# PREHISTORY OF UŽNEMUNĖ

## Summary


Užnemunė (beyond the River Nemunas) is the South-Western part of Lithuania situated on the left bank of the River Nemunas. It borders with Belarus and Poland in the South and South-West and with former East Prussia, now Kaliningrad Region of the Russian Federation, in the West.

### HISTORY OF RESEARCH. UŽNEMUNĖ IN ARCHAEOLOGICAL LITERATURE

The first records on the Stone Age in Užnemunė appeared in archaeological literature in the second half of the 19th century. In 1881 the work by Count A. Uvarov on the Stone Age in Russia was published in Moscow, referring to 6 stone axes, 3 bone – antler tools and a flint arrowhead. The findings were from the collection of the architect Boleslaw Podczaszynski. The bone spearhead with flint inserts from Užnemunė was also described by Konstantin Grewingk, the naturalist professor at University of Dorpat (now the University of Tartu). He used the artefact as an analogy to the Stone Age artefacts found in Estonia (Grewingk, 1882). A spearhead, the only exhibit of this type, is honoured a place in the Archaeological Museum in Krakow (fig. 1). The beginning of a new stage in research of the Stone Age in Užnemunė and entire Lithuania is marked by the activities of the famous Polish ethnographer Z. Gloger (1845–1910). Z. Gloger was the first to search for the Stone Age sites in Lithuania. In 1871, 1872 and 1899 during his boat trips on the River Nemunas he found a few dozen sites dated to the Stone Age between Druskininkai and Jurbarkas (Gloger, 1873; 888; 1903). Z. Gloger collected a plentiful collection of Palaeolithic, Mesolithic, Neolithic and Bronze Age artefacts which ended up in Poland and had represented Lithuanian Stone Age in Polish archaeological literature for a long period. A part of the material collected by Z. Gloger is archived in the Archaeological Museum in Krakow, some of it is in Warsaw (fig. 3). Academician Konstantinas Jablonskis (1892–1960) significantly supplemented the number of Užnemunė Stone Age sites with 30 Stone Age settlements he had found on the left bank of the Nemunas River (Rimantienė, 1974, p. 60–81). From the end of the twenties until 1960, without excluding the War and the Post-War periods, K. Jablonskis spent most of his free time searching for Stone Age settlements and collecting finds he had found therein. K. Jablonskis' collection comprised the main source base of Lithuanian Stone Age research. The collection has not lost its relevance to this day. Lithuanian archaeological research of the 1st half of the 20th century was summarised by Jonas Puzinas (1905–1978), the Head of the Prehistory Department of the Museum of Culture (Puzinas, 1935; 1938a; 1938b.). When presenting the Mesolithic Period, J. Puzinas published all bone and antler tools from Užnemunė that he had been aware of. Every bone and antler tool from the Stone Age registered by J. Puzinas before the 2nd World War was found accidentally; therefore the researchers who are examining the specific finds are constantly faced with the questions as to the precise localization and circumstances of finding thereof. Stone Age bone and antler tools from Užnemunė are very exquisite and expressive. Already starting from the 19th century they have been regularly published in Lithuanian and foreign archaeological publications, neither of any major monographs dealing with Lithuanian Prehistory could ever manage without them.

Rimutė Rimantienė provided an extensive and systematic summary of Lithuanian Palaeolithic and Mesolithic material that had accumulated until the 7th decade of the 20th century (Римантене, 1971). Groups of finds and single items from Uznemunė sites were included into the general Palaeolithic and Mesolithic chronological and cultural scheme of Lithuania. 19 Užnemunė Palaeolithic and Mesolithic sites were mentioned in total, 9 of them are being researched in detail. (Римантене, 1971, c. 19–72, 112–148). Along the above mentioned bone and antler tools, in R. Rimantienė's work Sūduva (west and north part of Užnemunė) and Dainava (south part of Užnemunė) are also represented by sets of flint finds from Pamerkinė, Jonionys and Kampiškės settlements and Palaeolithic material from Nendriniai (Marijampolė district). In 1966 and 1967 an archaeologist A. Merkevičius researched a late burial place with horse burials in Nendriniai village (Merkevičius, 1971). Finds dating back to the Palaeolithic Period were found in the burial place in line with the abundant Neolithic and Late Mesolithic finds.

Even though no excavations were made in Užnemunė Stone and Bronze Age sites, some finds dating back to this period were found during the research of the later burial-grounds and hill-forts. Finds of particular importance were found during research of Pažarstis barrow-cemetery (Michelbertas, 1969) and Paveisininkai hill-fort (Kulikauskas, 1982).

In the 8th decade of the 20th century Lithuanian archaeological sites were mapped again. The new Atlas of the Stone Age in Lithuania indicated 90 Stone Age sites and find spots of artefacts, provided registry of about 300 Stone Age ground tools from Užnemunė (Bagušienė, Rimantienė, 1974; Rimantienė, 1974).

After Lithuania restored its independence, Užnemunė Stone and Bronze Age sites were being researched for the heritage protection purposes as a rule.

Fig. 1. Bone spear-point and flint inserts from Klausučiai. Fig. 2. The first description of the spear-point by B. Podczaszynski. Fig. 3. Flint finds from Z. Gloger's collection from Baltašiškė.

