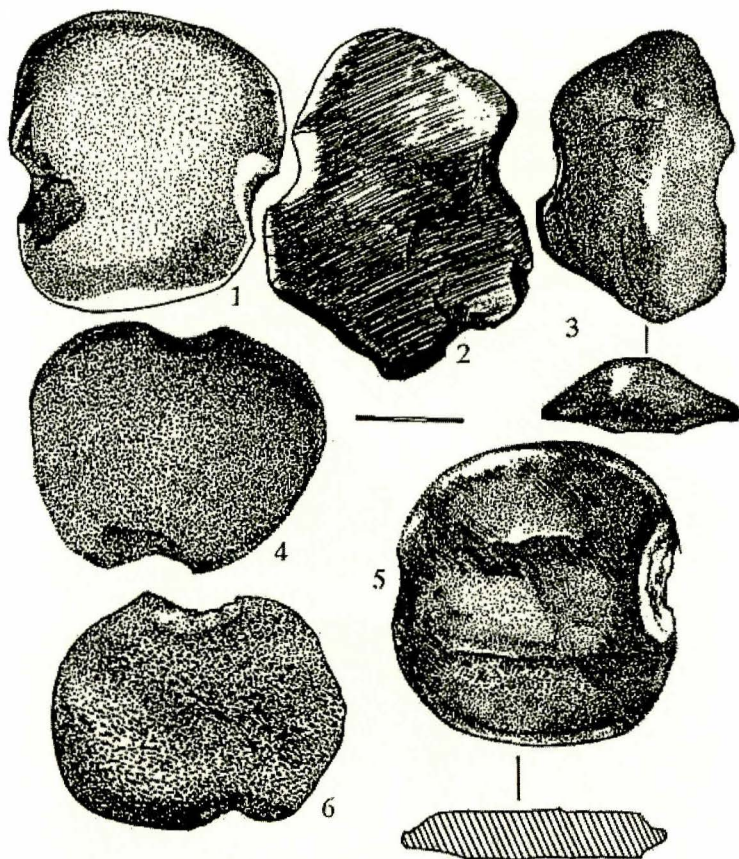


Figure 168.
Stone weights
from Palanga
settlements

1. P 35
2. P 37
3. BK 565
4. BK 305
5. BK 523
6. P 61

(Figure 169). The sizes of the weights differ from a diameter of 6,8 to 12,6 cm. They weigh about 400 g - 450 g on average. Two weights in the form of a lens, dated at the years 950 - 1000, were found in Fyrkat (Denmark). Respectively they weigh 458 g and 477 g (Roesdahl 1977: 31, Figure 24). There were comparatively many weaving weights in Palanga, and quite many were ornamented. In the layer of Ribe, the renowned trade and crafts center of Danish Vikings, which is dated at the years 720 - 825, there were one hundred weaving weights found; however, not a single one was ornamented (Bencard 1979: 113-138 and 136-137). There were also weights with little ornamentation in western Slavic centers (see below).

The firing process for most of the weights was poor or medium. Some found in the layer were already soggy and deformed, because they had not been thoroughly fired, only dried out. All researchers noted the comparatively poor firing of the weaving weights. The clay for the weights was usually not tempered; the clay mass of merely one or another had been mixed with sand.

Of the nine decorated weights, eight contain stamps with a criss-cross, and only one, BK 265, had different decor (Figure 170, 3). It had been decorated by piercing small pits in irregular, triangular or rectangular forms, which compose a straggling wave at the side of the weight. In addition, both sides of a weight were decorated. Weights decorated in this manner are a happenstance

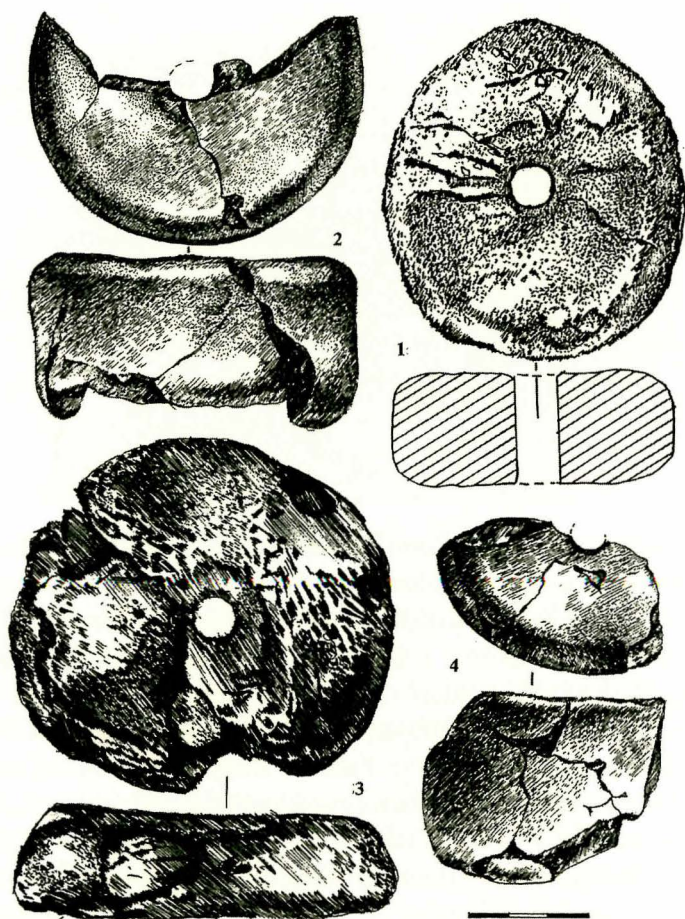


Figure 169. Clay weaving loom weights from the settlement at the foot of Birutė Hill

1. BK 665
2. BK 375
3. ŽK 24
4. BK 666

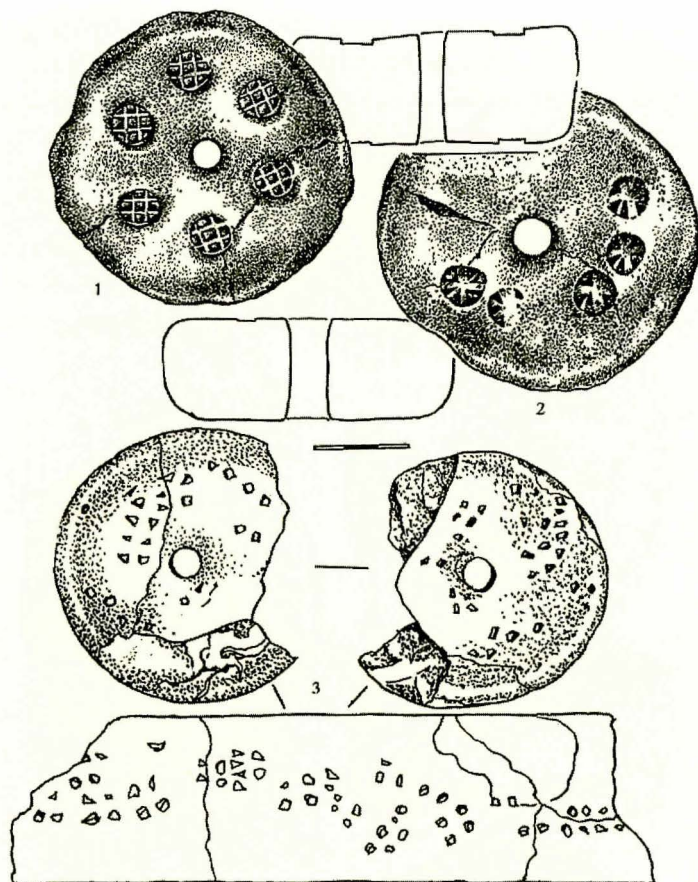


Figure 170.
Ornamented,
clay weaving
loom weights
from Palanga
settlements

- 1. BK 41
- 2. BK 389
- 3. BK 265

in other countries, apparently very rare. Similar to this ornament were the find from Palanga and one decorated weight found during the 1996 excavation of the Early Middle Ages, Raisio Mulli Settlement near Turku Town in Finland. It was comprised of small, circular pits, embellished with rectangular stamps (Dr. Sirkku Pihlman, Turku, information). A weight from Staraja Ladoga is decorated in squared and triangular, small pitted indentations, dated at the 8th - 10th century (Русь и Балтика 2006: 53). The Palanga weight, meanwhile, was most likely decorated by a local artisan, according décor that was widely used for the ceramics in the locale.

Eight weights are decorated with circular, cross stamps; however, these are not laid out the same way and they are not entirely the same themselves. Four weights probably have stamps on one side, while one, BK 41, has them on

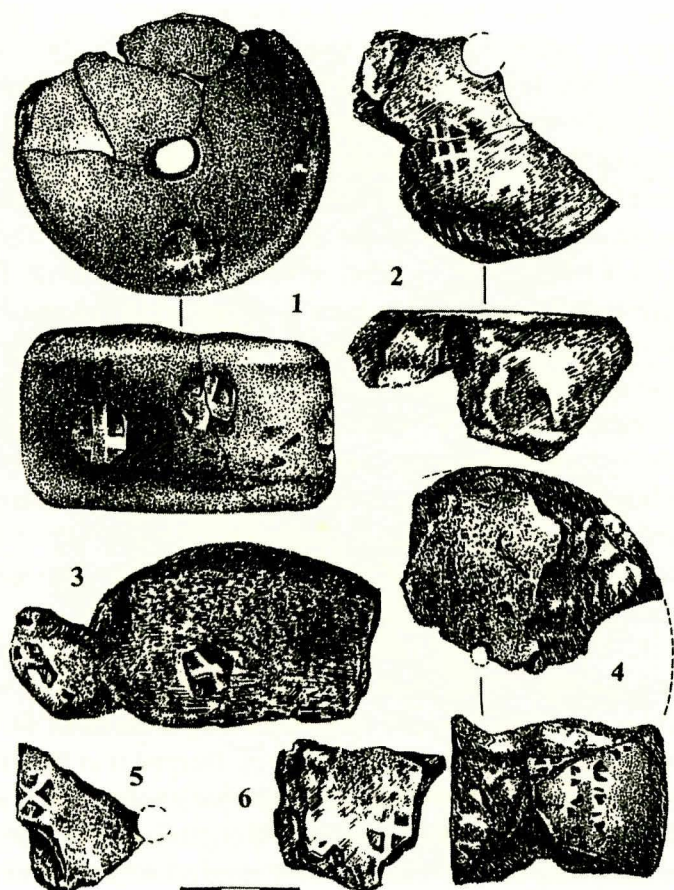


Figure 171. Clay weaving loom weights decorated in stamps from Palanga settlements

1. BK 663
2. BK 664
3. R 59
4. BK 732
5. R 57
6. R 58

both sides. Three were decorated on the side planes and there was yet another decorated on a half and on the side. The stamp was commonly on the surfaces of the weight, indented and devoid of clear order. Besides some stamps are at the surface, while others are indented very deeply and deformed. The exception is weight BK 41, which contains five stamps laid out in a precise circle around its center on one side and six stamps on the other side. The circles of the stamps are 1.2 cm - 1.6 cm in diameter.

Five weights, BK 663 and 732 and R 57, 58 and 59, are decorated with stamps that, in the middle, protrude in the shape of a + cross. Another weight, BK 41, has a "grill shaped" # criss-cross in the middle of all its stamps (Figures 170 and 171). The stamp on BK 664 contains the ‡ form cross, whereas the stamp on BK 389 has the * shape of a cross (Figure 170, 2).

The only other place in Lithuania, besides Palanga, where clay weaving weights ornamented in stamps are known is only in Apuolė (KVIM, Photo Negative No. 481); though, actually, they do have a different form (Figure 172). Clay weights decorated with a circular ornament containing a criss-cross are known in Germany, Scandinavia and Poland. Heiko Steuer investigated the dissemination of this type of ornament on weaving weights. Weights with an indented criss-cross had been widespread at the shores of the North and Baltic Seas. These are usually found in the territory from Holland up to Schleswig-Holstein. The oldest dated weight (around the year 600) is from Gotland, while the latest at the German seashores are already dated after the 9th century. In Haithabu only the ordinary cross ornament was very widespread (Steuer 1974: 119-121, Taf. 22, 26, Karte 5). Certain weights found at the seaside settlement of Raisio Mulli in Finland are also decorated with the stamp containing an ordinary cross in a circle (Dr. Sirkku Pihlman, Turku, Information). Weights with the cross stamp, found in medieval settlements of Denmark, are dated at the 8th - the beginning of the 12th century, most often at the 10th - 11th century (Graham-Campbell 1980: 21; Roesdahl 1977: 31 and 32; Nielsen 1980: 173, 202 and 204-208).

The "grate ornament" was widespread in the ceramics of Friesland from the 8th - 9th century. An analogy of the Type # ornament was found in the Netherlands, and the stamp with six rays in the shape of a cross was on a pot found in northern Germany (Steuer 1974: 123-124, Taf. 37:2, 11, Karte 7). Despite that the area, where the weaving weight decorated with a stamp, is comparatively large, it is a rare find, even at western Slavic center locales of the Viking times that retained close commercial contacts with Scandinavians. There were no such weights in the Slavic centers of Drensee (Schmidt 1989) and Lieps (Schmidt 1984). Of the twenty-three weaving weights found at the Menzlin trade center, only one was ornamented. One weight with a stamp ornament was found in Wolin, and two of the forty-two, found in the Groß Stromkendorf center, were so ornamented (Schoknecht 1977: 94; Wietrzichowski 1993: 36, 37, 57 and 58). To date only three clay weights decorated with a stamp are known in Russia; for example, the one found in Old Ladoga is dated at the 9th - 10th century (Steuer 1974: 189).

The limited dissemination of clay weaving weights in Slavic territories is not a chance occurrence, because western Slavs wove on looms of a different sort of construction, which were similar to horizontal looms. Horizontal looms also appeared rather early in southeastern Slavic lands—as early as the latter half of Millennium I. Meanwhile the Slavs that settled more north nearly never employed weights of such a form. In Novgorod vertical weaving looms were also more rarely

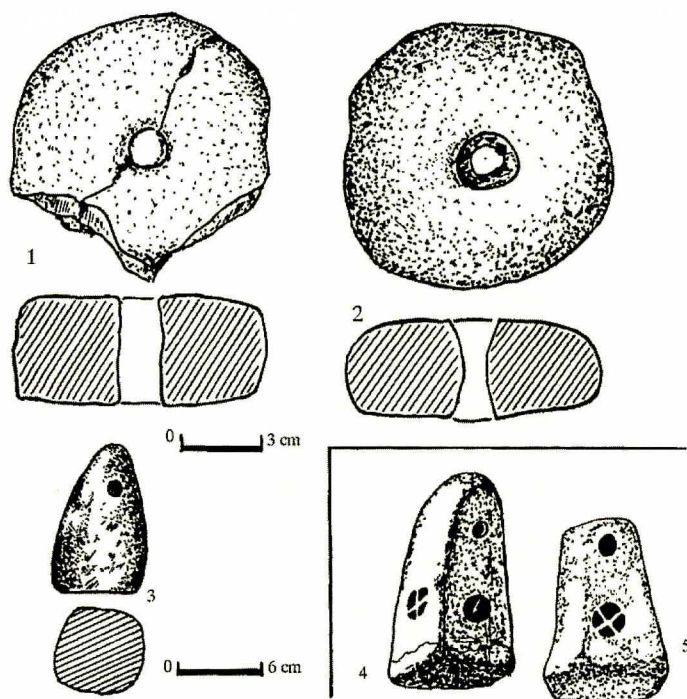


Figure 172. Clay weaving loom weights from settlements of West Lithuania
1 and 2. From Daubariai (as per V. Daugudis)
3. From Žardė (as per J. Genys)
4 and 5. From Apuolė

employed; only a small amount of the textiles, dated at the 10th - 11th century, were woven on them (Седов 1982: 240; Колчин 1985: 267). It is believed that clay weights for vertical weaving looms had been characteristic of the Livs (Apals, Mugurēvičs 2001: 333-334). Additionally, truncated conical, pear-shaped clay weaving weights were being made in Western and Eastern Europe as early as the Bronze Age (Museo delle Patafitte di Molina di Ledro, Italia). The ancient Greeks also used various grades of them, including weights made of stone and, from at least the 2nd century BC, lens-shaped weights as well (Gansiniec 1975: 426-437). These kinds are also found in Teutonic dwelling areas during the Migration Period (Schmidt 1976: 101). There seems no doubt that the impact of Germanic cultural traditions caused the appearance of clay weights in Slavic territories. There should be numerous weights in very many forms due to weaving on vertical looms in Eastern Europe. However, the comparatively rare finds of clay weaving weights is surprising. Actually stone weights of a natural form were used in many places. Additionally, it is possible that the people also used weights made of sand or small stones, poured into some sort of bags made of organic materials. On the other hand, clay weights

were not always considered weaving weights in certain areas. The criss-cross motif (a stamp with a criss-cross) was magical in all nations. Meanwhile, in Greenland, a clay weight in the form of an egg was found that contained a drawing of Thor with his hammer-axe (CNM. D 12213. 606 [Rum 127]). Some of the “net weights”, found in Lithuania from the Ancient Iron Age, (Kulikauskienė, Kulikauskas, Tautavičius 1961: 247-249), as per the opinion held here, are also weaving weights. Clay weaving weights are nearly always found with stone weights at the Palanga settlements. It is possible that vertical weaving looms, which contained no less than twenty weights, had some clay and some stone weights.

The variety of forms for weaving weights increased among the Baltic tribes during the Early Middle Ages. Clay weights are most frequently found in the shapes of pyramids, pears or cones in areas of Apuolė (KVIM. Photo Negative No. 481), Grobin (Petrenko, Urtāns 1995: 15, Figure 29), Eketė (LAA, II. P. 22) and Žardė (Genys 1995: 125, Figure VI, 2). Ornamented weights are rare compared to the others (Apuolė).

Weaving weights of short cylindrical or lens forms are even rarer. Weights of a short cylindrical shape are found in Daubariai, in addition to Palanga. One had a diameter of 10 cm and a thickness of 4 cm and contained a 1.3 cm perforation (Daugudis 1977: 147, 148, Pav. I: 21, 9 and 10). “Clay weights” of an unclear form were found while exploring the Jautakiai Hill-fort and settlement (Merkevičius, Stankus 1976 LIIA, No. 550). A part of a clay weight was discovered in a test pit while excavating at Kernavė (Luchtanas LIIA, No. 1099). All the named finds are from the western part of Lithuania and by the River Neris, an important waterway. Clay weaving weights are not often found in Laukskola Latvia either (Latvijas 1974: 69, tab. 31). For now, only three ornamented ones, dated at the 11th - 12th century, are from Daugmalė—one is decorated with a protruding cross (the same as in Palanga), the second has four finger stamps on one side and the third, a cross having wider terminals (Zemitis 1987, Find A 12705: 153; Urtāns 1969: 94, att. 72:9; Vasiliauskas 1999: 82-83, Figure 4). In Belorus, by Pripetė, the excavation of a weight in a lens form is considered a very rare find (Залашко 1988).

Eastern Slavs and Balts only began using horizontal weaving looms during the 11th - 13th century (Radatz 1991: 155, Abb. 4:26; Grundberg 1992: Figure 65, 3). The Balts on Latvian territory used them from the 12th century (Apals, Mugurēvičs 2001: 334). Henceforth finds of clay weights in ancient settlements disappear. The disappearance of cylindrical and lens-shaped weaving weights in northern Germany and Scandinavia (around the start of the 12th century) is also related to the spread in using horizontal weaving looms.

Fishing tools and means

Net weights. Only two stones, BK 658 and 659, found in the stain of Structure No. 33, can be considered true net weights. These are in the same form as the stone weaving weights, only considerably larger. Both stones are flat and have natural and split out hollows on the sides. The size of BK 658 is 17 cm x 12.8 cm x 6 cm. On one side it has stripes, about 1 cm wide, probably remaining rope marks. It contains three hollows. The second weight used to be larger, about 18 cm x 16 cm, only it was chipped (Figure 173).

