Kabeliai 2 Stone Age Site

TOMAS OSTRAUSKAS

Introduction

Investigations of Lithuanian Mesolithic first of all are connected with the name of Rimutė Rimantienė. She created scheme of Lithuanian Mesolithic on the basis of analysis of huge collections of stray finds and few excavated "sandy" sites in sixties and early seventies of the 20th century. According to this scheme Epipaleolithic Culture left by the mixed population of different Late Palaeolithic cultures flourished in Preboreal. In early Boreal some groups of Maglemose Culture from N-W Europe reached territory of the country. Local mesolithic Nemunas Culture was formed on the basis of epipaleolithic heritage and Maglemosian groups under the influence of some microlithic traditions from the south in Boreal. A few stray finds of characteristic artifacts of bone and antler and distribution sites of neolithic Narva Culture in Northern Lithuania let the investigator to include this area into area of mesolithic Kunda Culture (Римантене 1971; 1977; Rimantienė 1984). The scheme created by R. Rimantienė was basic scheme for investigators of Lithuania and the surrounding area for a long time.

Excavations of some new mesolithic sites in Lithuania and neighbouring countries as well as revision of old collections during latter ten years revealed facts which do not correspond to the scheme of chronological and cultural periodisation of the Mesolithic in Lithuania made by R. Rimantienė. Some new conceptions were proposed by investigators of younger generation (Brazaitis 1998; Остраускас 1993; Ostrauskas 1993; 1995; 1996; 1998a; 1998b; Šatavičius 1994; 1997). And here the first Lithuanian multi-layer mesolithic peat bog site Kabeliai 2 takes a key position. The present work is a presentation of the data obtained in the first two excavation seasons (1996 and 1997) in the Kabeliai 2 stone age settlement for proper auditory.

Kabeliai 2 stone-age site (A-116) is situated 400 m to the east from the Ašašnykai village of Varėna district (Marcinkonys local administration area), on the southern shore of former lake that has long ago turned into a peat field. The settlement was discovered in 1990. A great amount of flint stray finds were scattered on surface over the area of about 300×200 m including a few small hills (old dunes) on the shore of former lake and the edge of peat field. The total area investigated in 1994–1997 makes up 206 sq. m. It yielded more than 4000 fixed flint, stone,

bone and wooden artifacts and a few thousands flint flakes and chips. Three isolated cultural layers of the end of Late Palaeolithic – Mesolithic periods were uncovered at the edge of peat field.

Geomorphology and stratigraphy

The Ašašnykai (Kabeliai II) village is situated in the southern part of Lithuania at the edge of Gudai wood not far from the Byelorussian border. In the west and south the village is surrounded by a narrow 6.3 km long serpentine Grūda channel lake, in the north and east – by a glacial depression, bogged up former lake that was drained and converted into meadows at the beginning of the century (Fig. 1). The Grūda lake and its surrounding area is a part of Lower Merkys – Katra outwash plain sub-region, belonging to the southeastern sandy plain. It is a common opinion of researchers that the relief of this territory is of an exceptional fluvioglacial origin (Fig. 1). Its formation included a few stages and it is composed of three parts: the oldest southern part – glaciolacustrine plain, northern – an outwash plain, and the old erosion-accumulation valley formed of two levels with massifs of continental dunes on the upper level (Kabailienė 1996: 33–34).

Sites of various stages of the Stone Age and settlements of later periods developed on the shores of these two lakes (Fig. 1). Kabeliai 2 site was situated on a shore elevation of the former lake (Fig. 1). The deposition of shore strata and cultural layers of the site can be reconstructed by trench profiles and pollen analysis data (Fig. 2). So far three sample cores have been palynologically analysed.

The edge of the terrace contained an upper 5–30 cm thick mixed layer of ploughed grey soil and a 10–25 cm thick layer of dark grey soil. The deeper layer of yellowish white sand contained finds in its upper 10–15 cm. The terrace slope contained a few layers of yellowish and greyish sand formed by wash- and blow-out? Some finds were uncovered at the depth of 60 and even 70–80 cm in these layers. An area of 50 sq. m. has so far been investigated at the terrace edge, therefore, mixed flint finds from various periods are not distinguished planigraphically.

The upper layer in the area between the terrace slope and a drainage channel was represented by a ploughed 10–40 cm thick layer (Fig. 3: a). It was overlaying a layer of greyish-brown and greyish-white sand (Fig. 3: b) with brownish-red stripes and lenses of ortstein (Fig. 3: c). Deeper in the field the ploughed layer was overlaying a layer of peat with sand (Fig. 3: f), still further – a 30–40 cm thick layer of brown peat with stripes of washout sand and gyttja and charcoal accumulations (Fig. 3: e). The lower part of brown peat lumps layer was dated (by palynological analysis) to the end of the first stage of Atlantic, the upper part – to Subatlantic.