## PALAEOGEOGARPHICAL SURVEY OF THE COUNTRY. ARCHAEOLOGICAL SITES AND RESEARCH

Whenever one speaks of the landscape of Užnemunė, the first thing to open up in one's imagination is the plains, yet from the orographic perspective the country is heterogeneous, it has highland and plains, and lowland. The landscape of Užnemunė was formed by the glaciers and thawing waters. Based on the genesis and development of the landscape three main physical geographical areas are distinguished in Užnemunė. The North-western part belongs to the plain of the lower part of the Nemunas River with its Western part referred to as the Lowland of Užnemunė. It is the lowest, 40 to 60 meters above the sea level on average, and flattest point within Užnemunė territory, mostly covered by the glacial lacustrine plain with rich sod soils of dusty sandy loams in Šakiai micro-district. In the Eastern periphery there lays sands of Kazlų Rūda, once washed by the old Nemunas when flowing into the ice-melting lagoon at 80 m level. The bigger part of the old Nemunas delta is now covered with the forest of Kazlų Rūda. The middle area of Užnemunė is a part of the Nemunas middle plateau region. Its surface is added with variety by Veiveriai and Išlaužas–Igliauka ridges, i.e. the watersheds of the Nemunas tributary separated by inter-ridges filled with glaciolacustrine sediment. Some inter-ridges form clayey plains (Jiesia, Peršekė), some are covered with large bogs (Žuvintas, Amalvas, Igliauka pit bogs). The bogs are surrounded by the outwash moraine ridges. Large pit bogs (Dusia, Metelys, Obelija, Rimietis lakes, the River Kirsna) mark areas flattened by small-scale glacier sole in the South of the region. Further to the South there lays the moraine Sūduva highland which is an integral part of the Baltic highland divided by the Šešupė valley into the Western Pavištytis–Gražiškiai and Eastern Rudamina highlands. The southmost part of Užnemunė stretching from Veisiejai is a part of the South-Eastern plain, i.e. its lowest part in the South-West – the lower part of the Merkys–Baltoji Ančia plain, or otherwise known as Dainava sandy plain. It is dominated by wavy and lumpy sandur plains traversed by deep tunnel valleys or dry hollows. The tunnel valleys are in most places seamed with picturesque lakes (Veisiejis, Ančia), the Baltoji Ančia, Seira, other rivers and streams run through the sections of the tunnel valleys. The major part of this region is covered with the forests of Kapčiamiestis (Basalykas, 1958).

Kubilėliai Stone Age settlement was found in 1982. Flint finds and fragments of ceramics were found in the ploughed soil. 938 $m^2$ area covering almost the entire remaining part of the settlement was researched from 1984 until 1989. In the cultural level and beneath it there were traces of 25 hearths, 19 pits, 3 dwellings and 20 post-holes found. Kubilėliai settlement had been inhabited during a variety of periods. There is only one radiocarbon date from a hearth from the Mesolithic, i.e. the second half of the Middle Stone Age: T–10919 7550+/–60 BP. The second existence period of the settlement was the first half of the 2nd millennium B.C. which was recorded based on flint finds and ceramics typical of that period. Later there must have been an Iron Age settlement the traces whereof, i.e. fragments of ceramics were found all over the excavated area.

Gluobiai 1st Stone Age settlement was found in spring 1984 when surveying the Šešupė banks. Traces of a pole construction building, 3 hearths and 11 post-holes were found, flint finds and fragments of ceramics collected in the cultural level and underneath it (fig. 11). The radiocarbon dating of a hearth once located inside the dwelling dates back to the end of the Mesolithic: JIE-4714 7060+/–270 BP. The date is also supported by the microlithic finds typical of the second part of the Mesolithic. The ceramics is already attributed to the Iron Age (Juodagalvis, 2005).

Gluobiai 3A settlement was 600 m to the South-East from the right bank of the Šešupė River, on the eastern outskirts of the pinewood, 550 m to the South-East from Gluobiai 1st settlement (fig. 7). In the arable

field there stood a low-rise hillock, in its area of 70 m in diameter there were over 100 flint finds collected in 1984. In 1990 test trenches within and around the area of prevalence of flint finds (total area 32 m$^2$) were conducted, however no cultural layer was detected – underneath the layer of arable soil there occurred a layer of clean untouched sand. 1156 flint finds and several fragments of ceramics from unspecified period were collected in the test trenches and on the ground surface. Flint finds are specific to the Neolithic period (Juodagalvis, 1992b).

In spring 1987 a group of numerous find spots of sites and stray finds was discovered in the surroundings of Lake Dusia in the Southern periphery of the Šešupė basin (fig. 13). Unfortunately most of the Stone Age sites and settlements, especially the ones on the southern and eastern bank were located on high-rise sandy terraces with no favourable conditions for preservation of cultural layers (fig. 14, 15). In 1989 the most promising object of archaeological research was identified, i.e. Dusia 8th settlement situated on the north-western shore of the lake.

A third group of Dainava sites, i.e. settlements of the River Zapsė is concentrated around the surroundings of Lake Veisiejis and the River Zapsė (Lazdijai district), in the Southern part of Užnemunė (fig. 6). The River Zapsė 1st settlement was excavated in 1992, 1993, 1995 and 1997. Based on the finds and radiological dating two clear periods of the settlements can be distinguished: the Late Mesolithic with a developed technique of production of blades and microliths, lanceolate points, inserts, trapeziums and axes and the Bronze Age. The most abundant group of flint finds and ceramics consists of the legacy from the last settlement: flint bifacial arrowheads and knives, scarpers and other tools with brown and yellow cortex, irregular blades and irregular cores. However, one more group of sparse finds remains: sherds of clay mixed with sand and plant fibre temper which can also serve as the witnesses of another short-term dwelling place of the humans.

Zapsė 5th settlement and the Iron Age burial-ground were found on the other side of the Zapsė River. In 1992, 1993 the area of 100 m$^2$ was researched. The cultural layer of the Neolithic settlement was significantly disturbed by the subsequent cremation burials and graves (fig. 21) and forest planting furrows. In the process of research a number of flint finds, fragments of ceramics were collected, traces of post-holes and pits detected. In 1997 additional 69 m$^2$ area was researched which was added to the area excavated in 1996. Fragments of ceramics typical of the Nemunas Culture dating back to the Middle and Late Neolithic were found. In 1998, when the excavations were already supervised by Gytis Grižas, an employee of the Archaeology Department of the National Museum of Lithuania, 109 m$^2$ area was researched which was added to the eastern part of the area excavated in 1992, 1993 and its northern side excavated in 1994. To the west of the researched area of Zapsė 5th settlement and the burial-ground the River Zapsė 6th and 7th prehistoric settlements were recorded wherein small-scale survey research were conducted. The settlements contained archaeological material of various periods: the Stone Age, Bronze and Iron Ages.

In October, November 2001 following a work-order of the Department of Cultural Heritage under the Ministry of Culture, the Lithuanian–Belarus borderland in Lazdijai district was surveyed. It was an outstanding possibility for coming back to Užnemunė since following excavations of the Zapsė settlements the research in Užnemunė were terminated subject to expiry of the programs funded by the State Science and Studies Foundation. Archaeological survey conducted in the Lithuanian–Belarus borderland was successful: there were 30 new Stone Age sites found, rich material collected, unexplored terrains surveyed.

In 2008 the Archaeological Department of the Lithuanian Institute of History prepared a scientific research program ARCHAEO–LANDSCAPE. The program was supported by the State Science and Studies Foundation. The integral part of this program "Reconstruction of the Development of Economic–Household Activities and Social Structure of Human Societies during the Late Pleistocene – Early Holocene" provided with opportunities to continue with research in Užnemunė. In the process of implementation of the program the main focus was on surroundings of the gap-area between Žuvintas and Amalvas lakes. There were new Stone Age and Bronze Age monuments identified (fig. 25), data on previously found items which were not listed in the museums was collected (fig. 26).