Ice spikes. Only one such, better surviving artifact, ŽK 48, was found in Palanga. This is an iron plate with the spike tip in the middle and two vertically incurving terminals at the sides (Figure 174, A). Several types of ice spikes were being made. Some would be affixed to footwear, whereas others, containing tapered wings, were affixed on horses on their hooves (Wikinger, Waräger, Normannen 1992: 234:25; Arwidsson 1986: 111-112, 136, Abb. 13:2). A belt was generally used to

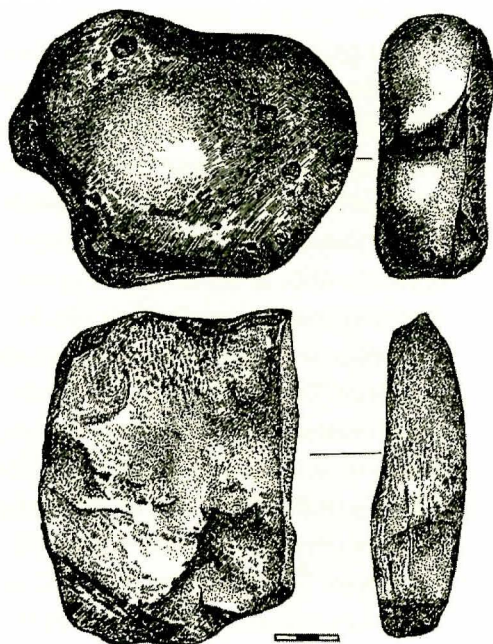


Figure 173. Large stone weights for nets
1. BK 658 2. BK 659

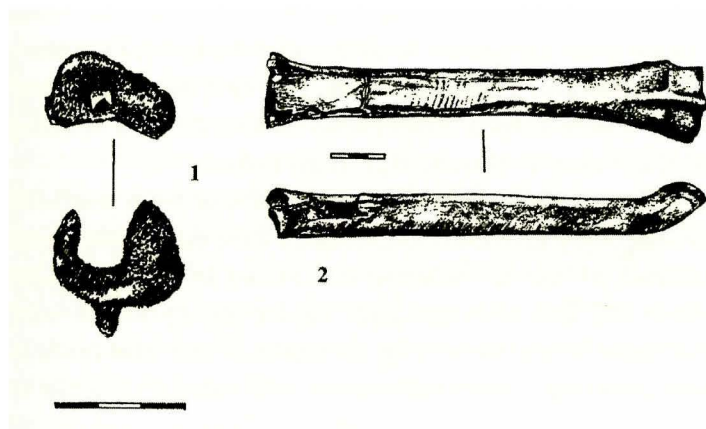


Figure 174. Iron
ice pick (ŽK 48)
and skates made
of a horse's
metatarsal bone
(BK 662 A)

tighten these to shoes; however, at times, a small stick, covered over with its wings, would be tied onto shoes. Triangular ice spikes with three tips were more rarely produced during the Early Middle Ages. Ice spikes are frequently discovered in many layers of northern and western European towns from the Early Middle Ages and, more rarely, in Eastern Europe, generally in centers relevant to distant trade. It is believed that these artifacts appeared in Scandinavia, where they are discovered in graves from Vendel, from the Viking times (Radatz 1991: 155, Abb. 4: 26; Grundberg 1992: Figure 65, 3). These quickly disseminated into neighboring northern lands. Meanwhile, on the other side of the Baltic Sea, ice spikes of such a form appeared where the Scandinavian culture had a greater influence. They are known in the surroundings of Lake Ladoga in archaeological structures of Karelia (Кочкуркина 1981: таб. 7: 4, 10: 20-22). In Russia ice spikes of this type are found, dating back to the 9th century (Кирпичников, Медведев 1985: 319, таб. 148: 20-29). Those found in Staraja Ladoga are dated at the 9th - 10th century (Русь и Балтика 2006: 19). Apparently they also first appeared where there were Scandinavian colonies, such as at Gnezdov (Radatz 1991: 155, Abb. 4: 26; Каменецкая 1991), Old Ladoga (Назаренко 1985) and other trading centers of greater importance (Гуревич 1981: 99, рис. 77: 13), including Baltic-Eastern Slavic centers of the 10th - 12th century (Шадыро 2001: 271, 272, рис. 8). Ice spikes with one spike in the middle appeared in Baltic lands due to Scandinavian influence and disseminated to western regions and the more significant crafts and trade centers of the Early Middle Ages (Latvijas PSR arheologija 1974: 79, tab. 1; Šnore, Zariņa 1980: 152, 154, 156, att. 25). Finds of this type have not been discussed in Lithuanian archaeological material. At first ice spikes were most probably more characteristic of settlements in West Lithuania and later spread eastward. One such artifact was found while excavating the Derbutai Settlement (KVIM. Photo Negative No. 2004). An ice spike for a horse hoof, dated at the 13th - 14th century, was found in Kernavė (Luchtanas, Vėlius 2002: 210, No. 585). Somewhat later two and three-spiked horseshoe-shaped attachments on footwear for walking on ice began being used, the same as the one-tipped ice spikes.

Skates. Skates made from animal bones are rare artifacts from medieval Baltic settlements and completely unknown in Lithuania. One skate, made from the carved horse metatarsal, BK 662A, was found in Horizon 2-3 of the cultural layer in the settlement at the foot of Birutė Hill (Figure 174, B). Skates were produced from horse or cattle bones. Sometimes perforations were also made in carved animal bones for inserting a small belt, which would attach the skate to the footwear. There were other skates, like the ones from Palanga, were devoid

of perforations in the front. Bone skates were not meant for entertainment during the Early Middle Ages. Fishermen and hunters usually used them. They would skate on ice using sticks with an iron spike at the terminal to kick-off. It is believed that treated bones could have also been used as runners on small sleds. These are frequently found in Scandinavian, German and Slavic settlements (Jørgensen, Skov 1992: 119, 136, Figure 26; Schoknecht 1977: 99; Wikinger, Waräger, Normannen 1992: 233-24; Wietrzichowski 1993: 62, taf. 13). Very many such skates are found in medieval Scandinavian towns. There are over a hundred of them known in Lund alone (Ein Wegweiser 1990: 12). Most of these are dated at the years 1000 - 1100 (Cinthio 1976: 383-386); however, in certain places (Toruń), bone skates are a happenstance even in cultural layers from the latter half of the 14th century (Hensel, Niesiolowska, Żak 1959: 71, tab. VII: 4). The oldest known picture of a person, skating on skates made from bone, is dated at 1539. Leveled animal bones were occasionally used for other purposes in addition to skating (Roesdahl 1986: 78-79; Vahlne, Arwidsson 1986: 167-169).

Construction parts and wood-working tools

Wood did not survive in the sand of the seashore. Therefore, certain features of construction can only be discussed on the basis of finds, such as nails, rivets, bores and adzes. No axes were found at all while excavating the settlements of Palanga.

Nails and rivets. Iron nails and rivets were found in nearly all the settlements, especially those by Birutė Hill, and nearly all the horizons of the cultural layer. In the settlement at the foot of Birutė Hill, there were thirty-six nails and forty-two rivets found. At Žemaičių Hillock, there were one nail and four rivets and at the Southern Settlement, five nails and one rivet. The latter is usually referred to as a boat rivet. However, the nails and the rivets could also be relevant to construction. It can be surmised that these might have been used for certain structural constructions, for example doors. The way to substantiate or refute this presumption would be an attempt to find certain consistencies in the distribution of iron nails and rivets within the stains of the structures (Figure 165). The areas in the structures where the nails and rivets were found, unfortunately, cannot confirm that these had been used for building. Most of these sorts of finds were around a place for a domestic fire (a hearth or oven). Elsewhere they were scattered in almost the same way. Seemingly the nails and rivets appeared in structures due to usage of old boat parts for the household or for fuel. A comparatively large amount of them testifies to a rather intensive ship-building period lasting several centuries.

The rivets found in Palanga settlements were usually 4 cm - 6 cm in length. Their stems are square in the cross-section. The average length of a nail is 5 cm - 6 cm; one with a length of 12 cm - 15 cm is rare. Only one nail, BK 770, had a length of 30 cm. The heads of the rivets and nails were irregularly circular and, less frequently, rectangular or with faceted forms emerging at the top (Figure 175). The rivet mountings, almost without exception, had rhombic forms. In the cross-section, the nail stems at the heads were usually square, thinning slowly towards the end, thereby gaining a rectangular cross-section.

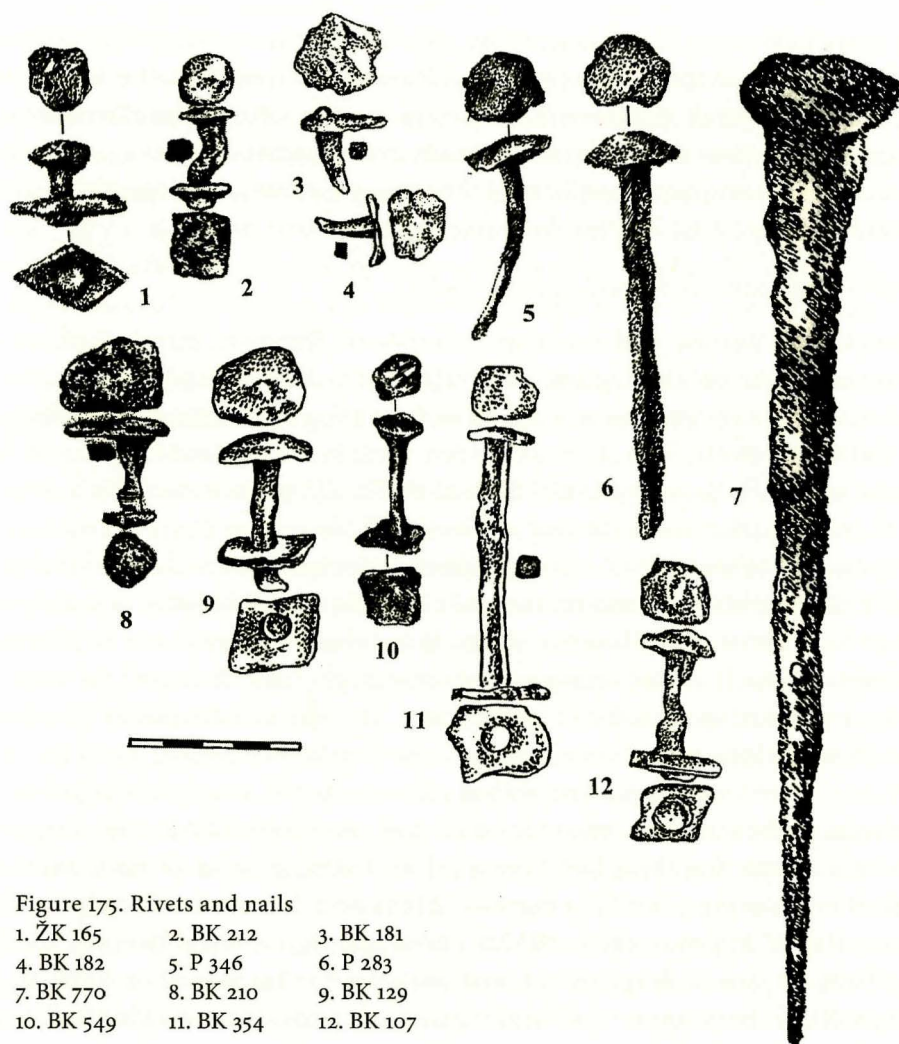


Figure 175. Rivets and nails

- | | | |
|------------|------------|------------|
| 1. ŽK 165 | 2. BK 212 | 3. BK 181 |
| 4. BK 182 | 5. P 346 | 6. P 283 |
| 7. BK 770 | 8. BK 210 | 9. BK 129 |
| 10. BK 549 | 11. BK 354 | 12. BK 107 |

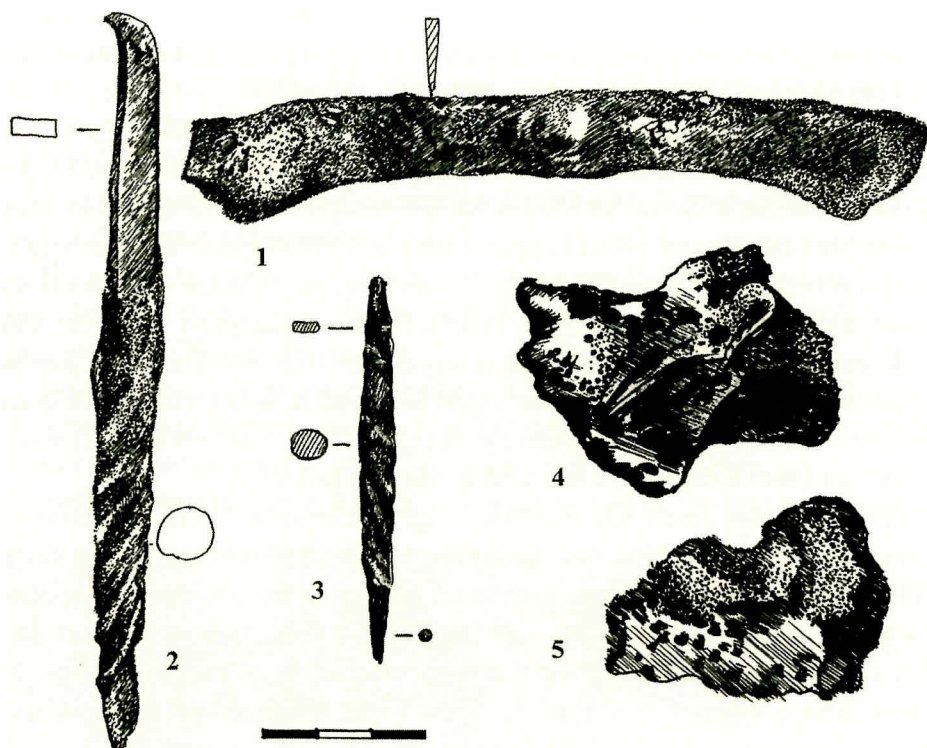


Figure 176. Wood processing tools (Nos. 1 - 3) and slag

1. adze BK 831 2. bore BK 579 3. bore ŽK 183 4. P 63 5. P 345

The boat rivets and nails from the Early Middle Ages are finds, characteristically from seashore settlements and harbors, discovered no farther than 10 km - 15 km from the sea (Žulkus 1986: 33-34). Scandinavians had used iron rivets for the construction and repair of ships with a clinker trim broadside. The Venden people (Western Slavs) used wooden nails in ship-building. Meanwhile Eastern Slavs used wooden nails and a "soft" interconnection of ship planks as late as up to 18th century in certain places (Дмитренко 2004: 25-26). Later the use of iron nails and rivets for building dwellings spread in the early towns. Iron nails appeared in Russia from the 10th century; later these were massively produced. In Novgorod alone, over 12,000 of them were found; some were 30 cm - 35 cm long (Колчин 1985: 254-258). Rivets appeared earlier in those place that had contacts with Scandinavians (Русь и Балтика 2006: 18).

Wood-working tools. The wood-working tools discovered most often are knives, which are described below. Knives used solely for wood-working,

assuming there were such in the first place, could not be distinguished. Additionally, two bores and one adze were found. It is possible that some wood-working tools were not recognized as such.

Bores. There were only two bores (Figure 176, 2 and 3). One, BK 579, was discovered in the settlement at the foot of Birutė Hill, whereas another, ŽK 183, was on Žemaičių Hillock. Both bores contain a shaft with a rectangular cross-section for a handle and a working part with a screwing thread. The first bore is comparatively large—11.3 cm in length. Its working part of eight coils measures 7.5 cm, and the largest diameter is 1.1 cm. Holes in diameters of 1.1 cm and thicknesses of 7.5 cm could be bored in wood with this tool. The other bore is significantly smaller—the holes that could be bored in wood would have been merely 0.7 cm in diameter and up to 4.5 cm in thickness. Not only that but many of the boat rivets found had stems with similar diameters.

Bores were not rare finds in Middle Age settlements. There the forms of bores that Palanga dwellers had used were widely employed during the Early Middle Ages, along with others, such as the one in the form of the cutting edge of a spoon (Hensel, Niesiolowska, Žak 1959: Tab. 53: 19-22; Gabriel 1991: 246-247, Abb. 44). The latter was, apparently, more characteristic of Eastern Europe. In Russia these comprised 85% of all the bores found (Колчин 1985: 257, таб. 99). One small bore, the same as those found in Palanga, was discovered in Gotland, at the Ire burial grounds, together with a penannular brooch that has poppy seed-shaped ends (Thunmark - Nylén 1995: Abb. 215-218).

Adze. An iron adze, BK 831, (its shaft had not survived), 14 cm in length, was designated for wood-working (Figure 176, 1). Very close analogies to the adzes in Palanga are from the Late Iron Age at the Tervetė Hill-fort and Raušai Settlement of Latvia (Latvijas PSR arheologija 1974: 70, tab. 3-4). These tools were not large during the Middle Ages. For example, the one found in Starigard/Oldenburg was about 15.5 cm in length (Gabriel 1991: 246-248). Many adzes in various sizes and forms have been found in the 9th - 13th century hill-forts and towns of Russia (Колчин 1985: 257-258, таб. 98).

A find of an unclear designation, BK 573, which is similar to an awl except for its length which is as much as 17.8 cm, could have been associated with wood-working as well (Figure 188, 4). The more tapered part of the circular cross-section incurves; whereas, the longer terminal of the rectangular cross-section has been broken off (as much as 9.2 cm of it had remained). Apparently it had been a chisel, the blade of which had broken off while working.

Metal processing. No tools that might have been directly associated with metal processing were found in the Palanga settlements. Iron had been smelted and processed in Palanga, the same as in other settlements of that time. Attesting to this are the pieces of slag, found in the layers at the foot of Birutė Hill and the Southern Settlement (BK 764, 835 and 836 and P 175, 280, 344 and 345). Iron, which was smelted somewhere farther away from dwellings, the same as was done with other kinds of metals, was processed in the structures of the settlements. On Žemaičių Hillock there was a small, brass plate found with a hole, having a diameter of 1.25 cm, perforated at its edge; it was the remains of a preformation (Figure 177, 3).

Palanga dwellers had good conditions for developing the craft of jewelry-making because they received the required raw materials of non-ferrous metals from merchants across the sea. A bronze or brass crook with slashes, BK 52, was found in the rampart encircling the foot of Birutė Hill, in Horizon 2 of its cultural

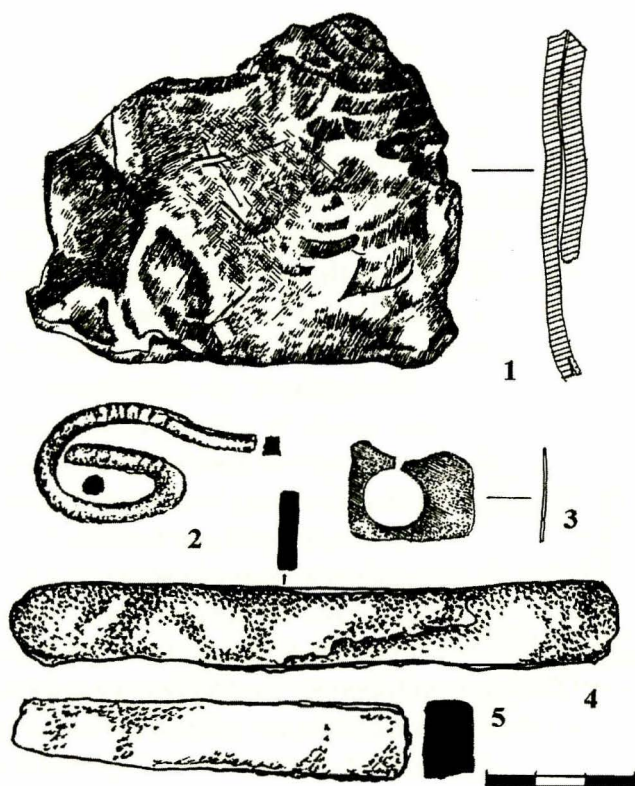


Figure 177.
1. Raw material for metals—lead, BK 722
2. Raw material for metals—brass, BK 51
3. Production scrap—brass, ŽK 8
4. Presumed preformation—iron, BK 128
5. Presumed preformation—iron, BK 344

layer. Straightened out the crook would have been 12 cm in length; its irregularly rectangular cross-section measures approximately 5 mm x 5 mm (Figure 177, 2). The chemical composition of this crook was not examined; therefore, it is hard to say whether or not it is related to other brass artifacts with highly similar compositions from Lithuania, Latvia and Estonia. The weight of the crook is 19.66 g, which is close to the weight of a unit, according to the weight system used at the settlements of the Curonian Lagoon and Sambia (Vaitkunskienė, Merkevičius 1978: 99-100; Volkaitė-Kulikauskienė 1970: 114; Žulkus, Klimka 1989: 54).

Raw lead was found for the first time in Lithuania, while excavating settlements. In Structure No. 23, ascribed to Horizon 3A of the settlement at the foot of Birutė Hill, there was a lead plate, BK 722, found that measured 9.5 cm x 7.7 cm in size and up to 1 cm in thickness. This plate was folded and made from sheets of two or three different thicknesses. The edges of the plate have hack marks, and there are signs of axing and hammering on the planes as well (Figure 177, 1). Raw lead, in the shape of an irregularly formed ingot, was found in the structure of a crafts artisan from Lund, dated at 1020 - 1050 (Bergman, Bilberg 1976: 199-200). Raw lead, nearly the same as the one from Palanga shaped like a folded plate, was discovered in a jewelry workshop in Starigard/Oldenburg (Gabriel 1991: 234-235, Abb. 35: 8).

Bone and horn artifacts

Bone and horn were widely used materials for making household items in Palanga, the same as in many Middle Age settlements. There was not a plentitude of artifacts made from bone and horn, but they were quite varied. Organic materials survived very poorly in the damp sand at the seashore. This is apparently why small-sized artifacts, made of bone or horn, were not discovered.

Irrespective of this, there were also nearly no tools or artifacts which would indicate how animal bones and horns were being processed. Only two bones were found that had marks of being treated (Figure 178). One, BK 300, had marks of being chopped at with a knife (?). In the opinion of Vladimir Kulakov, the marks could be similar to runes (Kulakov 2006: 156). The second find, BK 159, was a cut of a joint from a ruminant animal—a head of cattle.

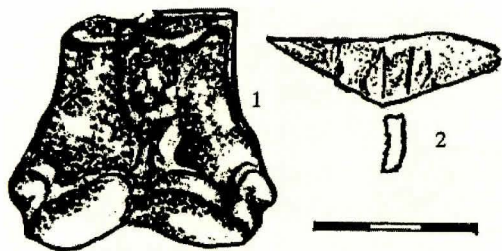


Figure 178. Bones with signs of processing
1. BK 159 2. BK 300

Other artifacts, in addition to ceramics, were a happenstance in the stains of Palanga settlement structures. Most were tools relevant to various household tasks. Actually such finds were not particularly varied; they included remains of small knives, whetstones, strike-irons and several other kinds of small artifacts.

Knives. Small knives comprised most of the work tools. There were twenty-five found in the settlement at the foot of Birutė Hill and one each on Žemaičių Hillock and the Southern Settlement (Figures 179 and 180). About a third of the knife blades were found in structures around the places for a domestic fire and a third in various spots of dwelling stains. The rest were concentrated where more whetstones were found as well—not far from the places for a domestic fire, in corners and near the terminal wall (Figure 165).

The knives had survived poorly; usually only their blades were found. Their lengths range from 7.3 cm up to 15 cm, such as BK 575. They are generally 10 cm - 12.5 cm in length. Only two knives have the remains of wooden handles and one, the remains of a bone handle. Most of the blades, seventeen, have a straight back, and the tops of five blades are very slightly bent. Knives with a bent back were in various horizons. All the knives, except one, BK 31, were found at the uppermost horizon of a cultural layer and contained hafted handles. An encased knife had a bone casing, reinforced with rivets (Figure 179). Most knife blades are blunted due to long-lasting use. The knife blades are clearly separated from the stems from one or both sides; however, there are also those knives in which the stems are akin to a continuance of their blades.

The small knives found at Palanga settlements do not differ from the household knives found in Lithuania during this time period. The only exception is one little knife, BK 832, which was found in Horizon 5 of the cultural layer. It seemingly once had a wooden handle, which was wrapped onto the blade with brass wire. A spiral of six coils, BK 660, was found separately, having a diameter of some 1.7 cm. It might have also slipped off the handle of a small knife (Figure 180, 7). Such a custom was not widespread in Baltic lands, although knives with enwrapped encasements were occasional happenstances during the Old Iron Age (Michelbertas 1986: 162). One knife, of the forty found, which was enwrapped with wire was accidentally excavated in the Bandužiai burial grounds (Stankus 1995: Figures 76 and 64, 31). Quite many small knives of various forms, containing variously decorated chapes with handles enwrapped with brass wire, were found in the burial grounds at Birka (Arbman 1984: taf. 177, 179) and Gotland

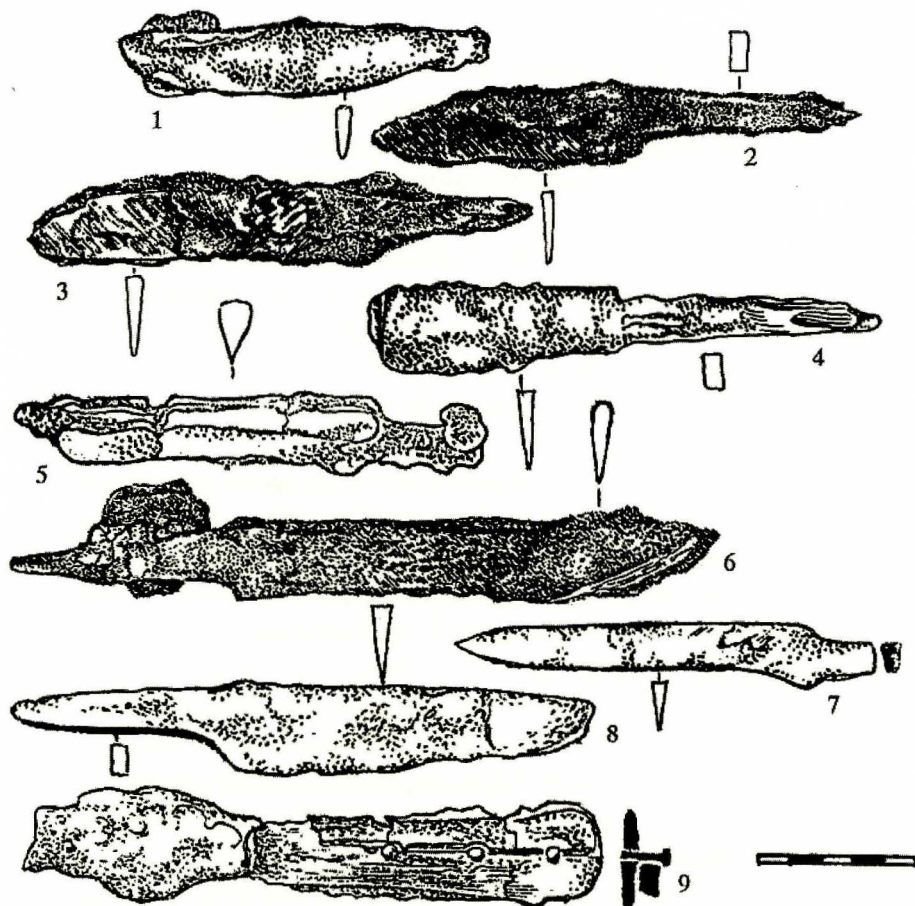


Figure 179. Knife blades

- | | | | | |
|-----------|-----------|-----------|-----------|----------|
| 1. BK 75 | 2. BK 547 | 3. BK 581 | 4. BK 127 | 5. G-252 |
| 6. BK 575 | 7. BK 259 | 8. BK 152 | 9. BK 31 | |

(Thunmark - Nylén 1995: Abb. 154:1, 193 b:10, 214 b:9, 220 b:9, 237:10). Knives with wooden encasements, enwrapped with brass wire, were found in 10th century graves in Jutland and in Bornholm Island, although the area in Denmark where they had been disseminated has still not been established (Lyngstrøm 1995: 79-82). Such knives are an occasional happenstance in former western Slavic centers of the Middle Ages along the German seashore, including one in Wolin where these are dated at the 11th - 12th century (Corpus 1973: 76, 41/174:14, 97, 41/265:4; Eggers 1985: Taf. 71).

Whetstones. Most whetstones, eighteen of them, were in the cultural layer of the settlement at the foot of Birutė Hill. Two were found in the Southern Settlement and only one in the settlement on Žemaičių Hillock (Figures 181 and 182). In the settlement by Birutė Hill, whetstones were usually concentrated in the stains of dwelling structures but were also happenstances in out-buildings. They were usually found by possible walls of these structures, where there was a place for a domestic fire, and in the southeastern corner. There were less of them in other places (Figure 165).

Of the whetstones found in Palanga settlements, only one, BK 355, contained a hole. This is one of the oldest of the whetstones found; it was discovered in Horizon 5A. Whetstones are generally massive, often devoid of form and only somewhat split, providing them with a shape of a rectangular cross-section. Two whetstones, BK 115 and P 338, are simply made from sandstone in its natural form. Only one whetstone, BK 116, has a more interesting shape, which is

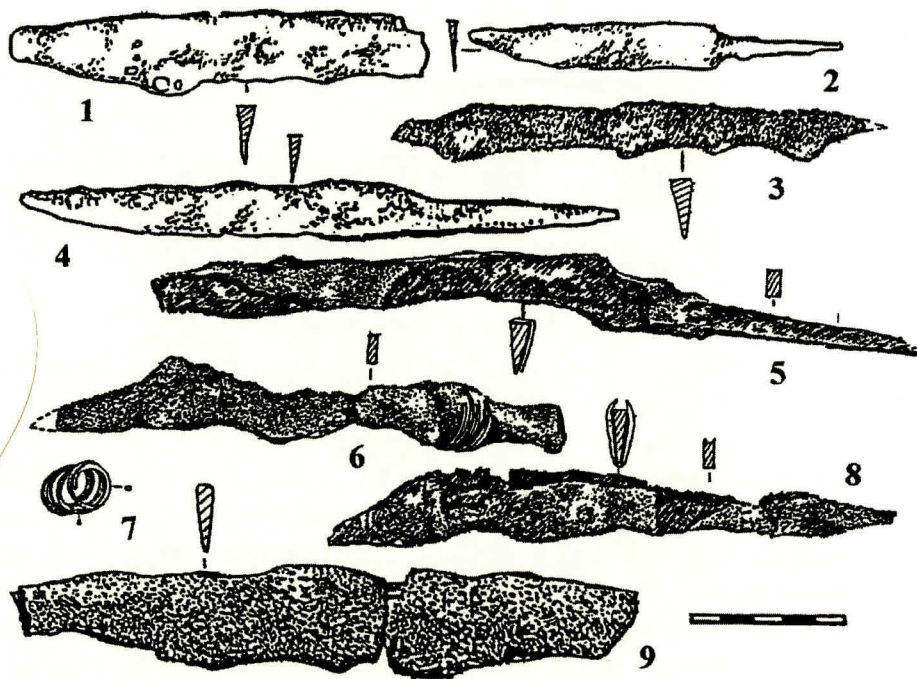
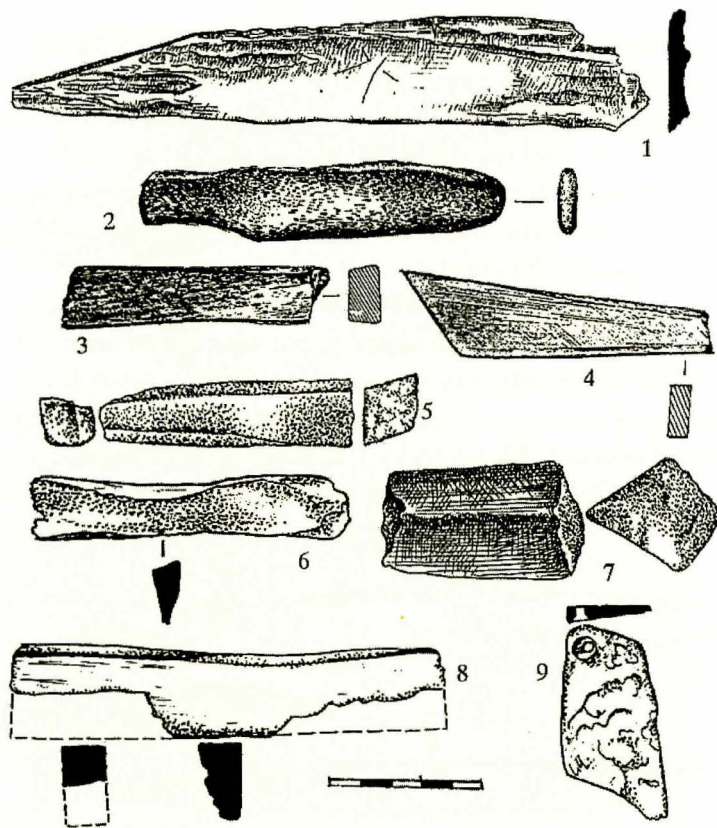


Figure 180. Knife blades

- | | | | | |
|-----------|-----------|-----------|-----------|-----------|
| 1. BK 341 | 2. BK 343 | 3. ŽK 184 | 4. BK 342 | 5. BK 830 |
| 6. BK 832 | 7. BK 660 | 8. BK 833 | 9. P 221 | |

Figure 181.
Whetstones

1. BK 116
2. ŽK 106
3. BK 563
4. BK 365
5. BK 241
6. BK 100
7. BK 139
8. BK 155
9. BK 355



reminiscent of the one-edged blade of an ancient sword. Another, ŽK 106, has a shape that is reminiscent of a knife (Figure 181, 1 and 2). The sizes of the whetstones are most various, ranging from small ones, the crook-shaped and up to fairly large pieces of rock.

Seven whetstones are made from slate that has a silvery, shining fibrous structure. Then there were another three whetstones made from grayish blue, dark rock of a similar structure. A great many whetstones were also made from such silvery glittering rock. These were also found at the site of the ancient Klaipėda castle. It is believed that this rock, a micaceous slate or natural schist, was brought in from abroad (Žulkus 1991: 27-28). Six whetstones are made of sandstone; raw material for them was also found—a fairly large brick of sandstone (BK 468). Two fragments of whetstones are from a dark, hard rock, probably from a local field stone, and one is from limestone. There is a large “brick” of

sandstone, BK 468, which has a yellowish color, a layered structure in a rectangular form and measures 21.5 cm x 8 cm x 6.5-4 cm. Then there is the flat piece of limestone, BK 721, sized 25.3 cm x 14.8 cm x 2.5 cm. Both might have been raw material for producing whetstones. High quality rock for producing whetstones was a commodity during the Early Middle Ages and it was brought in from afar. The whetstones of a glittering, fibrous structure, produced by Palanga dwellers, are made from exactly the kind of stone that the Vikings were exporting from Norway (Sawyer 1992: 126-135. Abb. 7). It is quite possible that the "light" and "dark" natural schist was muscovite quartz (Resi G. 1990).

Strike-irons. Strike-irons of two different types were found in the settlement at the foot of Birutė Hill.

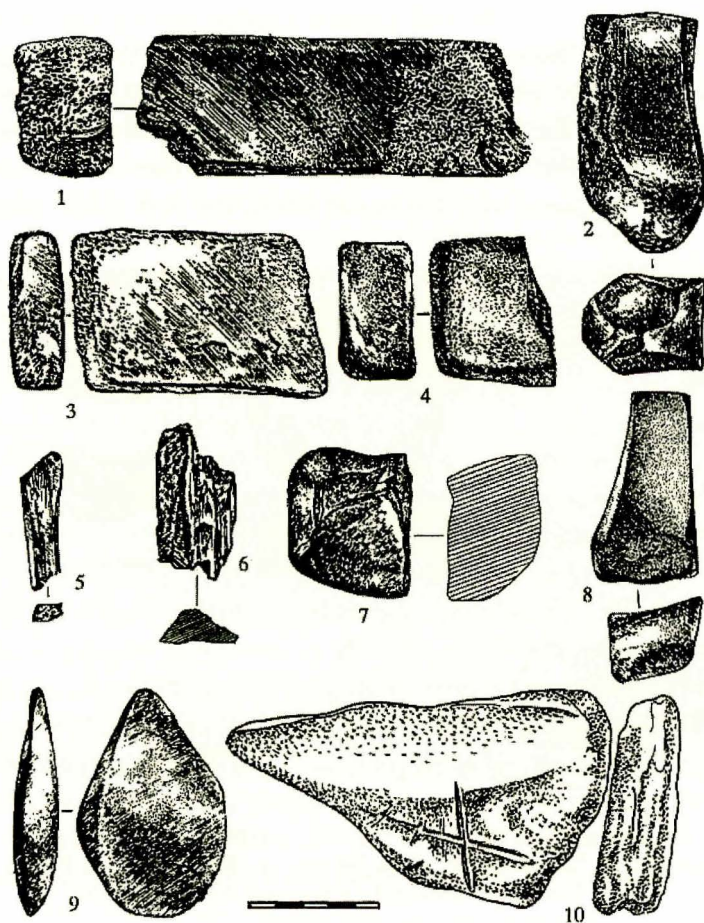


Figure 182.
Whetstones

1. P 243
2. BK 669
3. BK 383
4. ŽK 141
5. BK 670
6. BK 719
7. BK 718
8. BK 762
9. BK 810
10. BK 115

A banded strike-iron, BK 40, was found in the earthpile of the defense rampart, in Horizon 2. It is made of iron. Its length is 10.7 cm, its width 1.9 cm - 1.3 cm and its thickness, 5 mm - 7 mm. The terminal of one strike-iron is narrower, ending in a loop (Figure 183, 1). Banded strike-irons of equivalent width with a loop were widespread in Western and Central Europe during the end of the Roman period. Later these appeared in Eastern Europe, where they were used up to the 8th century and, in Finno-Ugric areas, all the way up to the 12th century (Седов 2002: 51-54). Possibly the strike-iron found in Palanga, which has a form uncharacteristic for Balts, testifies about trade relations with the Livs and Estonians.

The second strike-iron, BK 457, has an oval form with a closed contour. This strike-iron was tied down with brass wire containing a hook clasp (Figure 183, 2). The difference of this Palanga strike-iron from other oval strike-irons, which were widespread throughout Central and Eastern Europe during the Early Middle Ages, is the loop. The thickness of this loop is not even—the inner side of its lower part is widened over nearly its entire length. There are practically no precise analogies of it among the finds from Palanga. In the cremation graves, Nos. 40 and 51 at the Bandužiai burial grounds, there were two strike-irons found of this type. In accordance with the burial items, the first grave could

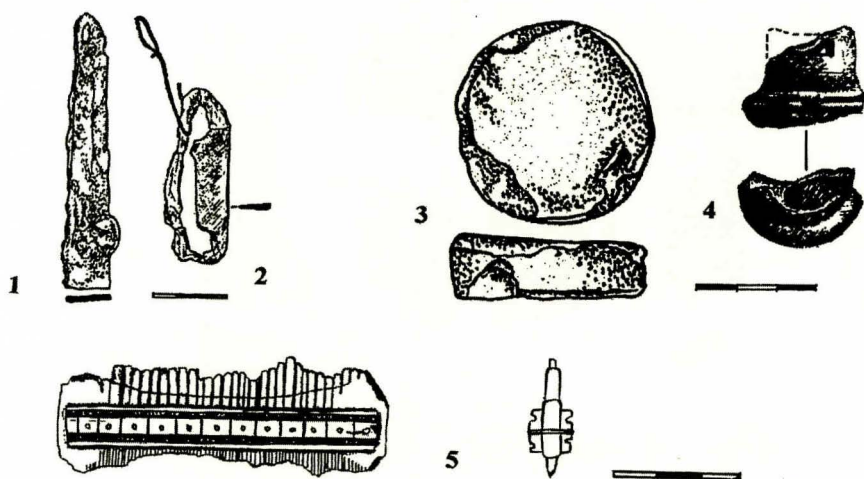


Figure 183.

Strike-irons:

Horn and bone game pieces:

1. BK 40

2. BK 457

3. "checker-type" piece, BK 312

4. "king" figure (?), BK 614

5. Combs, random finds in Research Area XIII of the settlement at the foot of Birutė Hill

be dated at the 12th - 13th century. The dating of the second grave is not clear (Stankus 1995: 82, 109, 112, 69 Figures 5, 8).

Combs. A fragment of a double composite bone comb was accidentally found in Research Area XIII at the foot of Birutē Hill. The length of the comb is 7.6 cm. Its ends appear to have been vertical (Figure 183).

Double composite bone combs, seemingly with vertical ends that have narrow plates on both sides, are assigned to several types. Those found in Elbing are dated at the latter half of the 13th - 14th century (Marcinkowski 2004: 500, ryc. 3: 10; 4: 1). Bone combs with an analogical construction with vertical ends, found in Riga, are dated at the 13th - 15th centuries (Strēle, Tilko 2001: 56-57). In Estonia combs of a similar type, some of which also contain two plates with longitudinal, decorated gutters, are dated at the 12th - 14th centuries (Luik 1998).

No analogies of the Palanga comb ornamentation were discovered.

Game pieces. A find from Structure No. 12 in the settlement at the foot of Birutē Hill was a stone for games, BK 312. It is made of sandstone and has a flat cylindrical form. Its diameter measures 5.3 cm (Figure 183, 1). Since it is similar to spindles, at first, it was considered a preformation for a spindle whorl (Žulkus 1984: PKIA. F. 5. B. 3371. P. 120).

Dice were used for various games. One game, which had spread from Arab lands all the way up to Northern Europe, was the "Mill game" (Herrmann 1982: 142). This game, using dice made of sandstone, bone or amber, was played on wood planks during the Middle Ages. The most important figure, the "king", would be placed in the center of the plank (Lindquist 1984: 215-218; Gabriel 1991: 223-228; Persson 1976: 379-382). The king figure came in various forms and it was taller than the other pieces were. It was usually made from bone, horn, walrus tusk or brass. Game dice of various forms are found quite often in Scandinavia and western Slavic centers. An analogy that is closely related to the game dice used by Palanga dwellers was discovered in an 1150 - 1300 cultural layer in Lund (Persson 1976: 379-382). A charred fragment of an artifact, BK 613, made from bone or horn, was found in Horizon 3 of Research Area XIII in the settlement at the foot of Birutē Hill. This was identified as a game piece of the "king" figure (Figure 183, 2). A similar type of a small bone figure of a "king" was found in Starigard/Oldenburg (Gabriel 1991: 228, Abb. 32:2). During the Middle Ages, there were also chess pieces, similar to the piece made in Palanga (Müller 1997).

These sorts of artifacts are rare in Baltic lands. It appears that game dice were not kept prior to this time. Seemingly one such artifact was found in Apuolė (KVIM. Photo Negative No. 484).

The collection of jewelry from Palanga settlements is not plentiful. The finds included one neck-ring, seven penannular brooches, six bracelets or their fragments, four rings and one little beaded piece (Figures 184 and 185). Most of the jewelry came from the foot of Birutė Hill. Four were found in the Southern Settlement. Only the neck-ring is from the cultural layers of Žemaičių Hillock.

All kinds of ornamentation are well known and, more or less, disseminated throughout West Lithuania. The traditions for dating them are already entrenched. Therefore, without going into deliberations on issues regarding the origin and dissemination of one or another artifact, the effort here will be to link the chronology of certain pieces of jewelry with the horizons of the cultural layer.

All the brooches, bracelets and rings, found in Palanga settlements, were made of brass. The jewelry from the settlement at the foot of Birutė Hill did not differ by ornamentation or form from those found in the burial grounds at Palanga and other seaside areas. The jewelry from the Southern Settlement layers was markedly poorer. The pieces were made from a thin band and they were either devoid of ornamentation or decorated carelessly.

The upper part of a crossbow ladder brooch was discovered unexpectedly in Research Area XIII (Figure 184, 8). This brooch is characteristic of the Curonians. It is totally flattened and, undoubtedly, assigned to the later variations of such brooches. Most likely it should be dated at the 12th century (Bliujienė 1999: 93-97). There are also similar ones at the Semigallian burial grounds of the 9th - 12th century (Vaškevičiūtė 2004). The flat, cruciform brooch with four-leaf clover appendages is characteristic of the Curonians and their closest neighbors (Figure 184, 7). Such brooches are dated at the 9th/10th - 12th century (Bliujienė 1999: 122, 53 Figure 2; Michelbertas 2005: 98, 108, 3 Figure 11). At the Jatvingian Jegliniec Hill-fort, a brooch was found that is analogical to the Palanga brooch and it, along with the entire composite of finds, is dated at the 12th century (Iwanowska, Niemyjska 2004: 92, Plate II: 12).