Fig. 4. The limits of the glacial advances: G – Grūda stadial, Ž – Žiogeliai phasial, B – Baltic stadial, EL – East Lithuania phasial, SL – South Lithuania phasial, ML – Central Lithuania phasial, NL – North Lithuania phasial. Fig. 5. Palaeogeographical situation of Užnemunė during the Baltic stadial of the Nemunas Glacial (1): 1 – active ice, 3 – moraine highland, hills and plateaus, 4 – glaciofluvial plains, 5 – glaciolacustrine plains, 6 – melting ice water basins, 7 – water flows and their directions, 8 – hilly relief and Jostedal Glacier in the Western Norway today (2). Fig. 6. Map of the

prehistoric heritage of Užnemunė: 1 – flint finds from the Stone and Bronze Age, 2 – Palaeolithic flint finds, 3 – groups of flint finds with Palaeolithic arrowheads, 3 – groups of flint finds with Mesolithic tanged points, 4 – microliths, 5 – bone and antler tools, 6 – Neolithic and Bronze Age flint arrowheads, 7 – Neolithic and Bronze Age ceramics, 8 – hoards, 9 – anthropological finds. Fig. 7. Situation in Kubilėliai and Gluobiai Stone Age settlements. Fig. 8. Kubilėliai settlement: 1 – situation of the researched area, 2 – a view of the excavations in 1985 from the left bank of the Šešupė. Fig. 9. Stratigraphy of the western section of Kubilėliai settlement: 1 – soil, 2 – yellow fine-grained sand, 3 – brown superficial sand, 4 – cultural layer, 5 – dark grey sand, 6 – light grey sand, 7 – white sand. Fig. 10. A view of Gluobiai 1st settlement from the East. Fig. 11. Excavations plan of Gluobiai 1st settlement in 1991: 1 – flint finds, 2 – sherds, 3 – burnt bones, 4 – boundaries of later trenches, 5 – contours of sunken floors of the dwelling, 6 – hearths. Fig. 12. Flint finds from Jotija and Gedupis sites. Fig. 13. Lake Dusia Stone Age sites on the geological map: 1 – Dusia Lake 8th settlement, 2 – Metelytė, 3 – Rinkotas. Fig. 14. The first flint finds from Lake Dusia surroundings. Fig. 15. Metelytė site and the finds. Fig. 16. Rinkotas site and the finds. Fig. 17. The milieu of Lake Dusia 8th settlement. Fig. 18. Washed-out cultural layer. Fig. 19. The situation of the Zapsė sites and a view from Paveisininkai hill-fort. Fig. 20. The plan of researched area in Zapsė 1st settlement. Fig. 21. The plan of the River Zapsė 5th Stone Age settlement and Iron Age burial ground. Fig. 22. Mara Stone Age settlement: 1 – on the intersection of the three states, 2 – a view of Mara settlement from the South, 3 – flint core *in situ,* 4 – cultural layers. Fig. 23. Stone Age sites in the surroundings of Sventijanskas. Fig. 24. Stone Age sites in the surroundings of Sventijanskas: 1 – Sventijanskas 2nd site, 2 – cultural layers in survey trench, 3 – Sventijanskas 4th site, 4 – Sventijanskas 3rd site, 5 – meeting the frontier–guards in Sventijanskas 5th site, 6 – the cultural layer of Sventijanskas 5th Palaeolithic site, 7 – research of Sventijanskas 7th site. Fig. 25. Daržininkai Mesolithic site by the pit bog of Žuvintas. Fig. 26. Flint finds from the surroundings of Daukšiai.

## PREHISTORIC HERITAGE OF UŽNEMUNĖ

### Flint Industry

Flint finds serve as the main source for the research of cultural development since the earliest times until the birth of ceramics. Based on the production technique of flint finds and types of artefacts there have been two cultures distinguished until now. They are definite in time and, according to certain researchers, contain ethnic content. The development of the production technique of flint artefacts is the reflection of the human improvement revealing the general features and peculiarities of the development. Flint tools represent the most abundant group of finds in Užnemunė settlements. Due to its outstanding physical features, i.e. tough and cleavable nature, flint was an irreplaceable raw material in manufacture of tools and weapons. Flint tools found across all researched settlements in Užnemunė constitute the absolute majority of finds and only in Gedupis settlement sherds outgo the number of flint finds. The total number of flint finds collected in excavated the sites of Užnemunė accounts for about 60 000.

Functional-morphological method was used for classification of flint finds in Užnemunė. The first typological stage presents finds classified in accordance with their functional purpose (arrowheads, scrapers, bores, etc.). The artefacts within the groups are classified into types based on their recurring morphological features (shape, type and place of retouch). The first typological stage allows defining the location of Užnemunė flint tools among other complexes of Stone Age artefacts in Lithuania. The second typological stage of tools grouping into types is also partly dedicated for that purpose. The purpose of the second and third stages, i.e. classification of types into variants is to identify the development features of types of flint tools in Užnemunė. In all cases, provided that adequate material was in place, in pursuance of preventing subjectivity when comparing similarities and differences of types of artefacts the stratification method was applied (Robinson, 1951; Brainerd, 1951).

The inventory of Kubilėliai is the richest in number, including all main types and variants thereof, yet at the same time it is of the most standard nature, i.e. more affluent groups of tools (scrapers, burins, knives) have one or two types considerably exceeding in quantity the other types. In the diagrams they represent one or two high graphs, whereas the other graphs are on a much lower level. It is also typical of other sites of the northern group. The inventory of Zapsė 1st and Dusia 8th settlements represent a rather similar height of graphs what shows a more levelled distribution of types. The types of flint tools in Užnemunė share significant similarities. Similarity ratios of different types of settlements intermingle. This phenomenon can be illustrated by the specific example: similarity ratio of Kubilėliai

and Dusia burins is 63,5, i.e. medium, the ratio of Kubilėliai and Gluobiai 1st is 78,2, i.e. high , and Dusia and Gluobiai 1st ratio stands for 84,1, i.e. very high. Such intertwining of similarity ratios which is also noticeable in charts of other types of flint tools provides evidence of similarity of the total complex of flint finds in Užnemunė. Certain individual features of settlements are brought to light: in Kubilėliai settlement there were lesser arrowheads compared with other sites, however the number of inserts was bigger then elsewhere. In Dusia the larger part of inventory, compared with other sites, consists of knives, tools of idenfinite purpose and chipped flakes; in Gluobiai 1st settlement scrapers prevail. The table provides similarity ratios of the group distribution of flint tools in Užnemunė settlements. The highest similarity ratio is 87,5, the lowest is 77,7. For comparative purposes it is possible to apply similarity ratios of flint inventory of Kunda Culture sites, which are calculated using the same method: the highest ratio is 85,73, the lowest is 32,19. The example shows that the Užnemunė complexes are slightly more similar and homogeneous.