One single bead, BK 775, was found in Horizon 4 of the cultural layer at the foot of Birutė Hill. It was made from blue glass. Its form is cylindrical, and it is notched.

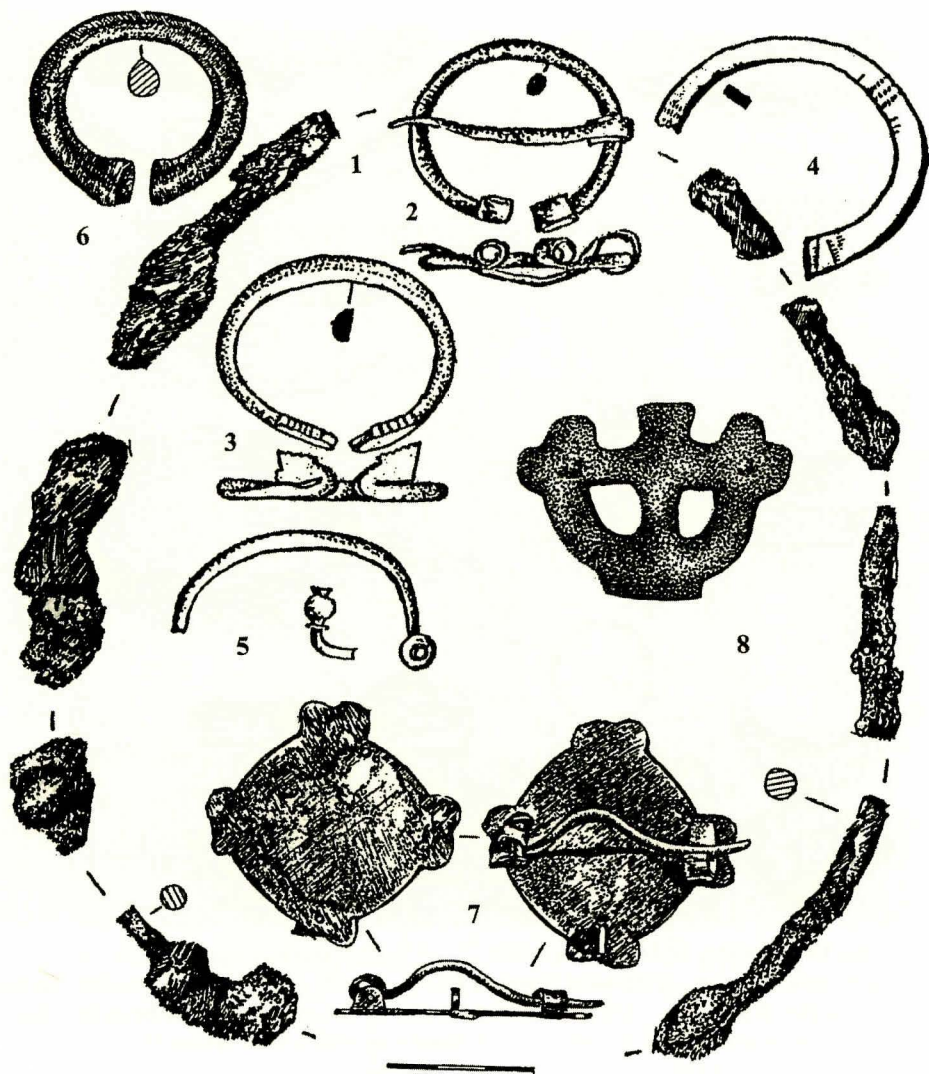


Figure 184. Jewelry

1. iron neck ring with blue glass and brass beads, ŽK 47
2. brass brooch with rolled ends, BK 180
3. brass brooch with animal-like ends, BK 190
4. brass brooch with widened ends, BK 331
5. brass brooch with poppy seed-shaped ends, BK 356
6. brass brooch with widening, thickened ends, BK 773
7. brass and silver (?), flattened brooch in a four-leaf clover form, BK 661
8. upper part of a crossbow ladder, brass brooch, a random find in Research Area XIII

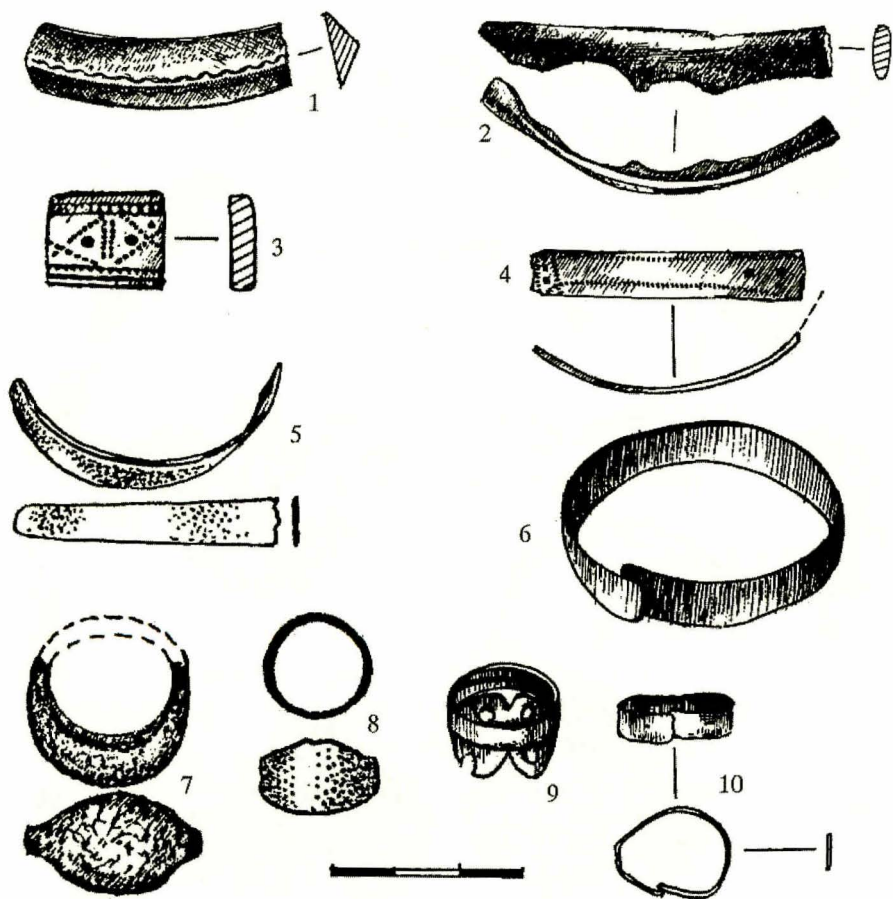


Figure 185. Brass jewelry and their fragments

- | | | |
|--|--|--------------------------|
| 1. spiral bracelet, BK 774 | 2. band bracelet, BK 693 | 3. band bracelet, BK 443 |
| 4. band bracelet, P 307 | 5. band bracelet, BK 78 | 6. band bracelet, P 212 |
| 7. cast ring with a wide center, BK 967 | 8. band ring with a wide center, G-253 | |
| 9. ring—interchanging ends and a wide openwork middle, P 213 | 10. band ring, P 308 | |

UNACCOUNTABLE PLATES

A total of five plates and their fragments, which were employable for various purposes, were found (Figure 187). Three, BK 324, 444 and 580, were in the settlement at the foot of Birutė Hill. One, ŽK 9, was from the Žemaičių Hillock, and another, P 86 - 87, from the Southern Settlement. One small unaccountable plate, BK 175,

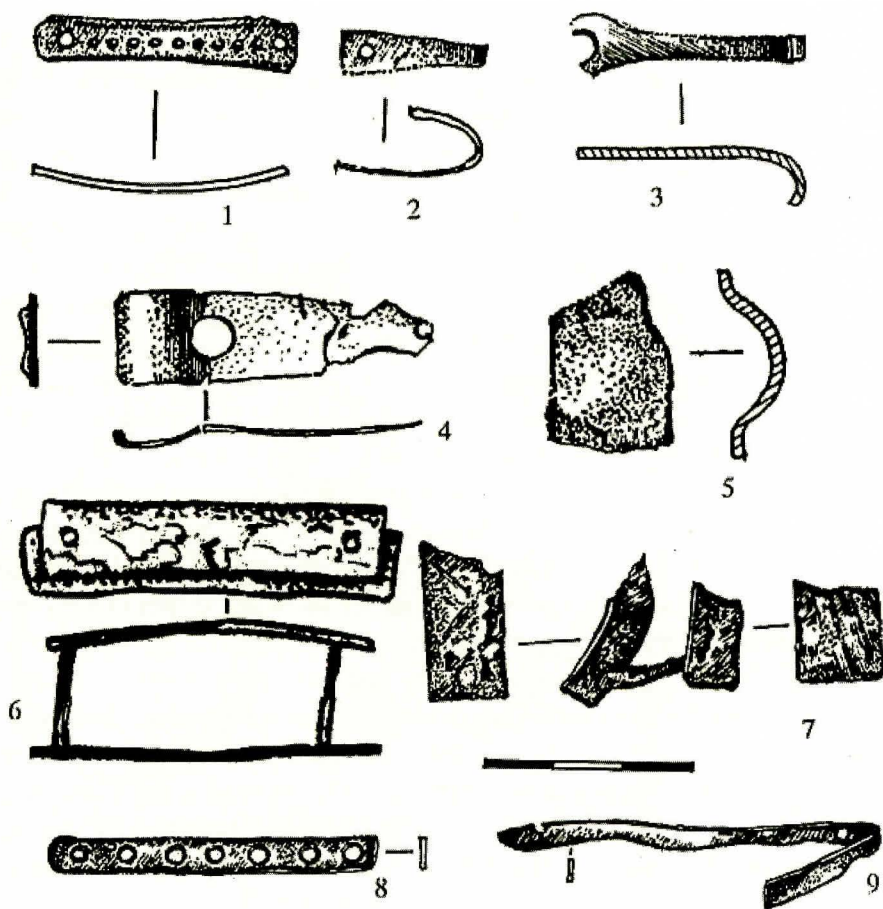


Figure 186. Various unaccountable plates

- | | | | | |
|-----------|-----------|-----------|-----------|-----------|
| 1. P 86 | 2. P 87 | 3. ŽK 9 | 4. P 31 | 5. BK 444 |
| 6. BK 324 | 7. BK 580 | 8. BK 771 | 9. BK 772 | |

made of white metal (tin?), was entirely worn. All the others were made of brass. Some of the unaccountable plates had hook clasps at their ends (ŽK 9 and P 86 - 87), which seemingly were for buckling belts. Many have small, surviving rivets or holes. One unaccountable plate, BK 444, had a concave cross-section; it was in the form of a half-moon. The ornamentation on the unaccountable plates was most ordinary, consisting of pounded pits on the inside and slashes at the edges.

In Horizon 1 of Research Area XI at the foot of Birutė Hill, an ingot, BK 357, was found. It was cast and had a half-rounded cross-section. Its ends were hammered flat, and it had five slashes—the “Lithuanian long” one (Figure 187). The ingot measures 13.3 cm by length, 1.5 cm - 1.6 cm by width and 0.8 cm by thickness. The weight of the ingot is 114.09 g. The silver contains inclusions and has a blackish color. Silver ingots of this type are usually found in hoards and, less frequently, at settlements. These are characteristic of the latter half of the 12th-13th century; they were still sometimes used even during the latter half of the 14th century (Duksa 1981: 83-130; 126; Michelbertas 1989: 31-33). Closely related to the Palanga ingot in terms of weight, at 116.02 g, was the silver ingot found in a hoard in the Ipšas area of Latvia, which is dated at the latter half of the 11th century (Urtāns 1977: 186, 187, att. 93). The 13th - 14th century ingots from Kernavė weigh from 102 g up to 108.6 g (Luchtanas, Vėlius 2002: 179, Nos. 434-438). The Lithuanian type of a 12th - 14th century ingot from the Polotsk-Vitebsk Duchy evolved from having a weight of about 102.3 g into a ruble, having a weight of up to 189 g (Бектинеев 1999). Analogies of the Palanga artifact would most likely be from the 13th century.

The only coin, P 230, was found in the Southern Settlement in the pit of a hearth of a post-bearing structure, which did not have a clear designation. This was a silver shilling from Elbing Town. Its diameter is 1.9 cm. It measures about 0.8 mm in thickness and weighs 0.44 g. On its head is the Polish eagle with an inscription around it, reading “SIGIS I REX POLO+ DO+ PRVSSIAE”. On the reverse side, there is the Elbing coat of arms with the inscription, “SOLID+ CIVII+ EL-BING+ 1533.” In the opinion of E. Ivanauskas, it had been minted in 1533 and wound up under the ground at around the middle of the 16th century (Žulkus 1999: 41).

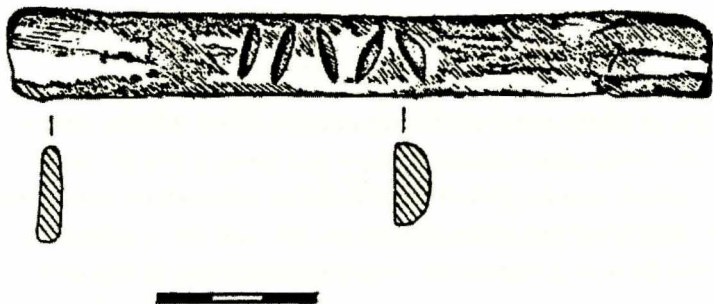


Figure 187. Silver ingot in a stick form, BK 389

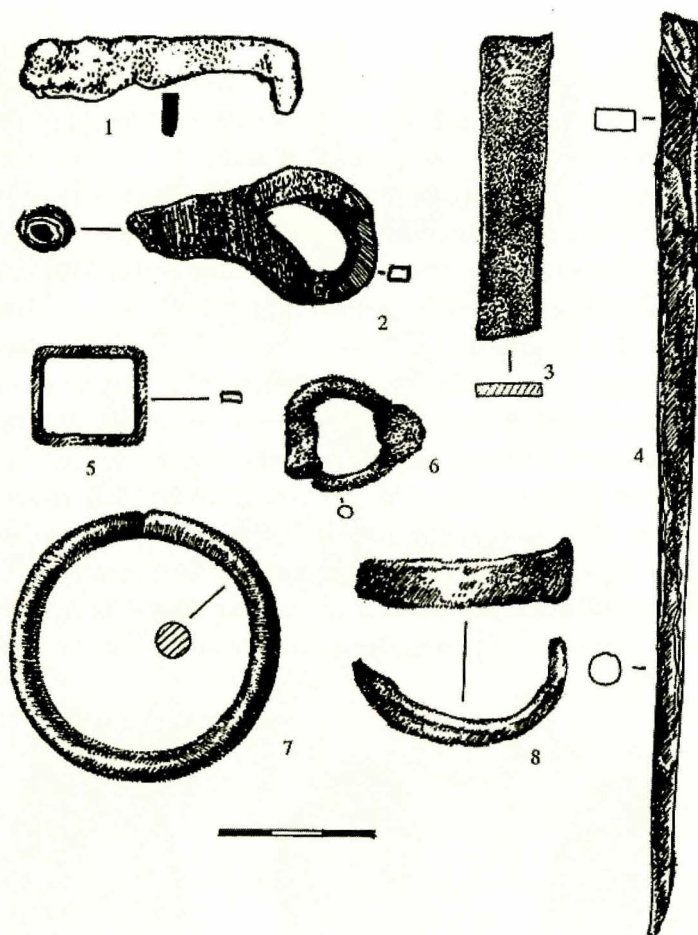


Figure 188.
Metal works
of an unclear
designation
1. iron, BK 52
2. iron, P 30
3. iron, BK 672
4. iron, BK 573
5. iron, P 348
6. iron, BK 769
7. brass, BK 838
8. iron, BK 767

METAL ARTIFACTS OF AN UNCLEAR DESIGNATION

There were small metal, usually iron, artifacts (G 286, BK 52, 298, 344, 573, 672, 767 and 769), and bands and plates of various forms found in different cultural layers of the settlement at the foot of Birutė Hill (Figure 188). Possibly some of these had been left over during the course of iron smithery, and some could be the fragments of tools, such as BK 344 and 573. Their designated use is not clear. Three artifacts, BK 771 and 772, were brass bands for an unclear purpose. There was a brass chain, BK 838; it had, apparently, landed in the upper layers randomly.

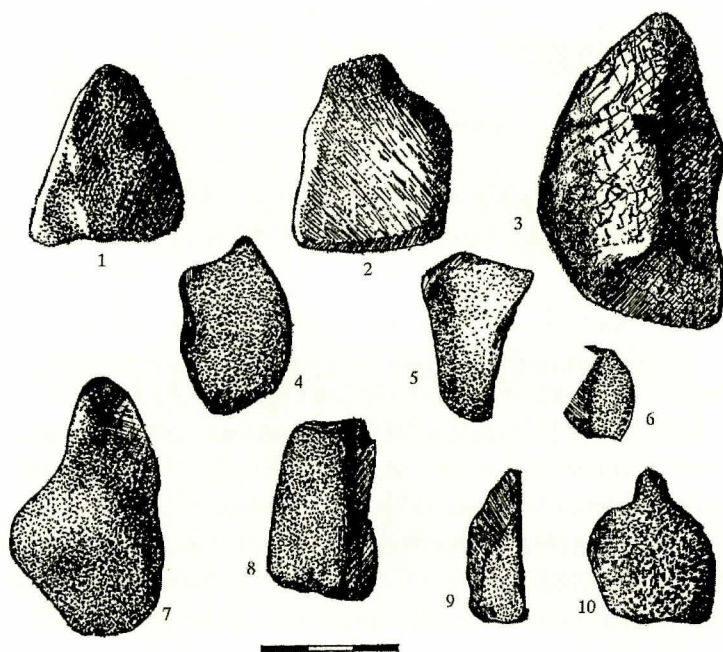
Palanga settlers not only gathered amber to sell as raw material but also to produce jewelry themselves. Based on the size of the “amber pit”, found in the Southern Settlement, and the seventy-seven pieces of amber in various sizes, which had not been removed from it (Figure 189), it can be surmised that a great amount of gathered amber had been stored in such warehouses of raw material.

Preformations and unfinished amber artifacts attest to the local amber “industry” during Viking times. In all eighteen pieces of amber were found that had clear marks of processing of one sort or another. Many of these are considered preformations for various artifacts. Only one piece of all the treated amber, ŽK 41, was found on Žemaičių Hillock. All the rest were discovered in the layers of the settlement at the foot of Birutė Hill. There was not a single piece of treated amber at the Southern Settlement. As such it must be believed that the “masters of amber” only resided in the settlements at Birutė Hill and Žemaičių Hillock. There are no available data about the income-producing activities of the dwellers at Roužė Settlement.

The amber preformations found are formed in various ways (Figure 190). Four are in the shape of a crook—apparently these preformations were for mak-

Figure 189. A hoard of amber found as part of the pit of Structure No. P-5 in the Southern Settlement

1. P 99
2. P 98
3. P 96
4. P 105
5. P 105
6. P 104
7. P 97
8. P 100
9. P 102
10. P 101



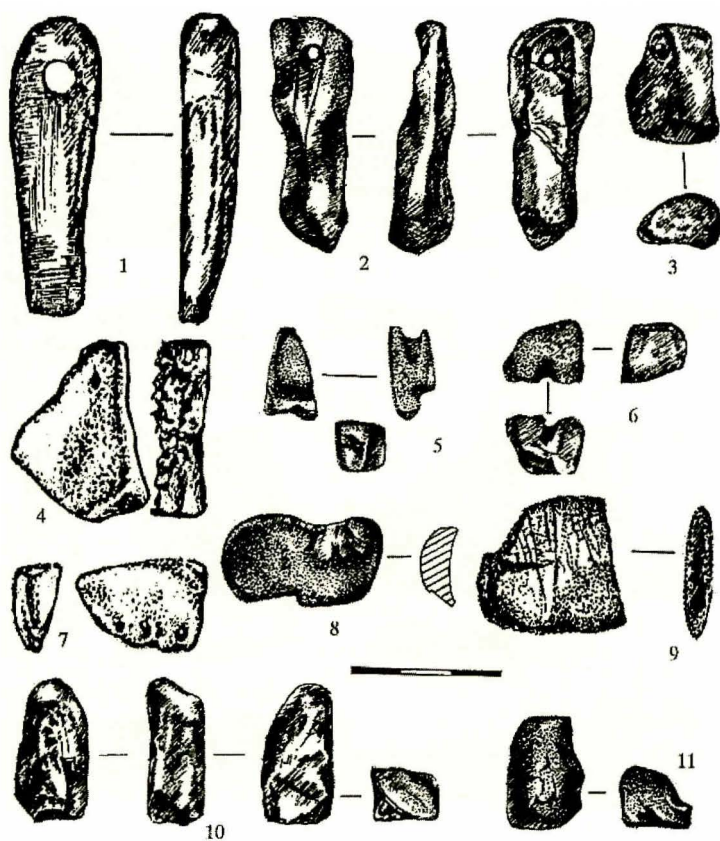


Figure 190. Amber artifacts and semi-processed pieces

1. pendant, BK 410
2. pendant, BK 808
3. pendant, BK 776
4. pendant, BK 57
5. piece of unclear designation, BK 677
6. piece of unclear designation, BK 507
7. unfinished small comb (?), BK 58
8. piece of unclear designation, BK 678
9. piece of unclear designation, ŽK 41
10. piece of unclear designation, BK 697
11. piece of unclear designation, BK 698

ing elongated pendants. Six had an accurately rectangular form, and the rest were in different shapes. When the form of a natural piece of amber needed to be markedly changed, it would be semi-split at first and then its edges “retouched” (BK 83 and 697). After that it would be “shaved” somewhat (BK 410 and 808), and holes drilled in it. The holes have diameters from 1 mm up to 2 mm. Since they were drilled from both sides, the external side of the orifice measures up to 4 mm. Six preformations in all were found with drilled holes or holes that had started being drilled. Only after all this was done, a piece would be painstakingly processed. The technology of amber processing—first “retouching” a piece to provide it with a rough, preliminary form, then drilling holes and only then treating the surface scrupulously—had not changed; this lasted from the Stone Age (Rimantienė 2005: 107-112) all the way up to the Late Middle Ages. The artisans of Klaipėda were still processing amber in this manner as late as during the 15th century (Sprainaitis PRPI. F. 5. B. 3888; Žulkus 2002).

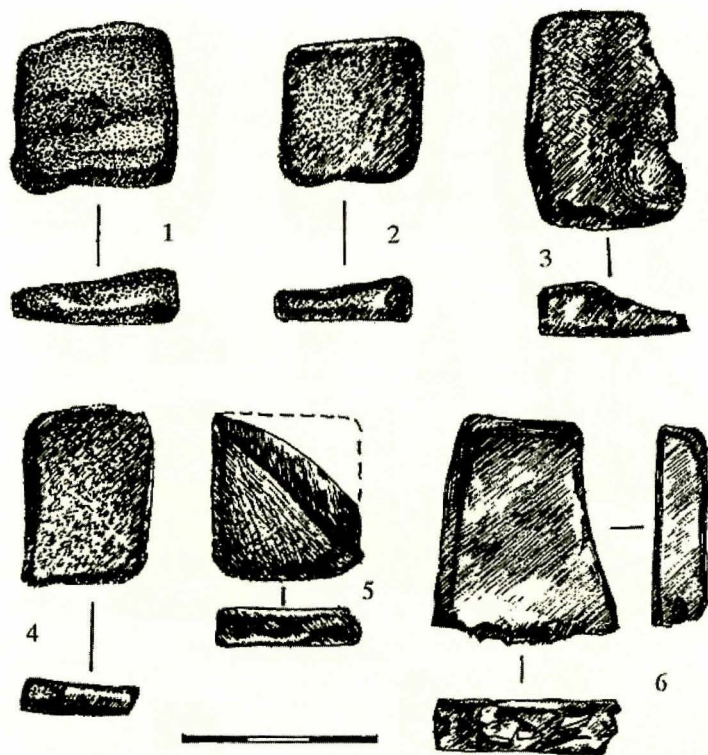


Figure 191.
Amber plates

1. BK 585
2. BK 559
3. BK 572
4. BK 558
5. BK 556
6. BK 791

There were several kinds of artifacts. At least eight could have been preformations for various pendants (BK 57, 410, 677, 697, 698, 776, 807 and 808). Several pendants were, seemingly, supposed to have been elongated, a rather unusual form (BK 410, 677 and 807). Similar ones were found in Daugmalė (Radiņš 1992). One small hook that had not been completed, BK 58, should have been in the shape of a small comb—work in making the teeth and indentations by them had been started (Figure 190, 7). Previously amber pendants in such a shape had only been discovered in the burial grounds of Lithuania's seashore (Varnas 1978: 121, 122). Amulets in the shape of small combs are associated with the ancient Baltic faith (Vaitkunskienė 1992). One little amber artifact, BK 678, has the same form as the stone weights used for weaving. It is not known if this was meant to be the imitation of such a weight or another sort of incomplete artifact (Figure 190, 8). A little, unfinished artifact in the shape of an ellipsis, ŽK 41, was found at Žemaičių Hillock. It is similar to the so-called amber “brooches” that had been widespread during the Neolithic Age (Rimantienė 2005: 109, Figure 49)—see Figure 190.

Additionally, there were processed, rectangular amber plates found in the settlement at the foot of Birutė Hill (Figure 183). Five plates were in sizes of 3.5 cm x 2.7 cm x 1.3 cm or smaller (BK 530, 558, 559, 572 and 585), and one was larger (BK 299). These could have been preformations of miniature plates for weaving sashes, which used to be placed in the graves of women from Palanga (Varnas 1978: 120; Žulkus 1994). These plates might have been used for other artifacts as well, including the production of pendants in the form of a small cross. Such pendants are found in the trading centers of Scandinavians and western Slavs, places where Christianity had already been accepted, and at more important Baltic marketplaces (Stenholm 1976; Leciejewicz 1989; Rādiņš A. 1992). For now, however, this is just a presumption, because amber pendants in the form of a cross have not yet been discovered in Palanga.

To date not a single preformation for making amber beads has been found at a Palanga settlement.

ITEMS FOR PAGAN CULT WORSHIP

Merely several finds are undoubtedly associated with the Pagan cult—two amulets, two uncertain finds and the “hoards” of amber bits found in structures.

The amulet made from a boar tusk, BK 717, was found not far from Structure No. 23. This is a very ordinary artifact—merely a hole has been drilled in the thicker end of a natural boar tusk (Figure 192, 2). There are no signs of chiseling. Such pendants were worn throughout the entire eastern Baltic region during Viking times (Luik 2004: 166, Figure 12: 8-11; Шадыро 2001: 269) and later.

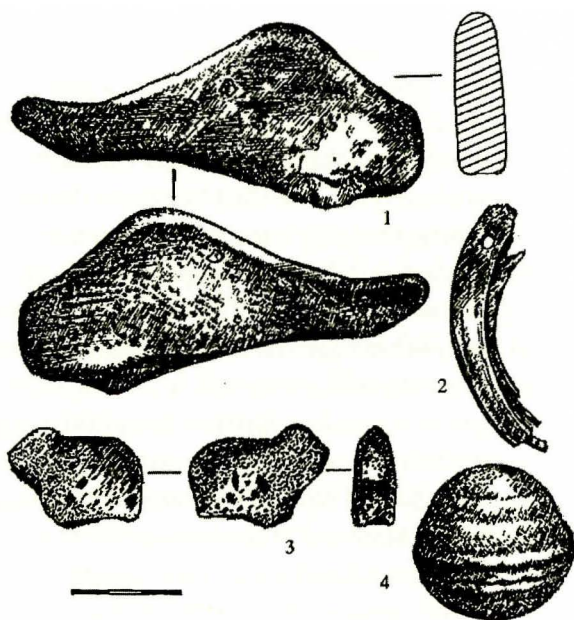


Figure 192. Amulets

1. stone, BK 720
2. boar tusk, BK 717
3. amber, P 349
4. stone, BK 763

The second find, BK 720, which was also considered an amulet, was discovered in Structure No. 23. This find is rather unusual. It is the head of a duck, made from sandstone, in a size of 11.5 cm x 4.5 cm. A vertical head and a long, upturned bill are well distinguished (Figure 192, 1). A natural flat stone, with a thickness of 1.5 cm - 1.6 cm, was used for this artifact. Apparently its form was similar to a duck head. The "sculpture" was made by adjusting natural stone and scratching accurate small circular forms on both sides.

Amulets in the shape of water birds have been known in Baltic territories since olden times (Nakaitė 1991: 67-70). Nonetheless, it is believed that the cult of water birds, especially ducks, was more characteristic of the Finno-Ugric neighbors of the Balts (Рябинин 1961: 60-62; Седов 1987). The water bird cult was very widespread in western Baltic lands. Nevertheless, even in Curonia, comparatively few metal zoomorphic pendants (Озере 1986: 41-49) and other artifacts have been found, which could have expressed adoration for water birds (Varnas 1978: 122; Nakaitė 1991: 69). An even more rare find is an amulet pendant made of stone that pictures water birds like the openwork pendant from Palanga, dated at the 12th century, from the grave of a Semigallian woman (Zemītis 1998: 109, Abb. 3:9).

The cult of the water bird—creator of the earth and intermediary between the different worlds—was much more expressed in Scandinavia. In the 7th - 8th century graves of Gotland, quite a few small brooches and plates have been discovered in the shape of water birds, usually ducks (Nerman 1069: Taf. 19). Water birds are also envisioned on one of the oldest stone runes in Gotland, dated as early as from the 7th century (Varenius 1992: 61, 64, Figures 15, 19, 21 and 22). Finds picturing water birds in western Slavic lands are considered to have a Scandinavian origin (Machajewski 1992: 19, 1:6).

One more amber find, P 349, from the uppermost horizon in the cultural layer of the Southern Settlement, could be associated with the cult. This small artifact is quite deteriorated. Its size is 4 cm x 2.8 cm, and it is 1.2 cm - 0.8 cm in thickness, with burnished surfaces. It looks very much like a bear (Figure 192, 3). There are no holes for hanging this artifact. The bear is an animal, which frequently has been linked with Baltic totemic visualizations since the Stone Age (Zemītis 1998: 109). However, it seems that there are no amulets in the shape of a bear in Lithuanian archaeological materials, which are dated at the Middle Ages.

In the opinion of Audronė Bliujienė, in a Southern Settlement, a flat unfinished sitting animal, perhaps a cat was found. Such figurines are known from the other Viking trade centres of the Baltic Sea Rim (Bliujienė 2007: 375 and 423, Figures 228: 4 and 225: 17, 19).

In Horizon 4 of the cultural layer at the foot of Birutė Hill, a natural stone, BK 763, was found. It is 4.5 cm x 4 cm in size. Due to its very accurate walnut form, people had saved it (Figure 192, 4). Most likely it had contained some sort of magical meaning. The "hoards" of small pieces of amber that are virtually useless for processing, which were found in the structures of the settlement at the foot of Birutė Hill, must also be linked with the Pagan cult. Two such "hoards", BK 117 and 133, are undoubtedly such. One was found next to Structure No. 1, and the other in the middle of Structure No. 2, not far from the oven. In the first "hoard", there were eight small pieces of amber, in sizes ranging from 3 cm x 3 cm up to 1.8 cm x 1.7 cm. In the second "hoard", there were eleven amber pieces; of these the largest was 4 cm x 2.6 cm, and the smallest, barely 1.8 cm x 1.0 cm. The bits of amber found lay in piles. Apparently they had been poured into some sorts of bags. These finds should indicate the special magical and ritualistic meaning ascribed to amber. An analogy has been found in a 16th - 17th century grave of a man at Naglis Hill. There a small pouch with amber bits lay alongside the bones of the left knee (Žulkus 1981: 63-72). Were such amber bits, held in a pouch of cloth or leather, possibly meant to safeguard either the dwellings or their dwellers?

WEAPONS

There are very few finds of this type—merely two arrowheads and one spearhead.

Arrowheads. Both arrowheads are made of iron, hafted, long and narrow. The part that has survived from the first one, BK 345, is 6.4 cm long (only the feather). The rhombic cross-section of the arrowhead shows that it had an even width, and the feather was stretched out (Figure 193, 1). It was discovered in the stain of Structure BK-14 in Horizon 5. The second arrowhead, BK 574, was found in Structure No. 33 in the cultural layer of Horizon 3. This arrowhead is only 8.6 cm long and it is narrow. Its feather is as much as 7 cm long and has an unusual, squared cross-section, 9 mm x 9 mm, which tapers (Figure 193, 2). Lithuania's archaeological material does not contain very many analogies of such arrowheads. Arrowheads of the first type were found while excavating at Apuolė and dated at the 9th - 10th century (Nerman 1958: 193-197, Text Figure 281; KVIM, Photo Negative Nos. 478 and 480). A very similar arrowhead exists in the second hoard from Sauleskalns in Latvia, which is dated at the 9th century (Urtāns 1964-1965, 73 att. 19). Such an arrowhead was in the layer of the rampart of Daugmalē Hill-fort, which is "no later than from the 12th century" (Zemītis 1996: 19, 7 att. 4).

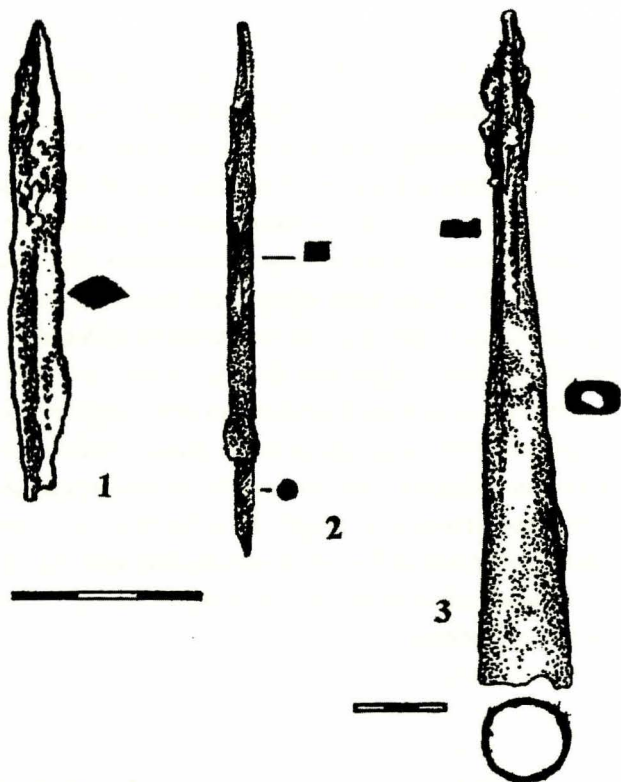


Figure 193. From the settlement at the foot of Birutė Hill:

1. arrowhead, BK 345
2. arrowhead, BK 574
3. spearhead, BK 163

Similar arrowheads were found in the burial grounds at Birka, dated at the 8th - 9th (10th) centuries (Arwidson 1986: 25-27). These are also isolated finds in the burial grounds of the Viking times at Gotland (Thunmark-Nylén 1995: Abb. 170:22). In the surroundings of Ryugu, analogical arrowheads (along with the rhombic and squared cross-sections of a feather) were found in the 9th - 12th century layers (Corpus 1973: 102, 41/272). Quite many were discovered while excavating in Arkono, in the layers dated at the beginning of the 9th, 10th and beginning of the 12th centuries (when the Danes attacked in 1136). Arrowheads of such a type are characteristic of the lands in Northern Europe (Herrmann 1974: 177, 209, 228 and 250-251, Abb. 14-16 and 20). Type 3 arrowheads from Starigard/Oldenburg with a rectangular cross-section, only with a feather of a different form, are dated at the year 900 - 1150 (Kempke 1988). This type of arrowhead is related to those, which were widespread in the 9th - 11th century lands of the Eastern Slavs and earlier towns (Седов 2002: 80-81).

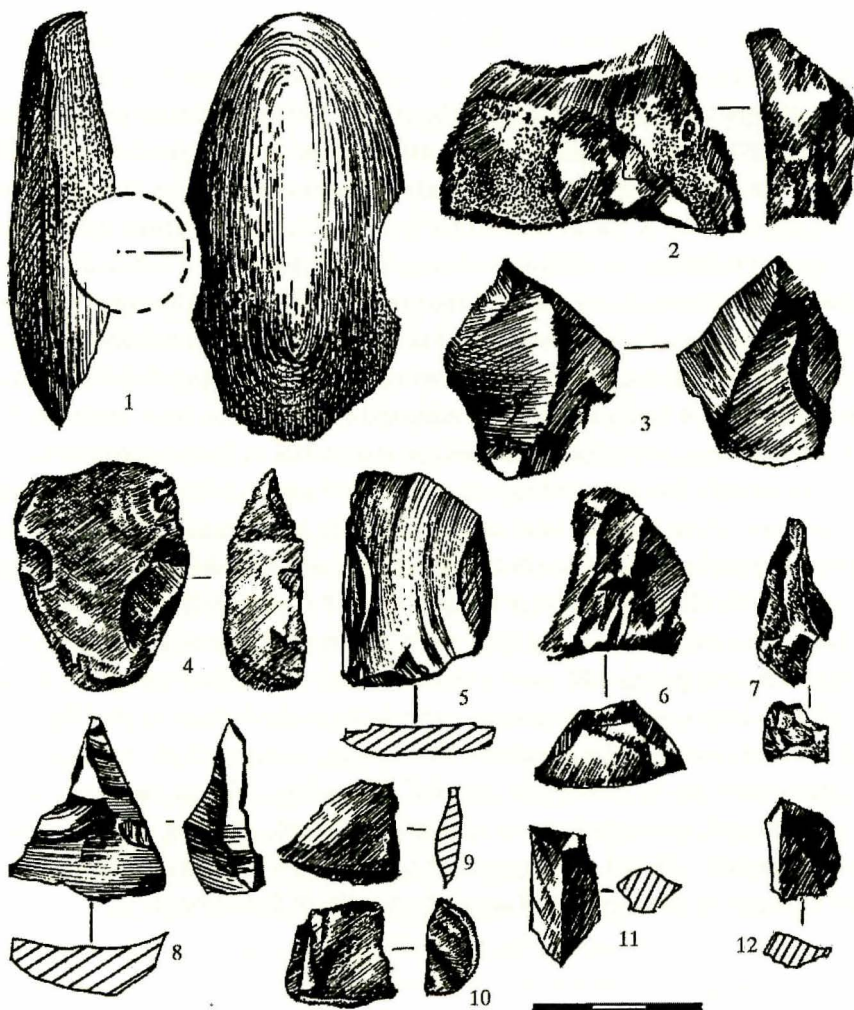


Figure 194. Fragment of a stone axe and pieces of flint

- | | | | | | |
|-----------|----------|----------|------------|-----------|-----------|
| 1. P 199 | 2. ŽK 32 | 3. P 339 | 4. BK 779 | 5. P 213 | 6. ŽK 31 |
| 7. BK 671 | 8. P 263 | 9. P 310 | 10. BK 837 | 11. P 200 | 12. P 201 |

Spearhead. A spearhead with a socket, BK 163, was found, speared in by the southeastern wall of Structure BK-4, outside the dwelling. This 26.5 cm long artifact, made of iron, contains a socket; its circular cross-section converts into the tip of its head with a rectangular cross-section. The tip of its head is not separated from the socket (Figure 193, 3).

The spearhead from Palanga is dated at the 12th - 13th century. Such a spearhead is a rarity. One was found at the burial grounds of Bandužiai. Unfortunately it was not dated with greater accuracy; however, it should not be later than from the 13th century (Stankus 1995: 98-99, Figure 83, 1). A very similar artifact, except with a wider feather, was identified as an ice-pick. It was found in an 11th - 13th grave in the Semigallian burial grounds at Pavirvytė (Vaškevičiūtė 2005: 100 and 103, Figure 5, 8). A spearhead of this type was found in a grave at Irzekapis, a Sambian peninsula. V. Kulakov classified this as Type VI, based on works by other researchers, and indicated that these had been widespread in Central Europe during the 12th - 13th century due to Eastern European influence (Кулаков 1990: 32 рис. 17:7). This claim seems questionable, because spearheads of a conical form with a socket and a feather of a squared cross-section have their analogies from the Iron Age, as per the archaeological material of Scandinavia in Gotland and continental Sweden (Almgren, Nerman 1923: As 128-131, Taf. 45:636 b). Furthermore, there are also later analogies, from Millennium II. Such finds are happened upon in areas of Sambia and Ladoga, which had been under the influence of the Scandinavian culture (Седов 1982: 184, таб. LVII: 17).

Flint. No artifacts made of flint were discovered. Nonetheless, there were flakes of flint and pieces that were split off for flint production purposes found in the cultural layers of all settlements, especially in the bottom ones (Figure 194). Most of them were in the Southern Settlement. Among these random bits of flint, there were many flakes (BK 555, 671, 799 and 837, ŽK 32 and P 94, 187, 200, 201, 233 and 339), several pieces of split off flint (P 76, 262, 263 and 310) and one core (?) fragment (ŽK 31). A fragment of a stone axe with a shaft-hole (P 199) was found along with the pieces of flint in the Southern Settlement.

XII. CHRONOLOGY AND SYNCHRONIZATION OF SETTLEMENT CULTURAL LAYERS

A conditional chronology was established for all the settlements by differentiating the horizons of their cultural layers. More precise adjustments were made in the dating of the cultural layer horizons. This was accomplished by including the entire complex of finds, including the ceramics. Dating of the ceramics, which had been shaped by hand and produced on a slowly rotating wheel, is not very applicable, because their traditional forms changed little over the ages. Therefore, the decorated ceramics produced on a rotating wheel were employed for dating. These have more precisely dated analogies in other Baltic lands. Certain other artifacts were employed for dating and synchronizing the horizons. These included, for example, the clay weights for weaving from the settlement at the foot of Birutė Hill, Žemaičių Hillock, Roužė Settlement and, in part, the Southern Settlement. Chronological tables (Tables 26 - 28) ease the dating of the cultural layers. Of course, despite all that, the dating is not sufficiently accurate for all the horizons.

The chronological tables of the finds from different horizons were compiled to serve as the bases for the tables shown above. The number indicating the greatest match by dates shows the most probable date of a cultural layer horizon (Tables 29 - 32). It can be seen in these tables that there were not sufficient finds to date all the cultural layer horizons. Furthermore, the finds were not from the same time period in all the horizons. The reason for this is that the dating of the analogies was not always accurate and the finds, especially certain ceramics types, had been in existence a rather long time. No doubt the reason is also due to the mixture of finds within a layer, caused by later constructions and different excavations. Specifically for this latter reason, some of the finds were clearly out of "their own" horizon, such as, for example, Ceramics BK 165 and 166. Despite these obstacles, the course of the chronology is quite clear and sequential. This assists in establishing the more doubtful time periods with greater accuracy.