There were neither ground flint tools found within the researched sites of Užnemunė, nor any data proving that ground flint axes or chisels had been manufactured in the settlements. A splinter of one ground axe is in the collection of Zapsė 5th settlement collected by R. Rimantienė, a fragment of another axe was found in Rinkotas site nearby Lake Dusia. The fact that there were no ground flint tools found in the researched settlements does not provide a full picture of the general distribution of such type of tools in Užnemunė – the number of randomly found items is bigger compared with other parts of Lithuania. Especially large quantities of flint ground artefacts are found in Sūduva. Some axes, particularly small of white colour or bigger of varicoloured or transparent flint may have been produced locally, i.e. in South Lithuania using lumps of erratic flint. Big tools from ground flint are specifically typical of the Neolithic in South Scandinavia rich in raw material for manufacture thereof.

Fig. 27. Flint concretion from the surroundings of Lake Žuvintas. Fig. 28. Distribution of cretaceous system derivatives in Lithuania. Fig. 29. Flint finds with patina. Fig. 30. Cores from Geruliai Palaeolithic workshop. Fig. 31. Flint finds containing traces of later processing. Fig. 32. Preparation of a core: 1 – the initial blade is formed, 2–4 – initial blades, blades, a prepared core from Geruliai Palaeolithic workshop. Fig. 33. Cores from Kubilėliai settlement. Fig. 34. Cores from Zapsė 1st settlement. Fig. 35. Cores from Dusia settlement. Fig. 36. Preparation of a core and stages of its use. Fig. 37. Types of cores. Fig. 38. Production of flint blades using the pressure technique: 1 – core for blades made by pressure from Kubilėliai, 2, 3 – making blades using pressure technique, 4 – blades made by pressure technique from Kubilėliai. Fig. 39. Blades and microburins from Užnemunė sites. Fig. 40. Width diagram of blades from Užnemunė sites. Fig. 41. Types of retouch: 1 – fine, 2 – plain, 3 – flat, 4 – fine abrupt. Fig. 42. Formation of flat retouch. Fig. 43. Neolithic and Bronze Age arrowheads from Užnemunė. Fig. 44. Arrowheads from Sūduva. Fig. 45. Arrowheads and spearheads from Dainava. Fig. 46. Microliths and their use. Fig. 47. Sūduva microliths. Fig. 48. Microliths and tanged point from Dainava. Fig. 49. Scrapers and experimental use (9). Fig. 50. Scrapers from Kubilėliai. Fig. 51. Scrapers from Gluobiai. Fig. 52. Scrapers and spokeshaves from Zapsė 1st site. Fig. 53. Scrapers from Dusia Lake settlement. Fig. 54. Scrapers and spokeshaves from Dusia Lake settlement. Fig. 55. Distribution diagram of types and variants of scrapers. Fig. 56. Burins from Užnemunė. Fig. 57. Burins from Kubilėliai (1–29) and Gluobiai 3A (30–39) sites. Fig. 58. Burins from the Zapsė River 1st site (1–18) and burins and scrapers from the Zapsė River 5th site (19–37). Fig. 59. Burins, chisels and axes from Dusia Lake site. Fig. 60. Distribution diagram of types and variants of burins. Fig. 61. Perforators and drills. Fig. 62. Knives from Sūduva sites. Fig. 63. Knives from the Zapsė River sites. Fig. 64. Knives from Dusia Lake site. Fig. 65. Distribution diagram of types and variants of knives. Fig. 66. Experimental use of flint knife in Kernavė. Fig. 67. Flint tools from Sūduva sites. Fig. 68. Flint axes. Fig. 69. Large flint tools from the Zapsė River sites. Fig. 70. Bifacial ground flint axes. Fig. 71. Ground flint axes of oval and multangular section. Fig. 72. Ground flint axes of quadrangular section. Fig. 73. Ground flint axes and chisels. Fig. 74. Distribution of ground flint tools.

**Ground Stone Tools**

There were very few ground stone tools found in the researched settlements in Užnemunė. A few are found in other Stone Age sites in Lithuania as well. None was found in Zapsė settlement. A waste bore-plug of shaft-hole axe (fig. 75:9 ) and a couple of splinters of ground or chopped stone from Kubilėliai settlement only confirm the very fact that there have been ground stone tools manufactured in the settlement. Significantly larger numbers of stone finds were found in Dusia settlement. Here the stone tools are

represented by ground axes, net sinkers, whetstones, quern stones and grinding implements. Only one 7,6x4,7x2,6 cm whole basalt hafted axe of oval section was found (fig. 75:1).

The majority of the historic-cultural stone heritage consists of stray finds. It was the moment of the first random data publishing and efforts to interpret it, in particular, that we have identified as the starting point of the discipline of Archaeology in Lithuania.

The ground stone tools found in Užnemunė may be classified into the following typological groups: axes, maceheads, adzes, hoes and coulters. Axes represent the biggest group. They are of two types: hafted and shaft-hole axes. After having carried out the typological grouping of Užnemunė axes the one thing was left to do, i.e. to evaluate the situation of the stone axes from the entire Lithuania in terms of typology. For that purpose the method was applied, which I called the statistical – geographical method of typological evaluation (Juodagalvis 2002). 280 stray ground stone tools from Užnemunė were registered in the Archaeological Atlas of Lithuania (Bagušienė, Rimantienė, 1974). They constitute 11,2% total number of ground stone tools found in Lithuania. Given the area of Užnemunė (12,6% total territory of Lithuania), this ratio is medium, i.e. there were as many ground tools in Užnemunė as in other parts of Lithuania. Based on the typological approach Užnemunė does not fall out of the overall picture as well – there were all the main types of ground tools found there. Certain differences are noticeable when comparing the correlation of the types of ground axes in Lithuania and Užnemunė. The essence of the comparative method lays in the distinction of theoretical and actual types. Užnemunė covers 12,6% area of Lithuania, therefore theoretically there should be 12,6% all types of axes on the number of the total amount of tools found in Lithuania. Distinctions between the actual and theoretically derived amount show characteristics of correlation of Užnemunė stone axe types. The graphic image on the result of comparing main typological groups (fig. 87) shows that in Užnemunė flint axes and stone axes of common European types (European type and double-edge) prevail.