Settlement at the Foot of Birutė Hill

There is insufficient material for dating Horizon 6; it is only possible to date it retrospectively. The meager finds from Horizon 5A date it at the 10th century. In it there are quite many analogies, some of which are at the limit of the chronology, "up to the year 1000"; whereas others are either "from the year 1000"

Table 26
Dating Finds from the Settlement at the Foot of Birutė Hill

Horizon	Find	Dating by analogies
1 (rampart)	Ceramics, BK 34, 35, 36, 50, 69	8 th - 9 th , 11 th , and end 10 th - end 12 th centuries
	Ceramics, BK 26	14 th century
	Weaving weight, decorated, BK 41	8 th - start 12 th century (usually 10 th - 11 th)
	Banded strike-iron, BK 40	to end Mille I
2 (rampart)	Ceramics, G-256, BK	9 th - 10 th , last half 12 th and first half 13 th centuries
3 (rampart)	Ceramics, BK 48	1115 - 1250, early 12 th - 13 th and to mid-12 th centuries
5 - 6 (rampart)	Ceramics, BK 84	8 th - 12 th century
1	Ceramics, BK 493, 496, 497, 500, 501, 503, 508, 534, 535	1075 - 1250, end 10 th - 1100, start 12 th - mid-12 th and 1000 - 1200
	Silver ingot, BK 357	12 th - 13 th century
2	Ceramics, BK 105, 109, 186, 188	1100, 1140 - 1180 - 1205, 11 th - 12 th and 11 th - 13 th centuries
	Weaving weight, BK 113	8 th - 12 th century
	Penannular animal brooch, BK 190	from 10 th century
	Weaving weights, BK 375 - 378	8 th - 12 th century
	Band bracelet, BK 443	11 th - 13 th century
	Cast ring with thickened middle	11 th - 13 th century
3	Ceramics, BK 192, 205, 220, 221, 223	10 th , end 10 th - 12 th , 11 th and mid-11 th - mid-13 th centuries; 1050 - 1200, to 1100 and 1160 - 1180 and 11 th - 12 th century
	Decorated weaving weight, BK 389	8 th - start 12 th century (usually 10 th - 11 th)
	Ceramics, BK 631, 632, 633, 644	end 10 th - 1100, 1000 - 1075 and 1035 - 1040
	Arrowhead, BK 574	900 - 1150
	Flat clover form brooch, BK 661	9 th - 12 th century

Horizon	Find	Dating by analogies
3A	Ceramics, BK 711, 723	10 th , 11 th , 12 th , and 10 th - 11 th centuries
	Decorated weaving weights, BK 663, 664	8 th - start 12 th century (usually 10 th - 11 th)
4	Ceramics, BK 134, 135, 136	10 th and 10 th - 11 th centuries
	Ceramics, BK 252, 271, 272	10 th - 11 th , 11 th , 11 th - 12 th and end 11 th - start 12 th centuries; 1115 - 1140 and 1150 - 1250
	Pot, BK 318	8 th - 10 th century, 8 th - 1000, 8 th - start 9 th , last half 10 th - mid-11 th and 9 th - 11 th centuries and 1044
	Ceramics, BK 743, 757	10 th , 10 th - 11 th and 11 th - 12 th centuries
	Weaving weights, BK 263 - 265 and 301 - 311; decorated, BK 265	8 th - start 12 th century (usually 10 th - 11 th)
	Penannular brooch with widened ends, BK 331	10 th - 11 th century (12 th)
	Penannular brooch with thickened ends, BK 773	from 10 th century
	Spiral bracelet, BK 774	9 th - 10 th century (11 th)
4A	Ceramics, BK 235, 237, 814	10 th - 11 th , 11 th and end 10 th - 12 th centuries; 1150 - 1250 and 1115 - 1140
5	Ceramics, BK 165 and ornamented form, 166	7 th - 10 th , 8 th - 9 th , 10 th - 11 th , 9 th - 10 th , 8 th - 10 th and 12 th - 13 th centuries
	Small knife, BK 832	10 th and 11 th - 12 th centuries
	Arrowhead BK 345	8 th - 9 th , 9 th , 9 th - 10 th and 9 th - 12 th centuries
5A	Ceramics, BK 352	8 th - 10 th and 10 th centuries
	Penannular brooch with poppy seed shaped ends, BK 356	from 10 th century
6, Cultural Layer II	Ceramics, shaped by hand and made on rotating wheel and Hatching ceramics	2 nd - 4 th century BC

Table 27
Dating of Finds at the Žemaičių Hillock Settlement

Horizon	Find	Dating by analogies
1	Ceramics, ŽK 3, 23, 84	11 th , 11 th - 12 th , 11 th - mid-13 th , mid-12 th - mid-13 th , 13 th - 14 th and 13 th - 15 th centuries
	Weaving weights, ŽK 24, 25	8 th - start 12 th century (usually 10 th - 11 th)
2	Ceramics, Ž-57, 114, 115, 117	end 10 th - end 12 th , 12 th and 12 th - 13 th centuries
2A	Iron neck-ring with brass and glass beads, ŽK 47 Weaving weight, ŽK 182	12 th - 13 th century 8 th - start 12 th century (usually 10 th - 11 th)
3, Cultural layer II	Hand shaped, rugged surface ceramics	
4, Cultural layer II	Hand shaped ceramics	
5, Cultural layer II	Hand shaped ceramics	

Table 28
Dating Finds at the Roužė Settlement

Horizon	Find	Dating as per analogies
1	Ceramics, R 23, 24	980 - 1080 second qr. 11 th - end 11 th 11 th - start 12 th centuries
	Weaving weights, R 30 - 56 and decorated weights, R 57, 58, 59	8 th - start 12 th century (usually 10 th - 11 th)

or stretch out into later times. There are two alternatives for dating Horizon 4A—the limit of the 10th - 11th century or the limit of the 11th - 12th century. A second possible way to date negates the dating of Horizon 4. For the second way, most of the dated analogies are ascribed to the period from the limit of the 10th - 11th century up to the middle of the 11th century. Of the two alternatives

for Horizon 3A—the limit of the 10th - 11th century or “about the year 1100”—the second is clearly the acceptable one. To formally date Horizon 3, its formation should be considered as starting from the year 1000 up to 1100. However, stratigraphy contests this; here the second, “weaker” dating alternative is the acceptable one—at about the middle of the 12th century. The cultural layer of Horizon 2 is dated at the end of the 12th - beginning of the 13th century, although many of the analogies of the finds are from the period of the 11th - 12th century. To formally date the very top of Horizon 1, it would be necessary to “return” again to the period of “about the year 1100”. However, this is impossible from the stratigraphic perspective. Therefore, the other possible date that remains is “about the year 1200”.

The dates of the layers of a settlement’s defense rampart correct the dating of the upper horizons of a cultural layer. The rampart and horizons of development are synchronic with one another. Of course, in terms of the dates of the finds, the surface of the latest rampart is not very homogeneous at all. The finds here were ascribed to the 10th - 12th century, and a ceramic comb of the Teutonic Order was dated “after the year 1300”. However, the period of the 13th century remains empty. Such a tremendous mix of finds is characteristic of hill-forts and dwelling ramparts. As they were rebuilt and heightened, the soil would include finds from various layers of the settlement. The dating is markedly more accurate for Horizon 2 of the rampart (“about the year 1200”) and Horizon 3 (mid-12th century) despite the meager number of analogies.

Summarizing all the data for dating all the layers of the settlement at the foot of Birutė Hill, the resulting chronological scale, illustrated by Table 29, is sufficiently objective.

All the available data attest that there had been no chronological break during the period, when the settlement existed, from the 10th up to the mid-13th century. Such a chronological table does not explain the appearance of 14th century ceramics, characteristic of the Teutonic Order, at the surface of the defense rampart for the settlement. The analysis of the finds from all the settlements indicates that the settlement at the foot of Birutė Hill no longer existed during the 14th century. It had been abandoned approximately during the middle of the 13th century. The same as the reinforcement rims of the hill’s platform for the period, the 14th century ceramics show that, for a short time during the 14th - 15th century, Birutė Hill was used for defense purposes.

Table 29
Chronological Table of the Settlement at the Foot of Birutė Hill

Horizon	Dating	Structures	No. of structures
1 (rampart)	mid-13 th and 14 th centuries		
2 (rampart)	end 12 th - start 13 th century		
3 (rampart)	mid-12 th century		
1	first half 13 th century	18, 29, 31	3
2	last half - end 13 th century	1, 6, 7, 8, 19, 20, 27, 30, 32	9
3	first half - mid-12 th century	9, 10, 21, 22, 28, 33, 34	7
3A	last half - end 11 th century	23, 35	2
4	mid-11 th century	2, 12, 24, 26, 37, 38	6
4A	first half 11 th century	11, 17, 25	3
5	end 10 th - start 11 th century	3, 4, 5, 13, 14, 36, 39	7
5A	last half 10 th century	5A, 15	2
6	mid-10 th century	15 A, 16	2
Cultural layer II	about 3 rd century AD		

Žemaičių Hillock

There was little comparative material for dating the horizons of the cultural layer of Žemaičių Hillock. However, it appears, it is more homogeneous and less mixed and it offers fewer alternatives when dating different horizons.

Two cultural layers were well differentiated. Nevertheless, the truth is, the material was insufficient for dating Horizons 3 - 5 of the second layer to greater accuracy (Table 30).

Table 30
Chronological Table of Žemaičių Hillock Settlement

Horizon	Dating	Structures	No. of structures
1	first half 13 th century	1	1
2	limit of 12 th - 13 th century	2, 3, 4, 5, 6, 7	6
2A	mid - last half 12 th century	8, 9, 13	3
3, Cultural layer II	to 10 th century	10, 11, 12	3
4, Cultural layer II	to 10 th century		
5, Cultural layer II	to 10 th century		1

Roužė Settlement

There was only one layer from the Middle Ages; thus, all the finds, though they were not plentiful, dated it quite well (Table 31). The second, bottom layer of the Roužė Settlement is only dated by the posthole, piled around with stones, which is analogical to those found at other Palanga settlements.

Table 31
Chronological Table of the Roužė Settlement

Horizons	Dating	No. of structures
1	second quarter 11 th - end 11 th century	1
2	could be around the 3 rd century AD	2

Southern Settlement

Ceramics of local types, shaped by hand and made on a slowly rotating wheel, predominated in this settlement. Meanwhile there were nearly no other artifacts found that are more readily datable. Therefore, an accurate dating of the different horizons of the cultural layer was complicated.

The oldest, Horizons 5 - 5A, 6 and 7 are dated very approximately; the comparatively small number of finds caused difficulties in dating.

The ceramics of types produced on a rotating wheel, which were common to all the Palanga settlements, were found in Horizons 1 - 5. Although the ceramics found in Horizon 5 were not plentiful, they are characteristic. Thus these were one of the landmarks used to establish the chronology of the settlement. These ceramics, P 244, 288 and 314 - 316, are the same type as those, R 23 and 24, found at the Roužě Settlement. The layer of the Roužě Settlement is dated at the second quarter of the 11th - the end of the 12th century. None of the ceramics from Horizon 4 were suitable for dating. The ceramics found in Horizons 1, 2, 3 and 1 - 3 were very similar to each other and characteristic of those from the 12th - 13th century. Therefore, the dating was stratigraphic for these horizons.

A 16th century coin dates the latest layers of the Southern Settlement and an erection on it (Table 32).

Table 32
Chronological Table of the Southern Settlement

Horizon	Dating	Structures	No. of structures
Uppermost	first half - mid-16 th century	7	1
1	first half 13 th century	2, 11	2
1 - 3	mid-12 th - mid-13 th century	1	1
2	limit of 12 th - 13 th century	3, 12	2
3	mid - last half 12 th century	4	1
4	first half - mid-12 th century		
5	second qr. 11 th - start 12 th century	5, 8, 8A	3
5 - 5A	end Mille I - start Mille II	9	1
6	about the 3 rd century AD	10	1
7	mid-Mille II BC	6	1

The chronology of the layers of different settlements was deliberated. Thereby, it became possible to answer an important question regarding the prehistory of Palanga—did all of the Palanga settlements exist during the same period and when? (Figure 195).

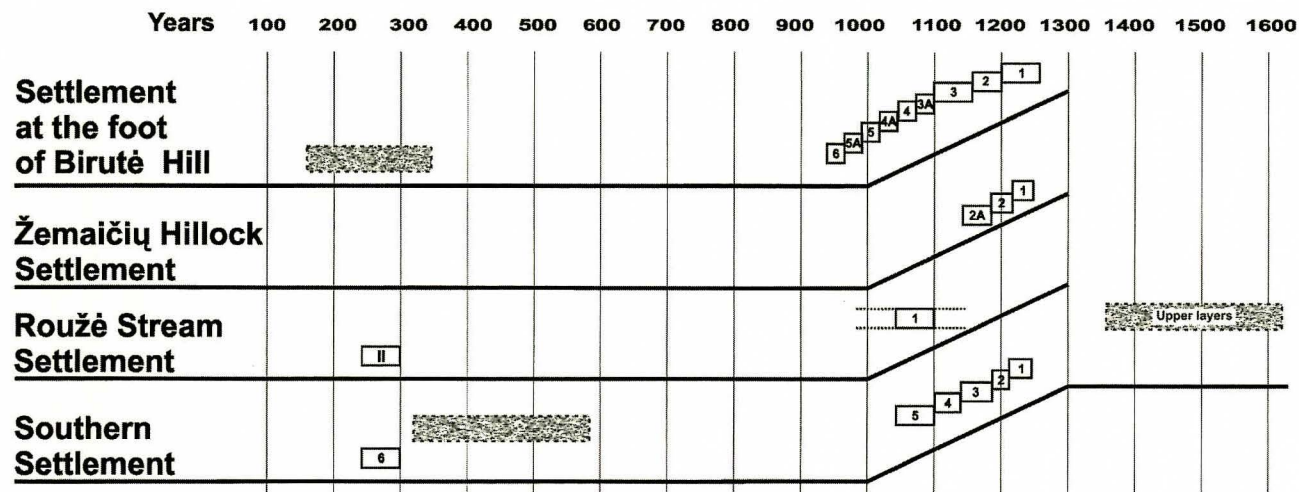


Figure 195. General Chronological Table for Palanga Settlements

Traces of humans, who had lived during Roman times, probably around the 3rd century, were found in three of the, now known, four settlements (at the foot of Birutė Hill and the Southern and Roužė Settlements) as well as on Birutė Hill. The rugged surface ceramics indicate that, in all the settlements excepting Roužė, there had been dwellers during the latter half of Millennium I AD as well. This period cannot be established to a greater degree of accuracy.

There actually were dwellers in the settlement at the foot of Birutė Hill and, apparently, the Southern Settlement during the Early Middle Ages, up to the 11th century, according to the available data. The layers of the Southern Settlement, dated at the "end of Millennium I", have not been more accurately differentiated. Nonetheless, next to the former burial grounds, there are graves from as early as the 8th century. Thereby people could have been living in this settlement continuously from the 8th up to the 13th centuries. There were already three settlements in Palanga from the second quarter of the 11th century. Only at Žemaičių Hillock, no cultural layers were found from this period. Materials from the burial grounds indicate that Palanga expanded during the 11th century. The population sharply increased, specifically during the 11th century, not only in Palanga but throughout the entire territory of Mėguva (aka *Megowe*, *Megouwe*) as well (Žulkus V. 2004: 80, 151).

Traces of human life are found on Žemaičių Hillock from the middle of the 12th century. Possibly people moved to this locale once there was no long sufficient space in the settlement by Birutė Hill. This latter settlement was the most densely populated during the 12th century. During that time, Žemaičių Hillock was also densely developed.

During the 12th century, there were no less than four, concurrent settlements in Palanga. Actually the chronology of the Roužė Settlement is more narrow; however, only the edge of the settlement was uncovered and only in a small research area. There is no reason to claim that the Roužė Settlement, which had only been established and fortified during the 11th century, was already abandoned by the 12th century, a time when the number of dwellers greatly increased everywhere else.

Defense fortifications at the foot of Birutė Hill appeared during the 10th century, in Horizon 6. Clearer traces of them were found in the horizons dated at the mid-12th, the limit of the 12th and 13th and the mid-13th centuries. Life ceased at all the settlements approximately during the mid-13th century. In the Southern Settlement, it seems that life only revitalized during the first half and middle of the 16th century. Birutė Hill and its fortifications were used during the 14th - 15th century; however, there is no longer any presence of ongoing life here either.

XIII. DWELLERS AND THEIR ETHNICITY

It is hardly a simple matter so much as to approximate the number of dwellers, who lived in the four Palanga settlements around the middle of the 12th century. It would be easier if only the investigation of the burial grounds was finally completed, and the age and sex of the people buried therein were known. Unfortunately the 8th - 13th century cemetery was considerably damaged and it was only partially excavated. Furthermore, from the 10th century onward, the dead were cremated.

Taking a count of the population according to the structures found at the settlements is also not a particularly reliable method. The settlements were not exhaustively examined, particularly the Southern Settlement. The research area of this settlement is about seven hectares. Assuming the middle of it was nearly empty, then the developed area could have comprised about five hectares. Of course, during certain periods, only parts of it might have been inhabited. It can be considered that only about two and a half hectares had been developed during the 10th - 11th century. Excavations showed that the area for one structure could have measured 100 - 150 m² of land. Such a calculation would result in about 200 structures standing in the Southern Settlement during the 10th - 11th century. Having established that, during the Middle Ages, the dwellings, even in towns, did not stand longer than twenty-five years on average. Thus the resulting number is divided by four. Therefore, some fifty dwellings stood at any one time in the Southern Settlement of Palanga for about 1,000 years. Furthermore, it is known that, at that time, the average family consisted of four to five members. As such there could have been 200 - 250 people living in those fifty dwellings. This calculation is, of course, an approximation.

The research area of the Birutė Hill settlement, excluding the defense ramparts, measured merely some 3,000 m². The building development there was rather dense. In the examined area, consisting of about one-sixth of the settlement, there were traces of nine dwellings in the horizon, dated at the mid to second half of the 12th century. For approximately 1150 years, there could have been about forty dwellings throughout the entire area of the settlement at any one time; up to 200 people could have lived within those dwellings. As per the traces of dwellings, there were only six of them

standing on Žemaičių Hillock around that time. This means that about thirty people lived there on an ongoing basis. Then there was the Roužė Settlement which, it seems, was no larger than 1.5 hectares, and the area developed with buildings could have comprised about one hectare or less. It should have been built up rather densely, the same as the other two trading settlements. Assuming that it was not populated as densely as the foot of Birutė Hill, it can be surmised that some 70 - 80 structures had stood there, housing some 350 people.

Overall the population of Palanga numbered some 600 - 800 people for about 1150 years. There were already at least four settlements in Palanga at about the middle of the 12th century, laid out over an area of approximately 1.5 km². The fact is that Palanga developed spaciouly, the same as Helgo, Haithabu (Herrmann 1982: 98) and Wolin (Filipowiak 2000).

Can this population be considered as many or not many? As per the "most careful calculations", there were 800 - 1,000 people residing in the Haithabu trading center during the mid-10th century. In Birka, during about the year 950, there were 700 - 1,000 ongoing residents and, it is believed, in Wolin there were from 5,000 up to 10,000 dwellers during the 10th century. In general, around the year 900, the population of early towns fluctuated at around 1,000 dwellers (Steuer 1993).

The population of Palanga was not stable. Considering the number of graves in the Palanga burial grounds (Tautavičius 1963. LIIA, b. 182, 183), which are located at the Southern Settlement, the population decreased from the 10th century. A decrease in the number of graves in all the burial grounds throughout the territory of Mėguva, which included Palanga, is noticeable from the 11th century onward. In the burial grounds at Girkaliai, Kretinga, Pryšmančiai and Lazdininkai, which are not far from Palanga, most of the existing gravesites are still dated at the 11th century (this would coincide with the overall population trend). It was not until later that the number of dwellers began decreasing (Žulkus 1997: 289). It would seem that a sort of regrouping of people occurred in Palanga during the 10th - 11th century. Could it be that the Southern Settlement became impoverished and thus abandoned? However, the finds in the gravesites attest that the settlement might have emptied, but it truly was not impoverished. The Curonians left the Southern Settlement of Palanga for some sort of local reason. It is easy to notice that the Southern Settlement was being deserted exactly during the time that the settlement at

Birutė Hill was growing, and a rather large Roužė Settlement appeared. Roužė was also undoubtedly associated with trade. People from the Southern Settlement would have moved to other locales, and its deceased were buried in some other, one or more, places. Therefore, the number of gravesites at the investigated burial grounds decreased.

There is still another reason why the population of Palanga's Southern Settlement might have decreased during the latter half of the 11th century. The chronology of the settlement at Birutė Hill leads to such a belief. During the latter half of the 11th century, for a time, there were very few structures standing. It is possible that, during the latter part of the 11th century, Palanga was being attacked and burned. Thus the settlements at the foot of Birutė Hill, Žemaičių Hillock and, maybe, even the Roužė Settlement were being amply populated during the 12th century.

XIV. FROM CURONIAN VILLAGE TO A BALTC TRADE CENTER AND AN EARLY TOWN

The life style at the different Palanga settlements varied. It is easy to notice the differences between the Southern Settlement and the other three settlements. First of all, the structures were different. The structures of mixed and lafted construction at the Birutė Hill, Žemaičių Hillock and Roužė Settlements were heated by cupolaed clay ovens. In the Southern Settlement, however, these were not discovered. There were only various open hearths with accompanying pits, stones laid around them, and their linings spread with clay. In the other settlements, there were no such hearths, already from the 10th century. The only known exception to date is the Curonian hearth with an accompanying pit in the latest, 13th century layer of Žemaičių Hillock. The second significant difference is that, in all three of the smaller settlements, that clay weights for vertical weaving looms that were found, comparatively many were ornamented. There were no such weights in the Southern Settlement. Here only small, stone weights were used to stretch the looms with heddles. The third noticeable difference is the ceramics found. Thinner ceramics, skillfully produced on a rotating wheel, predominated from the 10th century in the layers of the Birutė Hill Settlement. These are entirely different from the traditional Curonian ceramics. Even later there was quite a large amount of ceramics—pots were found that match a Curonian vessel by form and technique. However, the décor, for example, the circular stamp with a criss-cross, is not at all characteristic of local traditions. There are no such vessels in the Southern Settlement, although the form of the pots that predominate here had been influenced by the ceramics from Birutė Hill and the other two settlements.