Fig. 75. Stone finds from excavated sites in Užnemunė. Fig. 76. Hafted axes. Fig. 77. Boat battle axes. Fig. 78. Boat battle axes. Fig. 79. Boat battle axes. Fig. 80. Boat battle axe from Šunskai. Fig. 81. Boat battle axes. Fig. 82. Double-edge battle axes. Fig. 83. Double-edge battle axes. Fig. 84. Stone axes of quadrangular butt. Fig. 85. Stone axes of rounded butt. Fig. 86. Stone axes of pointed–butt end, blanks and remade tools. Fig. 87. Comparative chart of types of ground axes in Lithuania and Užnemunė:1 – flint axes, 2 – stone hafted axes, 3 – stone axes of quadrangular butt, 4 – stone axes of rounded butt, 5 – battle axes of European type, 6 – battle axes of Fatyanovo type, 7 – battle axes of Baltic type, 8 – double-edge axes. Fig. 88. Stone maceheads. Fig. 89. Stone maceheads and coulters. Fig. 90. Stone hoes and gouges.

**Bone and Antler Tools**

There were very few bone and antler tools found in the researched sites of Užnemunė. None of them was found in the River Zapsė settlements and Sūduva sites are represented only by one antler tool from Kubilėliai. It is a 9,5 cm long and 2,5–3,9 cm wide circular and oval cut fragment of a moose antler with and cut-off ends (fig. 91:1). One of the ends was cut off in straight line, the other was sharpened on both sides. On the straight end there are distinct traces of pestling and grinding resulted from processing of hard materials. Apparently the blunt end was used for preparation of mineral plant fibre temper for ceramics, i.e. more chunky pieces of granite and quartz were knapped. Furthermore, distinctive features resulting from knapping flint with an antler were noticeable on the straight cut end. Sharpened end was used for grounding hard materials.

In Dusia 8th settlement the osteological material was better preserved. A short little gouge with ground blades curved from both sides, manufactured from cleaved hartshorn (fig. 91:6), hartshorn's antler of sawn-off spiked end (fig. 91:5) and several fragments of cleaved tubular bones with spiked or 45 degree sharpened tops (fig. 91:4, 7, 8) were found. A fragment of one ground small tool of indefinite purpose (fig. 91:2) was also found. Among the bones found in Dusia 8th settlement there are more finds of sporadic shapes with sharp or whittled ends (fig. 91:3).

Until research activities were initiated in Stone Age and Bronze Age settlements at Lake Kretuonas in East Lithuania, a half of all bone and antler artefacts included finds from Užnemunė. Yet, the reason here is not of archaeological nature, i.e. in Užnemunė peat extraction and reclamation works were more intensive compared with other locations on Lithuania. Stray bone and antler tools from Užnemunė have been the topic for discussion in the archaeological literature starting from the second half of the 19th century (Grewingk, 1882) to this day (Girininkas, 2009). They can be found in typological diagrams of various regions made by the

archaeologists, they are discussed in every major archaeological research paper on the Stone Age in Lithuania. Most of the bone and antler tools from Užnemunė as well as the most expressive types thereof discussed in the archaeological literature have been dated back to the Mesolithic Period. At the time of the Stone Age and during the later periods bone and antler were used for manufacture of weapons and tools which can be classified into several key groups: harpoons, spear-heads and arrow-heads, daggers and ice-picks, axes, sockets, chisels, hoes and various less commonly collected finds.

Fig. 91. Bone and antler tools from excavated sites of Užnemunė. Fig. 92. Bone harpoons. Fig. 93. Bone points with flint inserts. Fig. 94. Bone point with flint inserts from Velniabalė bog. Fig. 95. Bone daggers and harpoon. Fig. 96. Bone and antler tools. Fig. 97. Antler axe from Puskelniai and its finding place. Fig. 98.Various antler tools. Fig. 99. Antler axes and sockets. Fig. 100. Antler axes. Fig. 101. Antler socket, hoe and axe.

**Ceramics**

Conditions for preservation of ceramics in Užnemunė sites were unfavourable. The cultural layers of all researched settlements, except for Dusia 8th, were hidden under sand, in some places they were disturbed in the result of ploughing or blown out by the wind. Sherds are tiny; it is often impossible to put them in one peace what actually makes little room for accurate reconstruction of forms of pottery ware. Although sparse and poorly preserved, the ceramics of Užnemunė is very miscellaneous and varies within the same sites. Ceramics typical of the Nemunas Culture, Corded Ware, Perforated Pottery, Trzciniec and Brushed Pottery Cultures were found in the excavated settlements.

Fig. 102. Ceramics of Kubilėliai site. Fig. 103. Kubilėliai site. Restored pot. Fig. 104. Perforated ceramics. Fig. 105. Shapes of perforated ceramics: 1 – Poland, 2, 4, 5, 7 – Germany, 3, 6 – Slovakia, 8, 9 – Latvia. 1, 4, 6, 7 – Neolithic, 2, 3, 5 – Bronze Age, 8, 9 – Iron Age. Fig. 106. Ceramics of Gedupis site. Fig. 107. Ceramics of Zapsė River 1th site: A – sherds of potery with sand and plant admixture, B – sherd with brushed surface, C – decorated sherds, D – sherds of potery with granite and quartzite admixture. Fig. 108. Fragments of rims and bases of pottery from Zapsė River 1 th site. Fig. 109. Zapsė River 1 th site. Restored pot. Fig. 110. Fragments of ceramics with plant fibre admixture. Fig. 111. Fragments of ceramics with mineral (1–6, 8) and plant fibre (7) admixture. Fig. 112. Ceramics of Dusia Lake site.

## CHARACTERISTIC PATTERNS OF LIFE

### Settlements and Dwellings. Activities. The Model of Household Activities and Şocial Structure

All researched Stone and Bronze Age sites in Užnemunė, except maybe Lake Dusia settlement, share the same feature, i.e. seasonal prevalence. Inhabitants of Užnemunė and from neighbouring and farther lands still cultivated the old, seasonal nomadic lifestyle inherited from the Mesolithic. Remains of buildings are seldom found within open settlements. Small mobile forest animal hunting – fishing family communities were incapable of leaving more conspicuous traces of dwellings. In the second half of the Mesolithic, after the boundaries of cultural areas had settled, hunting lands of separate communities which had set boundaries for roaming of the Mesolithic people were also supposed to get more obvious. However, hunting families were roaring about within the hunting grounds of a community and sparsely settled down in the same locations. Such a pattern of life determined the temporality of dwellings and lightness of constructions as well as compact nature of the settlements.

Kubilėliai, Gluobiai 1st and Dusia 8th settlements provide more conspicuous traces of constructions, whereas in other settlements there were just sporadic post-holes, which say nothing of the structure of the previous buildings.

In the central part of the researched area of Kubilėliai settlement, the cultural layer with dark spots on the top highlighted traces of two objects later defined as housing (fig. 113). The shapes of both houses were similar: reminding of a drop or a triangle with round angles.

Judging from however sparse post-holes, the buildings in Kubilėliai were of post-bearing design. Oval-shaped sunken floors suggest the assumption that the buildings were also of oval or round shapes, yet not necessarily the lines of pits were to match with the external walls of the buildings. And most probably they did not match since the sunken floor was just a space formed by the hearth, an empty area of the building. Meanwhile, the house had also to provide space for bunks, placement of food supplies and utensils. Moreover, there were traces of hearths at the very edge of the pit in every house; it is hardly likely the hearth could have been installed by the wall. The straight line of post-holes by the third point of sunken floor of the building may provide evidence that the building may have also been of quadrangle or angular layout. The most interesting construction element of the buildings

in Kubilėliai was an entryway of the second house. Until now it has been the only find of such type across the Stone Age settlements in Lithuania. The purpose of the entryway is obvious, i.e. to protect the dwelling from the cold when entering or exiting. Therefore it is possible to assume that the house with the entryway found in Kubilėliai was suitable for living there during winter. R. Rimantienė also sympathised with the version of a house with an entryway by publishing the illustration of reconstruction of the building (Rimantienė, 1995, fig. 14) (fig. 17:1). Similar objects dating to 4000 $C^{14}$ BC were found Mesolithic settlement in Vuollerim, in the North of Sweden. The reconstruction shows that there was a chimney dug in the ground near the entryway. (fig. 117:2). Given the fact that in Kubilėliai the "entryway" was narrow and full of soot, with its end being just by the hearth, we are forced to make changes to the first interpretation and fix on the chimney version.

Gluobiai dwelling was above-ground, since the hearth and post-holes were detected on top of the mark and the majority of finds were collected on the top horizon level of the cultural level. The double line of small post-holes in the western side of the mark was a place of the inner wall. Post-holes No. 10 and No. 11 are traces of roof-bearing posts holding the roof ridge. The area of sunken floors accounts for 19,5 $m^2$. Considering that the external post-hole No. 9 was over 32 cm from the edges of sunken floors it can be assumed that the building covered about $30^2$. Radiocarbon date of charcoal taken from the western hearth marks the end of the Mesolithic, i.e. ЛЕ-4714 7060+/–270 BP. The date is also endorsed by the microlithic finds from the settlement which were typical of the second half of the Mesolithic.

Over 60 post-holes were found underneath the cultural layer of Lake Dusia settlement. All of them focused around three groups in the northern, western and southern part of the researched area (fig. 116:1). The northern and eastern groups of post-holes are more numerous and compact. In the subsoil black post-holes were of distinct shapes, they were clearly visible in the light clayey soil or sand, yet invisible in the cultural layer, except for a few larger ones which were noticed as coaly, dark small shapeless spots. More vivid traces of the building were found in the eastern part of the trench. Based on the preserved post-holes it can be assumed that different poles were used in construction: the smaller ones of 5 to 15 cm diameter and bigger ones of 25 to 35 cm diameter. The smaller poles were sharpened and hammered and the bigger ones with blunt ends were placed into the little pits (fig. 116:3). Bigger poles which stood in the corners of the building were circled by stones, by matching their curves to the concavities of the pole. In some places the stones were placed in two rows, one on top of the other. In between the post-holes and a little beyond them there was a 2–3 cm width layer of red clay, i.e. most probably the remains of dirt floor.

A hearth is an important part of a dwelling. In Užnemunė settlement there were two types of hearths found, which differed in their construction. The hearths in the building of Gluobiai 1st settlement, Kubilėliai and Dusia settlements were open, firm, of round or oval shape, with a semicircle section in pits, 60–100 cm diameter on average and without any stone constructions (fig. 118:1, 2). The second group contains hearths circled by stones. Such a hearth was found in Zapsė 1st settlement (fig. 20). A hearth in Kubilėliai settlement is worth a separate discussion (fig. 118:3). Distinguishing features included the size and structure. The hearth's section clearly distinguished a layer of black soil separated by inter-layers of grey sand. The stratification of the hearth suggests that the fire kept burning here for a long time with some pauses and it was repeatedly extinguished by sprinkling it with sand. Hearths of similar structure were also found in other regions of Lithuania: in Paštuva, Klangiai (Rimantienė, 1984, p. 266–269, fig. 149), Nida (Rimantienė, 1989, p. 175, fig. XXV). Objects of such type are associated with the rite. Therefore it is possible to assume that Kubilėliai settlement also had a sacrificial place, i.e. a sacrificial offering hearth.

After the glaciers drifted away and the climate became warmer by the end of the Palaeolithic, in XI millennium BC the first inhabitants, i.e. reindeer hunters came to Užnemunė. The pattern of life of the oldest inhabitants of Užnemunė was completely dependent upon the surrounding environment. During the Palaeolithic Period the core household activity of the inhabitants was reindeer hunting. In summer Palaeolithic hunters wandered in the tundra in order to keep traces of the reindeer herds. In autumn reindeers travelled East, in such a way forcing the hunters follow them. Hunting was the main activity of Užnemunė inhabitants during the Palaeolithic Period, as well as in the Mesolithic and Neolithic. The hunting methods depended on the object of hunting and that was the major difference between Mesolithic and Palaeolithic hunting. Forest animals led a completely different way of life from that of the object of the Palaeolithic hunting, i.e. reindeer. Forest animals which

could have been hunted held themselves individually or in small families, mostly in the same locations.