It is well-known that, in addition to burial customs, the traditions for building structures are highly stable and well reveal ethnic differences. Different construction traditions are observed in different Curonian territories. A comparison of Palanga and Imbarė provides a suitable example. Curonians also lived in the settlement at Imbarė; however, it was part of another, the Ceklis territory. There were no hearths with accompanying pits in the Curonian structures at Imbarė. Instead dwellings were heated by a stone oven in the corner of a structure (Daugudis 1994). Stone ovens were rare in Palanga—there were none in the settlement at the foot of Birutė Hill, one in the Southern Settlement and, seemingly, one at Žemaičių Hillock.

The obviously differing traditions in everyday life at the Palanga settlements did not occur by chance alone. They reflect the varied ethnic composition of the population as well. The large Southern Settlement of Palanga can be called

Curonian. At the other three, smaller settlements, the dwellers were Curonians as well as some sort of foreigners. Who might they have been?

The ceramics of the Baltic Sea indicate wide contacts, involving international trade and culture. The oldest examples of these ceramics are found in the settlement at the foot of Birutė Hill. Ceramics and traditions for decorating them were imported from Palanga and, apparently, other, still undiscovered seaside marketplaces. These disseminated throughout Curonian lands, the Middle River Nemunas and elsewhere in Lithuania. The tradition of packing cupolaed ovens with clay and erecting them towards the middle of a dwelling by its end wall appeared in Palanga from the 10th century. This tradition can be linked to the western Slavs and Teutons, who lived in the southern peninsula of Jutland and East Holstein. To date it is not known whether rough hewn posts were used at other 9th - 10th century Curonian settlements in addition to Palanga. A squared hearth made of clay, found in one of the dwellings, is entirely foreign to the local tradition. Hearths, so installed and so constructed, were more characteristic of Scandinavia (Libæk, Stenersen 1991: 33). In Curonian territories it was not customary to cover dwellings with planks, pack them with clay and then cover them with turf the way people who lived at the foot of Birutė Hill did. Such a roof covering was used in Baltic territories during the Middle Iron Age. Later this covering only survived on the half-sunken structures of the Slavs and in Scandinavia (Apals 1996). The clay weights for vertical weaving looms, especially those decorated with cruciform stamps, are known at the trading centers of the Baltic Sea. However, these are no longer characteristic of the western Slavs but rather widespread in the region of the lower, Rivers Elbe and Rhine as well as the Jutland peninsula. Single weights of this kind were found in merely a few western areas of Lithuania, aside from Palanga; however, these were not ornamented.

It is highly likely that the foreign residents of Palanga had arrived from the western shore of the Baltic Sea, the southern part of the Jutland peninsula or the surrounding regions, bearing a mix of Teutonic and western Slavic cultures.

The ethnic composition of the Palanga population was not always homogeneous. The change in heating installations, which had been in the structures of the settlement on Žemaičių Hillock, indicates that the ethnically mixed inhabitants left this place around the end of the 12th century. Meanwhile dwellers from the Southern Settlement or some other Curonians moved in. During the limit of the 12th - 13th century, open hearths that were oval and hearths with accompanying pits appear in the structures on Žemaičių Hillock in addition to the packed clay ovens. Only in the settlement at the foot of Birutė Hill, there were no noticeable shifts in the material culture. The descendants of ancient dwellers still lived here all the way to the middle of the 13th century.

XV. ECONOMIC STRUCTURE OF PALANGA

The Curonian people of the Southern Settlement engaged in agriculture and fishery, the customary crafts and commerce of those times. They also gathered and sold amber. In comparison to other Early Middle Age settlements, these people of Palanga were rather affluent, as surmised from their gravesites. The economic structure of the other Palanga settlements was more complicated.

The conclusions of the research on the bones, found in the cultural layers, also bespeak about the economy of the Birutė Hill Settlement (see the article by L. Daugnora, following in this book). The results are most interesting. Of the 143 bones examined, only one small bone could have belonged to a seal. The others came from domesticated animals—people who lived here did not engage in hunting. These settlers consumed the meat of cattle, sheep, goats and pigs. There were also bones of horses found; horses were also used for food. These were found along with several small dog bones. Bones from the same sorts of animals were found in all the levels of the cultural layer. Comparatively, it can be said, the other 10th - 13th century residents of Lithuania did not hunt much either. A greater number of wild animal bones only appear in the layers of settlements by the more important feudalistic castles.

It has been established that the percentage of farmers in Palanga sharply decreased from the 11th century. This relates to the exceptional economic structure of the Palanga community; here agriculture held a secondary position. The sharp increase in the number of warrior graves during the 11th century in the land of Mėguva and, especially, in Palanga could be related to defense from plundering Vikings. Additionally, a great deal of information appears in written material from those times about Curonians pillaging neighboring lands (Mickevičius 2004: 117 and 139). The appearance of two new settlements (Roužė and Žemaičių Hillock) correlates with the increase in the number of “merchant” graves. (The greatest number of such graves in Lithuania is in Palanga.) There were also traces of the lives of merchants in the settlement at the foot of Birutė Hill. In Structure BK-12 from the mid-11th century, one of the richest with finds, there were the decomposed remains of a scale for weighing silver next to its rectangular hearth.

One of the most important imports in Palanga during Viking times was raw material for metals—primarily brass and metals for its production. (Raw material for brass, in the shape of a crook, and a lead plate were found in the

Birutė Hill Settlement). Comparing the amount of brass in the burial grounds of Mėguva, it was established that most of it had been in Palanga and its surrounding areas, in Kretinga and Girkaliai. This indicates that brass came through Palanga into Mėguva and more distant lands. Brass was shipped across the sea and delivered throughout western Slavic centers from Central Europe or directly from Sweden, where copper and lead was excavated since olden times. In the cultural layer, dated from the end of the 11th - the first half of the 12th century, which was next to Birutė Hill, a crook of raw brass and a lead plate were found. The most brass and silver were found in the 11th century graves of Palanga. From the 11th century silver and imported glass traveled from Western Europe through Palanga into southern Curonian territories. Of key importance, Palanga dwellers possessed the local raw material that was in demand—amber. The finds in the Southern Settlement (in the “amber pit”) show that amber was gathered for a longer period and then sold, after a greater amount had been accumulated. It could well have been the trade in amber which formed the preconditions for the appearance of a trading center in Palanga.

All the trading centers of the Baltic Sea area have evolved in a similar way. The oldest form of trade was the marketplace, akin to a fair selling all sorts of goods and animals, held periodically and always at the same time of the year. A traditional locale and a suitable time were selected for them. In Scandinavia such fairs were usually held jointly with the regional *tingas* ‘meeting of community authorities’ (Medieval Scandinavia in Encyklopedia 663); religious celebrations and the regularly held, mass trade fairs would occur at this same time. The locales for the public gatherings were readily accessible, by land and by sea. For example, in Uppsala Sweden, the *tingas* and trade fair were held on February 2. This kind of a market would last from three days up to six weeks. Merchants would arrive for a lengthy stay or visit merely one marketplace event (Сванидзе 1980: 74-76). Initially there might not have been major structures or capially equipped wharfs.

Palanga appeared as a trading place the same as the other centers did at the shores of the Baltic Sea and it should have developed similarly. The available data permits an assumption about the dates when marketplaces might have been held in Palanga. The dates should have been associated with the annual Pagan celebrations.

The research on the 14th - 15th century Pagan sacral place on Birutė Hill shows that the most important celebratory date was April 23. The date was determined

by the alignment of the setting Sun from the posts set up in the Pagan sacral place. Such a positioning of the Sun would repeat on August 22. The Pagan sacral place already existed on Birutė Hill during the 10th - 13th centuries. The Christians adopted its traditions. The Šv. Jurgio (St. George) Chapel was built on Birutė Hill and, in August, the indulgence of St. Roche, known to this day, has been celebrated (Žulkus, Klimka 1989: 82).

Both of these times were favorable for sailing into Palanga to trade. By the end of April, the spring storms would have passed and, in August, the autumn season not yet begun. By April, the people of Palanga had a sufficient accumulation of amber, gathered during the storms of autumn and spring, in addition to the skins of animals, hunted in winter.

The functions of the marketplace and the religious center did not interfere with each other. It can be asserted that it was specifically the trade and the foreigners living there, which made Palanga meaningful as a religious center. Meanwhile this also promoted trade.

For the time being, it is not possible to answer the following question. What was Palanga during the 10th - 12th centuries—a Curonian trading center, where foreign merchants resided, or a colony of arriving merchants and warriors? It may have been both one and the other and, still yet, another. (Truthfully the burial grounds where those foreigners might have been buried have yet to be discovered.) In all those cases, the minimally three settlements, which grew in Palanga, all with clear signs of a foreign culture, lead to the thought that it was colonists who influenced the prospering of Palanga as a trading center. The purpose for their taking residence in Palanga can only be guessed. It might have been merely an economic reason, although public institutions might have also been organized for greater or lesser political schemes. Most likely the reason was both one and the other. Analogies come to mind about the known Scandinavian "colonies" in Grobin and Kaup-Wiskiauten.

There is no doubt that local Curonians participated in the economy and trade of Palanga, directly or indirectly. The period of prosperity of the southern, Curonian settlement coincides with the beginning of the first trade settlement, during the 9th - 10th century, as per the data from the excavations and burial grounds research at this settlement. An analysis of the gravesites substantiates this even better. There is a very close and unquestionable relationship between the graves with silver and silver-decorated jewelry, as well as the changes in the weights of brass in the graves, and the amount of silver in Gotland and western

Slavic territories (Žulkus, Klimka 1989: 58-61). Therefore, it is not meaningful to discuss the expansion of the Palanga center as merely Curonian alone, independent of the economy of the Baltic Sea.

The expansion of Palanga as a trading center, during the 9th - 13th centuries, well reflects the researched Curonian gravesites. Dwellers of the Southern Settlement had been intermediaries between the trading settlements of Palanga and the hinterland. Therefore, the burial grounds provide extremely valuable data about the interrelationship between these two economic spheres.

The statistical analysis of the gravesites for the Mėguva territory revealed that there had been satellite settlements around Palanga. Their economies were closely related with that of Palanga (Žulkus 1992a: 63; Žulkus 1997: 292). Having analyzed the finds from the burial grounds of Pryšmančiai, Anduliai and Girkaliai, it was determined that the neighboring settlements were truly, tremendously influenced by Palanga. The weightiness of working relationships, amount of artifacts decorated with silver and number of graves—all changed at the same rhythm. The aforementioned settlements comprised the economic backbone of Palanga; they were its hinterland and they were interconnected by mutual ties with the center. The hinterland of Palanga, during the 10th - 12th centuries, should have been laid out over an approximately 12 km radius, encompassing an area of some 70 km².

XVI. APPEARANCE OF PALANGA AND THE EARLY TOWNS OF LITHUANIA

The concept of the "early town" has still not been entirely defined. Early towns are non-agrarian settlements with the rudiments of a town. They can be considered as structurally very different complexes from the settlements of the Early Middle Ages. Initially they appeared at the seaside. The important features of such settlements are not their sizes as much as their dense developments and a clearly non-agrarian feature. Crafts and commerce are not so much developed as differentiated. They have distinct economic and political influence on the hinterland and interwoven functions as centers of economy, administration and religion.

As early towns matured, their structural differentiation manifested, either as compact centers occupying large territories or as conglomerates, composed of settlements, performing different economic and public functions.

The existing archaeological material indicates an entire array of early medieval, Baltic settlements which would be recognized as early towns presently. The first settlements engaged in trade and crafts with the Balts are known in the 9th - 10th centuries. These include Kaup and Truso in old Prussia (Truso was mentioned by Wulfstan at the end of the 9th century [Wulfstan 1984]) and Grobina and Apuolė in Curonia.

During 1000 - 1200, the non-agrarian settlement that had grown from a previous time, now develops. Archaeological data and early written sources (Figure 196) indicate that new, early urban centers appeared. Some were also political and administrative centers for the "small tribes" in the territory (Žulkus 2002a: 192).

Many features, essential to early towns, are found in the 10th - 12th century agglomeration of the four Palanga settlements. The economic structure was sufficiently diverse. There were arts and crafts. Trade was well developed both internally and over a greater distance. The population was multi-ethnic. Settlements were fortified. The locale was well situated for religious and, possibly, public gatherings. That there were efforts by early Christian missions is more or less probable. An economic backbone was clear and sufficiently large. One of the more important external features of the development of an early town is its reinforcement, designated to safeguard the property of merchants and local dwellers. Fortifications were being built around the small settlement of Birutė Hill from the 10th century. It seems that, already by the first half of the 11th century, the fortification from the side of dry land also encircled the larger settlement at the bend of the River Roužė.



Figure 196. Early towns on the eastern Baltic Seashore

Many seaside trading centers had wharfs or even harbors. It can only be guessed where the harbor of Palanga was during Viking times, because no traces of any harbor installations have been discovered. It is sometimes claimed that, during very ancient times, Palanga had been a harbor. Traces of this harbor were “searched for” under water—and found. The existing band of stones at the base of the sea, which begins south of Birutė Hill and continues north, distancing from the shore little by little, is sometimes considered the remains of an ancient harbor (Remeika 1933; Šimoliūnas 1933: 28; Končius, Ruokis 1926: 104). Geologists do not doubt the natural origin of this stone “wall” in the sea—the traces of it derive from wave-washed moraine, discovered at various depths (Bitinas 2004: 23-24). The archaeological survey research, conducted underwater during 2002 - 2004 towards Palanga (led by V. Žulkus), found no remains of ancient landing wharfs. A possible assumption is that a wharf for merchant ships could have existed in the former lakelet of the lagoon, at the locale of the present Botanical Park reservoir. However, it is not clear when it might have adjoined the sea. Besides, there are no traces of an ancient settlement in that locale. Additionally, a special harbor was not very needed either. The draught for trade and military sailing ships during Viking times rarely exceeded one meter. Therefore, cargo ship easily sailed into shallow bays of the sea (Crumlin-Pedersen 1991; Filipowiak 1994). In Palanga cargo ships could have been pulled into the bay right by Birutė Hill or they could have sailed directly into another settlement of that time along the more watery stream of Roužė. The comparatively large amount of nails and rivets found would attest that Scandinavian types of ships visited Palanga rather frequently. Rivets and nails from ships of the Early Middle Ages are finds that are only characteristic of seaside settlements and harbors. These are discovered 10 km - 15 km from the sea.

The geographic environment determined the scattering of the Palanga settlements. It was difficult to find convenient areas for life in the swampy, loam pits and the flat, sandy shore near water. Such a historical topography of Palanga could have also influenced its economic development. Singular, small settlements, which built their reinforcements separately, could not guarantee the kind of safety for life and trade that was possible in a large, well reinforced trading center. Apparently Birutė Hill was a place for the common defense of all Palanga dwellers and a religious local for the entire territory and region of Mėguva. Without a doubt, Palanga was the key marketplace for the land of Mėguva.

The land of Mėguva (aka *Megouwe*, *Megowe*) encompassed the surroundings of Palanga. Its southern border was with the land of Pilsotas, the northern with

Duvzare and the *dykros* to the east separated it from the dwellers of the land of Ceklis. It is highly likely that Mėguva had been among the five Curonian territories during the mid-9th century, mentioned by Rimbert. The oldest document in which the name of Mėguva is found is dated April 29, 1252 (LEK, Bd. I. Abt. 1. No. CCXXXVI). The known locales, according to archaeological and written resources (LEK, Bd. I. Abt. 1. No. CXLVI, CCLIII), are over twenty burial grounds, about ten hill-forts and eight undetermined settlements (Figure 197).

Most Mėguva settlements were by Lake Akmena and its tributary, the River Tenžė. Today it is not simple to name the administrative and political center of Mėguva. It could possibly be Palanga, the most important trading center and interregional place of worship for the land (Žulkus 1997: 300–302). It shared the tributary with Anduliai up to the end of the 12th century. Once the significance of Palanga diminished, starting from the end of the 12th century, Anduliai–Kretinga may have acquired the status of the most important place in Mėguva. The convenient geographical situation of Anduliai caused it to be the major administrative center for Mėguva. The tradition to consider Anduliai–Kretinga as one of the most important locales, where a Scandinavian settlement had existed as well, reflects the significance of it (Grotinga) during the Early Middle Ages (Narbutas 1994: 72, 473). In 13th century resources, Kretinga is named a *Burgsuchung* ‘castle district’. When the Teutonic Order divided up the Curonian territory in 1253, the nobility of Curonia—Velthune and his brother, Reygin, as well as Twertikine and Saweyde—were awarded the castle district of Kretinga along with Kretinga Castle. These four Curonians, who were granted land of the Kretinga Castle District, directly from the hands of the Order (LEK, Bd. I. Abt. 1. No. CCXLVI), had to be the ancient “dukes” of Anduliai–Kretinga and all of Mėguva. The grants from the Teutonic Order empowered their rule.

The existence of trading centers along the shores of the Baltic Sea had more than merely economic significance for the country. The status of seaside emporia and their multi-ethnic compositions were an assurance for visiting merchants, having different ethnicities and religious beliefs. The formation of trading centers in Baltic territories provided the early preconditions for the appearance of the first seeds of Christianity.

Adam of Bremen provided the first known news about the initial efforts to institute Christianity about the building of the first churches in Baltic territories. He wrote that one merchant took care to found a church in Curonia. For this deed, Danish King Svend Estridsen endowed this merchant with various goods. The king himself had informed Adam of Bremen about this (Adami IIII: 16). There is no cause to doubt this information. The fact that the merchant had

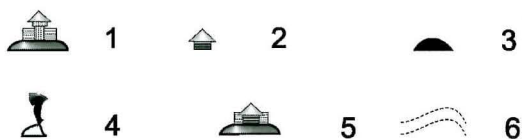
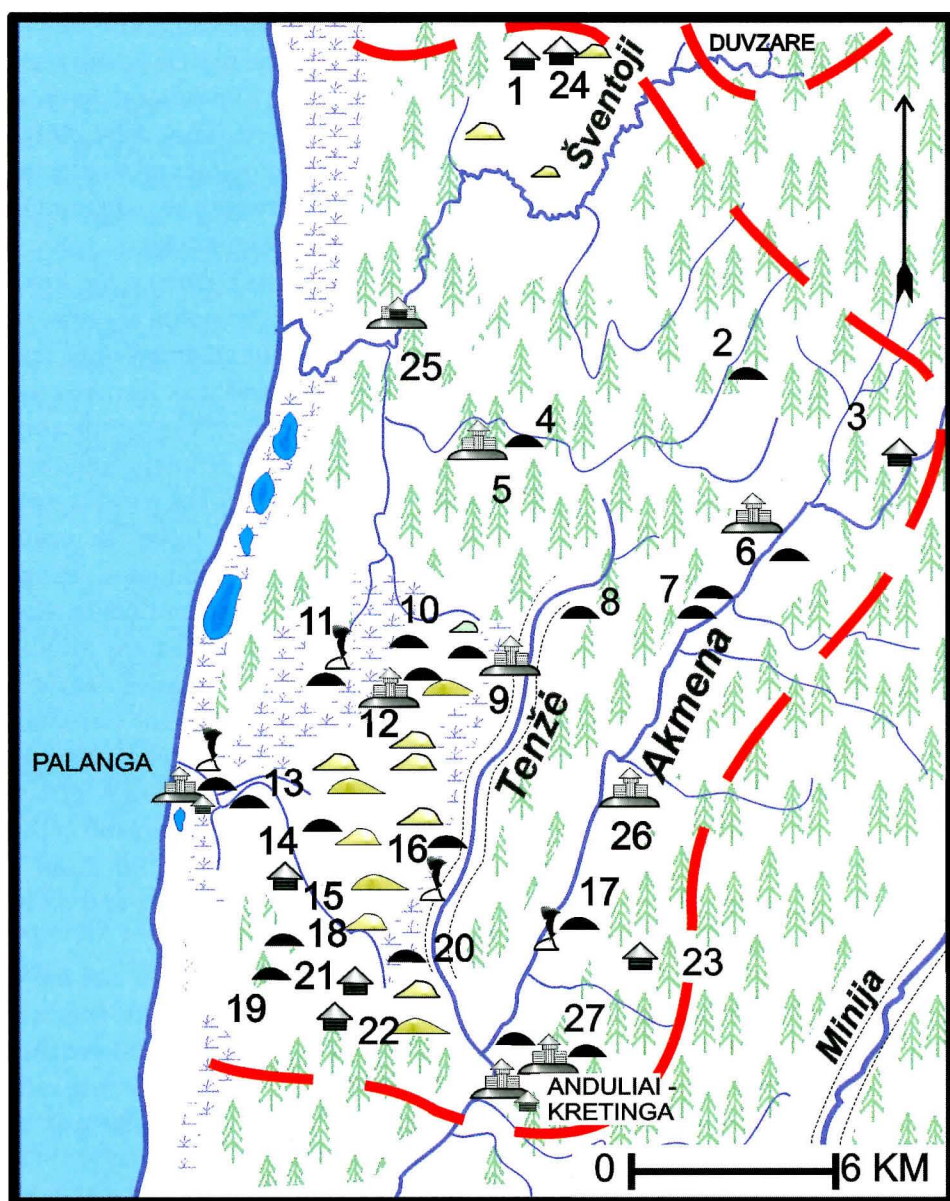


Figure 197. Mėguva territory in the Early Middle Ages

established a church and the king had bestowed the man with gifts is very characteristic of medieval Scandinavia. The interests of kings, the church and merchants often coincided in Pagan lands during those times. Early churches were frequently referred to as "merchant churches". The commentary on the information from this resource calls for an explanation of two more questions—when was this church built and where?