When solving issues of the Stone Age residential population of Užnemunė, a lot of problems arise – the most important of which is the nomadic way of life of hunters. The Palaeolithic as well as Mesolithic inhabitants changed their places of residence; they sometimes would come back to the same places, in other times they would settle nearby the previous settlements. During the Neolithic Period and beginning of the Bronze Age Užnemunė inhabitants still apparently had their seasonal settlements. A traditional Neolithic formula as manufacturing economy and permanent dwelling is not always appropriate when speaking of the forest zone inhabitants since in their case the hunting remained as the main activity until the second half of the Bronze Age. Paleosteological material of Dusia Lake settlement shows that the main hunting object was wild boar. Its bones account for 36,5% total identified bones of hunted animals. The bones of red deer and hind make 21,15% each, bear 19,2%, aurochs 1,9%. Types of animals hunted by Dusia inhabitants and the percentage of composition of their bones is closest to that of osteological material from Cedmar (former East Prussia) settlements, only in case of the latter there are more bones of an aurochs than that of a deer or hind (Timofeev, 1991, p. 22, tab. I).

Human communities or societies of similar socio-economic base constitute one historic type with the social structure being a substantial integral part. Thus, communities belonging to the same historic type must be of the analogous social structure. In other words, from the Late Palaeolithic until the resent past, all hunters and gatherers irrespective of their surrounding environment and economic-cultural type were, if not identical, very similar in their sociological structure. The similarity primarily showed itself in the identical structure of three social levels consisting of a small family, community and tribe. Human communities which existed in the current territory of Užnemunė in the Mesolithic and Neolithic Periods were no exception to that. Unlike the communities engaged in manufacturing activities, Užnemunė's society of the Mesolithic and Neolithic epoch primarily interacted with its surrounding environment through active social adaptation not only through a technological control of its environment. A community organisation which had developed through the millenniums allowed responding dynamically to fluctuations in food resources by rotating the number of economic groups, intensity of mobility, methods of acquiring food and at the same time maintaining the community as the most substantial structural element of the socio-economic society.

Fig. 113. Plan of excavated area of Kubilėliai settlement: 1 – fireplaces, 2 – dwellings, 3 – pits. Fig. 114. Dwellings of Kubilėliai settlement: A, D – north dwelling, B, E – south dwelling, C – sections of postholes. Fig. 115. Dwelling of Gluobiai site: A – plan of dwelling, B – sections, C – sections of postholes, D – sectional view of hearth and western part of dwelling. Fig. 116. Dusia Lake settlement: 1 – placing of postholes in the excavated area, 2, 3 – postholes, 4 – scheme of building structure: 1 – dirt floor, 2 – postholes, 3 – hearth. Fig. 117. Reconstruction of Stone and Bronze Ages buildings: 1 – Kubilėliai , 2 – Vuollerim, Sweden, 3 – Samantonys. Fig. 118. Hearths of Kubilėliai settlement.

## DEVELOPMENT OF ARCHAEOLOGICAL CULTURES

### The Earliest Inhabitants of Užnemunė. Cultures of Forest Animal Hunters and Fishermen. On the Doorstep of the Baltic Culture.

There are very few flint finds, i.e. traces of the earliest inhabitants in Užnemunė. And their find spots do not match with that of the reindeer antlers and parts of skeleton. Reindeers moved their own ways prompted by their instincts and their hunters travelled the river banks, where they could find flint. The majority of Palaeolithic arrowheads and other finds attributable to this period have been found on the left bank of the Nemunas, on upper terraces and at quite a distance from the current watercourse. Some have been found further from the Nemunas. We can even follow the itineraries of the earliest inhabitants of Užnemunė leading through the banks of the Baltoji Ančia, Dovinė and Šešupė deeper into Užnemunė (fig. 6). Palaeolithic arrowheads and other tools are found nearby the great lakes of Sūduva and Žuvintas bogs. A place where undoubtedly Palaeolithic finds have been found is in the northernmost part of central Sūduva, in Nendriniai, where the Šešupė makes its turn to the West. There were no Palaeolithic finds collected in a well surveyed section of the Šešupė stretching from Kudirkos Naumiestis to the mouth of the River Jotija, nor were any found on the left bank of the Šešupė. But to the south of Kudirkos Naumiestis, by the Šeimena oxbow lake one arrowhead was found (fig. 121:1). Nearby the River Širvinta which runs on the border, Palaeolithic or Early Mesolithic find of crucial importance was found, alas on the other side of the river. It was an axe

manufactured of reindeer antler, traditionally referred to as the Lyngby type hoe. Some researchers agree that local variants of the Late Palaeolithic territorial group which is distinct in the nature of its material culture reflect "Social Territories" which had existed at that time. "Social Territories" are associated with individual communities of hunters and gatherers referred to as the archaeological cultures. The only criterion that distinguishes the cultures is peculiarities of technological flint tool manufacture and types of usable tools. The concept of the Palaeolithic and Mesolithic cultural development and chronology in Lithuania was created by R. Rimantienė. In 1971 "Palaeolithic and Mesolithic in Lithuania" was published in Russian, the work which still remains the keystone for the researchers of the Eastern Baltic Palaeolithic and Mesolithic (Римантене, 1971). The concept developed by R. Rimantienė passed the tests of time, withstood the attacks of critics and until now holds its position as the basis for the concept of Lithuanian Palaeolithic. R. Rimantienė distinguished two main cultural groups in terms of Lithuanian Palaeolithic which in turn were further divided into smaller ones: Baltic Magdalenian and Swiderian and into various hybrid versions as a result whereof. The Baltic Magdalenian was the name given by R. Rimantienė to the finds and arrays sharing features typical of the Bromme and Ahrensburg Cultures. The latter prevailed in North-Western Europe during Allerød Oscillation and Older Dryas Periods. Characteristic features of the Bromme Culture include the use of direct ("hard") percussion technique in formation of blades and flakes and perpendicularly retouched tanged points produced from blades or flakes. The Ahrensburg Culture is characterised by tanged points made on thin irregular blades with a tang retouched on the front side. The main features of the Swiderian Culture separating this group from that of Baltic Magdalenian is the flat retouch of the back side of the majority of tanged points and some of the burins. Tanged points were long and narrow with well-separated tang (fig. 120:1, 6, 9), yet the willow leaf-shaped were predominant (fig. 120:11, 12, 14).

15–10 thousand years ago the Northern Hemisphere witnessed major climate changes – the Glacial Period was over and it was followed by the Holocene or Post-Glacial Period. Rapid climate shift made fundamental changes in the ecological situation which in turn caused chain reaction in terms of the development of economics, social and material structures. From the general perspective of the human development the Mesolithic pointed at the ability of the human as a biological type to adapt himself to dynamic changes in the surrounding environment.

The Mesolithic is described as the Early Post-Glacial Stone Age Epoch characterised by human adaptation to changing natural environment which had manifested through comprehensive development of gathering under nomadic living conditions and masterly manufacture technique of flint tools. In terms of making a distinction between the archaeological cultures the Mesolithic is the most complex epoch of the Stone Age. The outspread of microliths and pressure technique considerably restricted possibilities of segregating cultures only based on flint finds. Moreover, certain shapes of microliths transferred to the Neolithic Epoch and in such a way significantly expanded chronological boundaries of their existence. In Lithuania the Mesolithic Cultures were very diverse, as is diverse the understanding of the Mesolithic Archaeological Culture. It is possible to distinguish two key trends within the modern milieu of the researchers of the Mesolithic in Europe. The first opinion coming as the legacy from the past, yet still vital, states that the groups of finds segregated on a typological or technological basis reflect certain groups of inhabitants. To put it in other words, the Mesolithic Culture is an ethnic group of people which had left complexes of finds including typological and technical characteristics of manufacture of tools that differ from other finds. The researchers representing this trend believe that based on the typological and technological analysis of tools it is possible to deal with the origin, development, assimilation and other ethno-cultural issues of the Mesolithic human communities. The second group of researchers, to which I attribute myself with no reservations, defend the following position: the solution to the problems what regards the origin of the Mesolithic human communities, their development, assimilation and other ethno-cultural issues of the similar extent is impossible, therefore one should go into more specific and tangible problems by giving the priority to the question "how did they live" not "who lived".

The Stone and Bronze Age research in Užnemunė conducted in recent years made it possible to have a look at certain cultural development features of this small territory. A lot of gaps still remain. We have not succeeded in finding any burials or burial items. The only reflection of the spiritual world was the great sacrificial offering hearth in Kubilėliai. Its analogies in other sites of this period provide proof that inhabitants of Užnemunė practised the same rituals as in other parts of Lithuania.

Particularity of the cultural layers within the researched sites in Užnemunė did not make it possible to properly apply scientific dating methods. On-site excavations were conducted in the 1980s, the decade when we had only a few radiocarbon dates available. And only during the last years of excavations, with the cooperation of the researchers from the Institute of Geology, scientific methods were applied which helped to slightly improve the situation in terms of dating. All researched prehistoric settlements in Užnemunė, except for Lake Dusia settlement, are multilayered in cultural and chronological terms, significantly disturbed by the household activities which followed or a burial site. The objects that have been dated usually reflect only one period, therefore the dating process was forced to include the old dating methods which were conventional at that time, i.e. the topographical situation of sites and typology of tools. Based on this data it is possible to distinguish two relative chronological poles, one of which includes Gluobiai 1st and Kubilėliai settlements from the earlier period and the later one includes Dusia 8th settlement. The Zapsė settlements are in between these chronological poles.

The flint inventory of Užnemunė settlements is abundant and comes in various shapes. Similarity ratios of tool types are high and intermingled and it speaks of overall similarity of the inventory. Simultaneously the differences are noticed as well. They were caused not by the diverse cultural development but the diversity of chronology of sites and local characteristics. The flint inventory of Sūduva sites shares a number of identical features with the finds from Late Neolithic sites in the lower reaches of the River Nemunas (Rimantienė, 1985c). Along the tool types typical of the Late Neolithic a lot of harpoons, inserts, long perpendicularly retouched awls, borers, straight knives slightly chipped or with no retouch, burins and microburins were found on the both sides of the River Nemunas. Similarity ratios of width of blades within the group of Northern sites and the ones found in the lower reaches of the Nemunas are very high. The distribution of tool groups is similar as well (fig. 129). Dusia 8th settlement already did not have any inserts, the blades were not of standard shape, inhabitants did not use the blade pressure technique, tools were of nonstandard shapes, there were a lot of tools of indefinite purpose and there were more curved and chipped knives. Flint tools in Dusia 8th and Zapsė 1st settlements were more massive and their types were closer to the finds from Mergežeris 13th and Lynupis (Rimantienė, 1985a; 1985b) settlements. All listed disparities are overshadowed by the crucial feature of the Late Neolithic sites in Užnemunė and the lower reaches of the River Nemunas, i.e. strong Mesolithic traditions within the flint inventory. In fact, it is Mesolithic inventory of the Nemunas Culture supplemented by certain new types of flint tools typical of the Neolithic and Bronze Age (Juodagalvis, 1992c). The soundness of the old traditions became obvious during the Bronze Age: in Dusia 8th settlement there were knapped flint axes, microburins, various types of burins found and lancets together with trapezium constituted the majority of arrow-points. The main activity of Late Neolithic inhabitants in Užnemunė, i.e. hunting speaks of the continuity of old traditions. Rich soils of Sūduva never saw an ard – the latest pollen-dating on agriculture in the surroundings of Amalvas and Žuvintas lakes since the end of the Bronze Age did not provide any data (fig. 130). Stockbreeding did not yet play a big role, though its traces were found in Dusia 8th settlement. In the course of the Bronze Age the inhabitants of Užnemunė were still building dwellings typical of the Neolithic settlements of Lithuania.

In Užnemunė the culture developed without any cataclysms, it gradually absorbed advanced new developments and at the same time followed the old traditions until the Bronze Age when it evolved into already Baltic Brushed Pottery Culture.

Fig. 120. Tanged points from Dainava. Fig. 121. Tanged points from Sūduva. Fig. 122. Percentage pollen diagram from Amalvas Lake. Fig. 123. Epipalaeolithic finds from Pamerkinė 1st site. Fig. 124. Finds of mesolithic Kampiškės site. Fig. 125. Mesolithic finds of Jonioniai site. Fig. 126. Flint finds of Pypliai and Pamerkinė sites. Fig. 127. Arrowheads from Pamerkinė 1st site. Fig. 128. Hoard from Norūnai. Fig. 129. Cofficients of typological similarity of Užnemunė and some Lithuanian neolithic sites. Fig. 130. Human impact indicators of Amalvas Lake suroundings. Fig. 131. Facial reconstruction of Kirsna ir Turlojiškė skulls (by V. Urbanavičius).

*Translated by Kamilė Juodagalvytė*