Adam of Bremen began writing a chronicle after the death of the Archbishop of Bremen, Adalbert. This means it occurred after the year 1072 [Adami (*Ex praeefatione*) III–IV; Religion I, 81]. King Sven Estridsen told Adam of Bremen the news about the building of the church in Curonia in 1068 or 1069 (Nyberg 1993). Since Adam of Bremen submits this information from King Sven Estridsen about the Curonian church in the present tense, it can be assumed that this church had been constructed no later than during 1069.

Latvian archaeologist, Ē. Mugurēvičs (1993: 8), speculates that the church had been in northern Curonia; however, he provides no argumentation for his deduction. Where could it have been? As per the current archaeological data, there were three known centers where Scandinavian merchants and colonists resided: Gruobinia, Palanga and Kaup-Wiskiauten. Scandinavians had lived in Gruobinia, in northern Curonia, approximately up to the year 900 (Nerman 1958: 186; Latvijas 1974: 146; Petrenko 1990; 1990a; Petrenko, Urtāns 1995). Meanwhile, Palanga still existed during the 12th century. The currently available data would attest that the most likely location, to search for the first churches built in Curonia during about 1069, would be southern Curonia, where there are manifestations of Danish activities. As such only one trading center, which maintained contacts with southern Denmark during the 11th - 12th century, is known at this time—Palanga. Thus it can be surmised that the first Curonian church had been built in Palanga. This presumption is also substantiated by the description of the Curonians, provided by Adam of Bremen. He wrote that Curonians are "people in whose dwellings there are numerous gods, prophets and fortune tellers" (Adami IIII). There are no other writings known by the author of this book, at this time, which emphasized the Pagan character of the Curonians in this manner. It is very likely that an informant for Adam of Bremen visited a place in Curonia, specifically where manifestations of the Pagan faith were highly pronounced. In other words, this had to be one of the Curonian cult centers, which also served as a gathering place.¹²

12. In the Pagan environment of Scandinavia, construction of Catholic houses of worship required approval from a meeting of community representatives (the *tingas*) as well as from the "duke" (Staecker 1999: 352). Matters should have been the same when building the first church in Curonia.

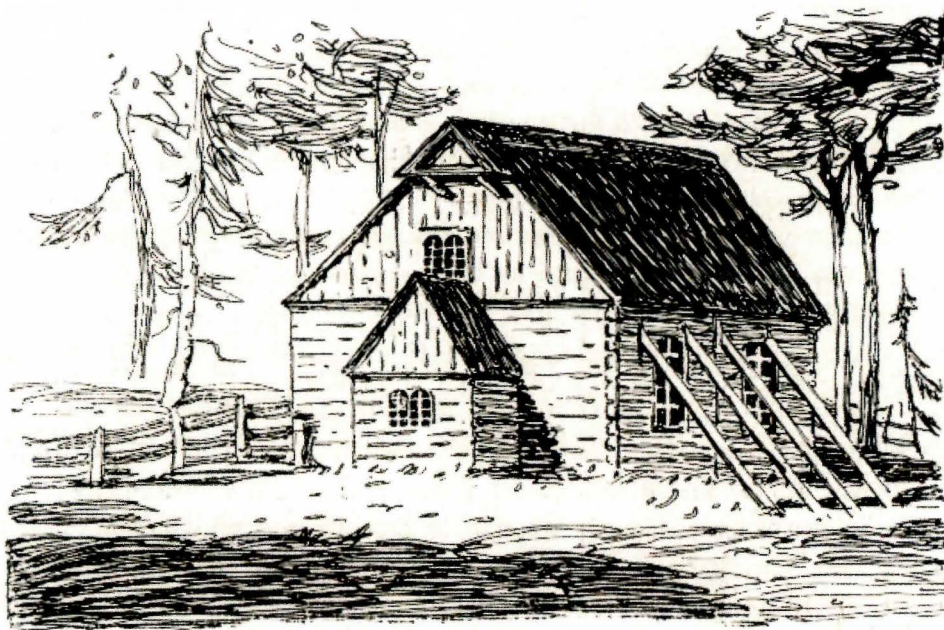


Figure 198. Wooden church in Juodkrantė (the Curonian Spit) erected in 1795.

Incidentally, the 1431 court proceedings between the Bishop of Curonia and the Capitular Cathedral of Riga presented a fact about the seizure of Palanga in 1161¹³ and the commemoration of the first Bishop of Curonia, Ernemordus who was considered legendary by certain historians (LEK, Bd. I. Abt. 8. No. 440). Certainly this was not associated by mere chance with the first diocese established by Danes in Curonia. Either a connection of Palanga with these events is not simply a happenstance, or it is linked with 15th century political peripeteia alone. This news corresponds with all the information about medieval Palanga as well as the dissemination of Christianity in Curonia. Additionally Palanga was distinguished because it had a Pagan temple of interregional magnitude and, apparently, a very important *ting*—a place for assembly. In the opinion of E. Anderson, the relationships of the Danes with the entire ecclesiastical and political conjuncture of the eastern Baltic area contribute to the probability about activities by Ernemordus in Curonia up to 1176. The successor of the first

13. It was argued in court that Abel, the son of King Valdemar, landed on the shore of Palanga and occupied the castle there on June 15, 1161.

bishop could have been Bishop Hermann who, in 1183, brought in the Holy Army of the Brotherhood of the Cross to stand against Curonia (Anderson 1986).

In all probability the first church of Curonia, mentioned around 1069, could be in Palanga, though it can not be identified with any structure, discovered in its ancient settlements. One of reasons could be very simple—the architecture of wooden churches in Viking period. The plan of early churches was very much like that of large houses (Ahrens 2001: 41, 102, Fartafel 5). The fact that traders' churches were also employed as a space for storage of merchandise and other property, makes the search for more such churches even more difficult. The tradition of tiny plain churches survived in small and poor communities of later times. In Juodkrantė (the Curonian Spit), a similar wooden “medieval” church (Figure 198) was erected in 1795 and survived until 1878. According to witnesses, this structure was “reminiscent of a barn” and it was covered with thatch (Strakauskaitė 2001: 41-42; Strakauskaitė 2005: 74).

The Livonian Order moved into the Curonian seaside during the mid-13th century. It continued the Christian mission and began colonization with assistance from the local nobility. The point of resistance to the expansion occurred in 1252. The Klaipėda Castle was constructed. In 1262 the Curonians of Kretinga threw off Christianity and attacked Klaipėda. Soon after the central castle of the Mėguva territory, at Anduliai–Kretinga, was burned down, and its inhabitants were murdered (LEK, Bd. I. Abt. 1. No. CCCXXIX). The ancient Palanga settlements had to empty for practical purposes at that same time as well. Birutė Hill was still reinforced against the Crusaders during the 14th - 15th century. The remaining Curonian community buried their dead on Žemaičių Hillock during the end of the 15th to the beginning of the 16th century.

XVII. RESULTS OF ANALYSIS ON OSTEOLOGICAL MATERIAL EXCAVATED FROM THE SETTLEMENT AT THE FOOT OF BIRUTĖ HILL

INTRODUCTION

The analysis of the osteological material excavated from the settlement at the foot of Birutė Hill was performed at the Osteological Laboratory of the Lithuanian Veterinary Academy.

In total only 151 fragments of bone were excavated from this settlement, some of which had survived poorly. The analyzed material is presented in five tables. Measurements of the bones are submitted in the appendix of this book.

RESULTS

From the data in the tables, it is apparent that bones from the main types of domesticated animals were recovered from Horizon 1, dated to the first half of the 13th century (Table No. 1) and Horizon 2, dated to the second half of the 12th century (Table No. 2). Most of the bones from these two phases belong to cattle, horses and pigs. By analyzing the ages of the excavated animals, it was possible to establish that the cattle were 24 - 28 months and 28 - 32 months old, the pigs were - 17 - 22 months old and the sheep / goats - were 5 - 6 months old. While examining the lumbar vertebra of one head of cattle from this period, a 3 - 4 cm ulcerous pit was discovered in the bone. It is believed that an abscess had formed in this spot following traumatic injury.

The excavated bone material from Horizons 3 ir 3 A, dated at the first half of the 11th - first half of the 12th century (Table No. 3) also revealed the use of the same types of domesticated animals.

The lower jawbone of a young, one-year old colt was found while examining the bone material from Horizon 4, dated to the mid-11th century. From this same layer, a canine tooth (*dens canini*) and the metacarpus from a horse were recorded. The discovery of the latter two specimens indicates the presence of a different horse (stallion) which, at its withers, was 112 - 120 cm tall. The wear on the surface of the teeth from the right side of the lower jawbones of two pigs from this phase indicates that these pigs were aged 17 - 22 months and 31 - 35 months

(Minimal number of individuals - 2). The wear on the surface of the premolars (*dentes premolares*) on the right side of the lower jawbone, of a cow suggests an age of 21 - 24 months. The detached epiphyseal plates of the vertebrae of a sheep or goat show that this had been a young animal. Furthermore, the analysis of the milk teeth and the sprouting M₁ tooth substantiates such an assumption—the age of the animal is 5 - 6 months in age. Another jawbone of a sheep or goat belongs to an individual of 8 - 10 months in age. A 9.3 cm goat horncore was also discovered.

The bones of all the main domesticated animals were established in Horizon 5, dated at the end of the 10th - beginning of the 11th century (Table No. 5). The hoof and phalange (*phalanx proximalis*) as well as the distal portion of the metacarpus (*ossa metacarpalia*) of a one-year old colt was excavated. Also found were a much worn incisor (*dens incisive*) of a horse and fragments of the metacarpus of an adult horse. Found, among those bones suitable for measurement, was a fragment from the left side of the upper jawbone of an 18 - 24 month-old sheep or goat with an M³ tooth, which had erupted through the surface of the bone. Some of the bones were unsuitable for measurement.

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- Measurements of the bones were performed in accordance to the methodology by A. von den.

Table 1

Analysis of bones excavated from the settlement at the foot of Birutė Hill

Horizon 1

Bones	Cattle (<i>Bos bovis</i>)	Pig (<i>Sus suis</i>)	Horse (<i>Equus caballus</i>)	Sheep/goat (<i>Ovis aries</i> / <i>Capra hircus</i>)	Undetermined	Total
Processus cornualis						
Cranium		1				1
Mandible	3			2		5
Dentes	10	4	7			21
Columna vertebralis		2	1	1		4
Scapula			1			1
Humerus		1	1			2
Ossa antebrachii						-
Carpus						-
Metacarpus				1		1
Os coxae						-
Os femoris			1		1	2
Patella		1	1			2
Ossa cruris						-
Tarsus		1	3			4
Metatarsus			1			1
Phalanx						-
Total	13	10	16	4	1	44
%	29.54	22.73	36.36	9.09	2.27	
MNI	2	2	2	3		9
Age, month		17-22		8-10 5-6 23-30		

Table 2

Analysis of bones excavated from the settlement at the foot of Birutė Hill

Horizon 2

Bones	Cattle (<i>Bos bovis</i>)	Pig (<i>Sus suis</i>)	Horse (<i>Equus caballus</i>)	Sheep/goat (<i>Ovis aries/ Capra hircus</i>)	Undetermined	Total
Processus cornualis						
Cranium						
Mandibula	3			1		4
Dentes	5					5
Columna vertebralis	2			1		3
Scapula	1					1
Humerus						
Ossa antebrachii						
Carpus						
Metacarpus						
Os coxae		1			1	2
Os femoris						
Patella						
Ossa cruris	1					1
Tarsus						
Metatarsus	2					2
Phalanx						
Total	14	1		2	1	18
%	77.77	5.55		11.11	5.55	
MNI	3	1		1		
Age, month	28-32 24-28			18-24		
	Abscess					

Table 3
Analysis of bones excavated from the settlement at the foot of Birutė Hill

Horizons 3-3A

Bones	Cattle (<i>Bos bovis</i>)	Pig (<i>Sus suis</i>)	Horse (<i>Equus caballus</i>)	Sheep/goat (<i>Ovis aries/ Capra hircus</i>)	Undetermined	Total
Processus cornualis						
Cranium						
Mandibula	1					1
Dentes	3	2	1			6
Columna vertebralis	3			2	1	6
Scapula						
Humerus		1				1
Ossa antebrachii						
Carpus						
Metacarpus						
Os coxae						
Os femoris						
Patella						
Ossa cruris	2	1				3
Tarsus						
Metatarsus						
Phalanx	1		1			2
Total	10	4	2	2	1	19
%	52.63	21.05	10.53	10.52	5.26	
MNI	2	2	1	1		
Age, month		17-23		18-24		

Table 4

Analysis of bones excavated from the settlement at the foot of Birutė Hill

Horizon 4

Bones	Cattle (<i>Bos bovis</i>)	Pig (<i>Sus suis</i>)	Horse (<i>Equus caballus</i>)	Sheep/goat (<i>Ovis aries/ Capra hircus</i>)	Dog (<i>Canis familiaris</i>)	Total
Processus cornualis				1		1
Cranium	1	3		1		5
Mandibula	3	2	1	2	2	10
Dentes	1	1	3		1	6
Columna vertebralis	1			4		5
Scapula						
Humerus						
Ossa antebrachii				1		1
Carpus						
Metacarpus			1			1
Os coxae	1			1		2
Os femoris				2		2
Patella						
Ossa cruris						
Tarsus						
Metatarsus						
Phalanx	1		2			3
Total	8	6	7	12	3	36
%	22.22	16.66	19.44	33.33	8.33	
MNI	1	2	1	3	2	
Age, month	21-24	17-22 31-35	12	5-6 8-10 23- 48		
					Pathology	

Table 5
Analysis of bones excavated from the settlement at the foot of Birutė Hill

Horizon 5

Bones	Cattle (<i>Bos bovis</i>)	Pig (<i>Sus suis</i>)	Horse (<i>Equus caballus</i>)	Sheep/goat (<i>Ovis aries/ Capra hircus</i>)	Total
Processus cornualis					
Cranium	1	5		1	7
Mandibula					
Dentes		1	1		2
Columna vertebralis	3			1	4
Scapula					
Humerus				1	1
Ossa antebrachii					
Carpus					
Metacarpus			2		2
Os coxae	2				2
Os femoris					
Patella					
Ossa cruris	1				1
Tarsus			1		1
Metatarsus			2		2
Phalanx			2		2
Total	7	6	8	3	24
%	29.16	25.00	33.33	12.5	
MNI	2	2	3	1	
Age, month			12	18-24	

Horizon 1

Horse (*Equus Caballus*) (MNI-2) by cm

Teeth:	P ³	P ⁴	M ¹	P ²	M ³
L	2.45	2.50	2.86	3.62	2.71
B	2.48	2.51	2.68	2.29	2.09

Humerus

Bd	6.16
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Talus

GH	4.68
LmT	4.60
GB	4.18

Metatarsus (withers height 120 cm - 112 cm)

LI	22.1
Bp	4.23
SD	2.49
Bd	4.13

Phalanx proximalis

GL	6.59; 7.60
Bp	4.46; -
SD	2.71; 3.32
Bd	3.73; -

Sheep / goat (*Ovis Aries*/*Capra Hircus*; Age -) by cm

Mandibula

Teeth	P ₂	dP ₄	M ₁
L	0.93	1.68	1.51
B	0.48	1.62	0.70

Pig (*Sus suis*) by cm

Maxilla (17-22 months)

Teeth	P ⁴	M ¹	M ²
L	1.21	1.64	2.10
B	1.21	1.33	1.69

Humerus

Bd	2.93
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Talus

GLI	3.68
GLm	3.32
Bd	2.38

Horizon 2

Cattle (*Bos Bovis*) by cm

Single teeth	M ₁	M ¹	dP ₄
L	2.42	2.37	2.64
B	1.02	1.60	1.04

Scapula

SLC	6.48
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Sheep / goat (*Ovis Aries*/*Capra Hircus*; Age -) by cm

Mandibula Teeth	P ₄	M ₁	M ₂	M ₃
L	1.04	1.41	1.80	-
B	0.66	0.76	0.82	0.62

Horizons 3 - 3 A

Horse (*Equus Caballus*) by cm

Mandibula	M ₂
L	2.78
B	1.43
H	6.88

Phalanx media

GL	-
Bp	4.43
SD	4.06
Bd	4.23

Cattle (*Bos Bovis*) by cm

Mandibula	P ₂	P ₄	M ₁	M ₂	single teeth	M ₃
L	1.86	2.00	2.09	2.32		2.84
B	1.06	1.33	1.43	1.50		1.01

Horizon 4

Horse (*Equus Caballus*) by cm

Mandibula	dP ₂	dP ₃	dP ₄
L	3.10	2.88	3.21
B	1.18	1.05	0.93
H	-	3.41	3.42

Maxilla

	P ²
L	2.58
B	2.43
H	4.41

Metacarpus:

LI	17.5
Bp	4.12
SD	2.70
Bd	3.96

Phalanx proximalis:

GL	6.29;	7.13
Bp	4.64;	4.28
SD	2.84;	2.72
Bd	3.62;	3.73

Phalanx media

GL	4.12
Bp	4.34
SD	3.60
Bd	4.30

Cattle (*Bos Bovis*)

Mandibula	P ₂	P ₃	P ₄
L	1.06	1.76	2.15
B	0.78	0.96	1.03

Pig (*Sus Suis*) (MNI-2; Age – 17-22 months and 31-35 months)

Mandibula	M ₂	M ₃	M ₂	M ₃
L	1.94	2.34	1.96	2.80
B	1.08	1.20	1.10	1.34

Sheep / goat (*Ovis Aries/Capra Hircus*; Age –) by cm

Mandibula	M ¹
L	1.39
B	0.64

Horizon 5

Sheep / goat (*Ovis Aries/Capra Hircus*; Age – 18-24 months) by cm

Maxilla	M ¹	M ²
L	1.31	1.32
B	0.79	0.86

ABBREVIATIONS

- A&F – Ausgrabungen und Funde
- ATL – Archeologiniai tyrinėjimai Lietuvoje
- DSB – Deutsches Staatsbibliothek. Kartographische Abteilung
- FMM – (Forhistorik Museum Moesgård) 1939. CxB. CNM C 5643. K. 22.
- CNM – Copenhagen National Museum
- KVIM – Kauno valstybinis istorijos muziejus.
- KŪPI – Komunalinio ūkio projektavimo instituto Klaipėdos skyrius
- LAA – Lietuvos archeologijos atlasas
- LAP – Lietuvos archeologijos paminklai
- LEK – Liv-, Est- und Kurländisches Urkundenbuch
- LIIA – Lietuvos istorijos instituto archyvas
- LMK – Lietuvos materialine kultūra
- MAB – Lietuvos Mokslų Akademijos bibliotekos rankraščių skyrius
- MADA – Mokslų Akademijos darbai
- MSPI – Miestų statybos projektavimo instituto Klaipėdos skyrius
- PKIA – Paminklų konservavimo instituto archyvas
- PRPI – Paminklų restauravimo projektavimo instituto archyvas

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ADDENDUM I

Formal Table for Writing-up Ceramics

Object of Research				Type	Kind of Item			
Inventory No.	Research Area	Structure	Horizon		Pots	Miniatures	Vessels with handle	Bowls

Group			Size					
Modeled	Made on slowly rotating wheel	Made on rotating wheel	Height	Mouth diameter	Base diameter	Body diameter	Body height	

Fragment			Firing environment		
One color	Two colors	Tri-colored	Reductive	Mixed	Oxidational

Firing quality			Perforations		
Good	Average	Poor	At the rim	In the neck	On the shoulders

Base				Wall thickness
Foot	Sprinkled	Smoothed	Pressed	

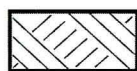
Temper				
Very fine to 0.25 mm	Fine 0.25 mm - 0.5 mm	Medium 0.5 mm - 2.0 mm	Coarse 2 mm - 5 mm	Very coarse >5 mm

Ornamentation, technique					
Indented	Slashed	Incised	Comb	Stamp	Wheel-shaped

Ornamentation														
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ADDENDUM II

Markings predetermined



1



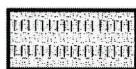
9



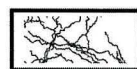
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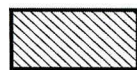
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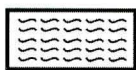
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18



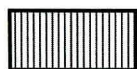
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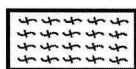
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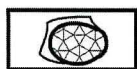
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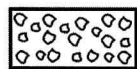
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12



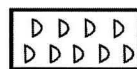
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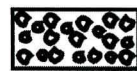
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13



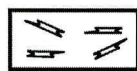
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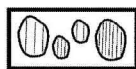
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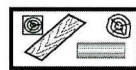
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15



8



16

- | | |
|-------------------------|---|
| 1. Turf | 13. Packed clay |
| 2. Black earth | 14. Burnt through clay |
| 3. Brown earth | 15. Postholes and stake holes
(without charcoal and with charcoal) |
| 4. Gray earth | 16. Rotted through wood |
| 5. Stones | 17. Burnt up wood |
| 6. Burnt through stones | 18. Tree roots |
| 7. Gravel | 19. Hearths |
| 8. Sand | 20. Clay oven hearth |
| 9. Sand with soot | 21. Ceramics |
| 10. Sand with ashes | 22. Bones |
| 11. Clay | |
| 12. Singed clay | |

Vladas Žulkus

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