The upper cultural layer was represented by black 6–10 cm thick peat bedding under brown peat (Fig. 3: g). The layer of black peat was palynologically dated to the first half of the first stage of Atlantic (the first half of Atlantic 1). This date was proved by radiocarbon analysis. The sample from the middle part of the black peat layer was dated to: (Ta-2610) 7060±150 bp cal. 6009(5943, 5908, 5885)5724 BC. Moving towards the terrace slope the black peat layer contained more sand particles converting into layers of black peat with sand and sand with peat (Fig. 3: f). The layers of black peat and peat with sand were underbedded by a 10–15 to 20 cm thick interlayer of whitish sand (Fig. 3: i) dated to the second half of Boreal. It was

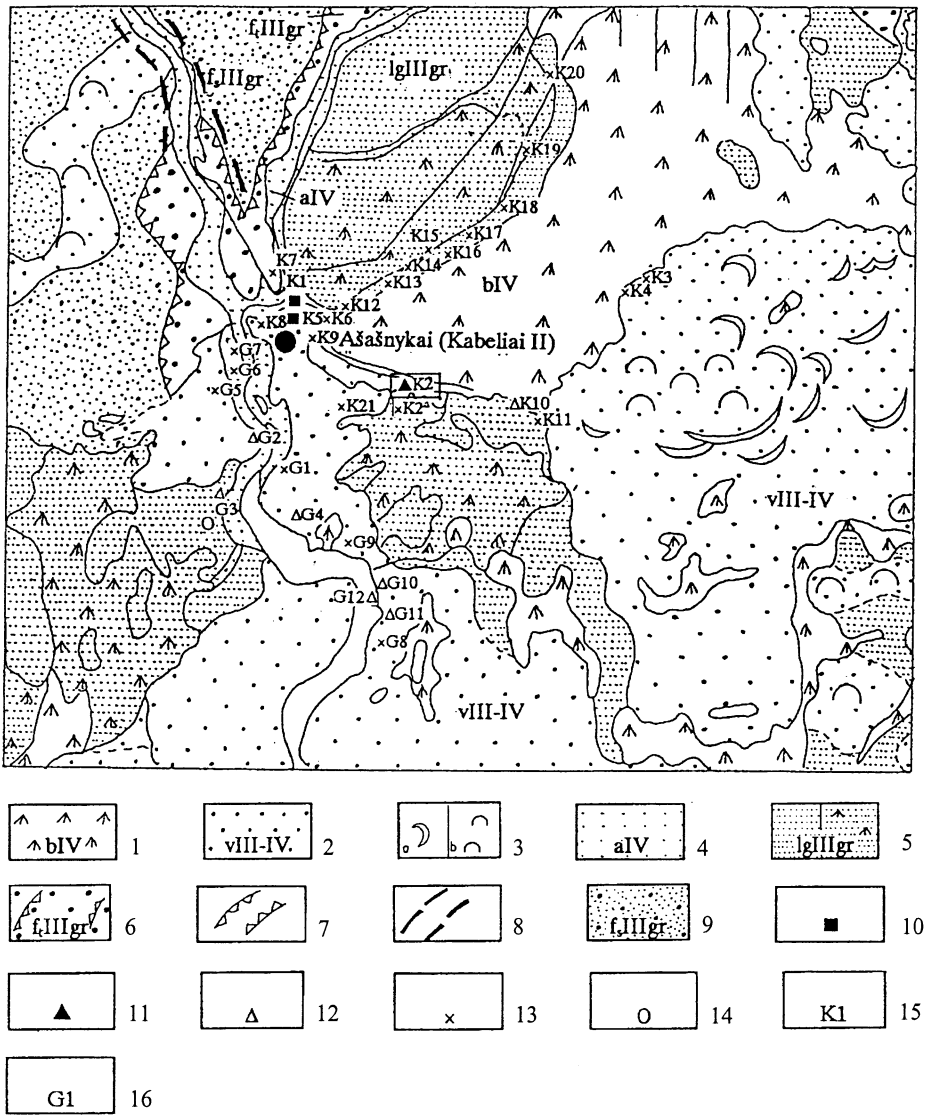

Fig.1. Geological-geomorfological scheme with ancient settlements and sites (R. Guobytė 1996): 1. Plains of low lying marshy bogs, boggy lows of relief; peat. 2. Eolian relief with continental dunes and hills; various sand. 3a. Continental dunes. 3b. Hills. 4. Flood-plain valleys; medium-grained sand. 5. Glaciolacustrine plain formed by relic basins: a) fine-grained sand, b) fine-grained sand, its upper part peaty. 6. Valleys of fliuvoglacial streams; coarse-grained sand with gravel and pebble. 7. Slopes of fliuvoglacial valleys. 8. Glaciokarst rives. 9. Fliuvoglacial-outwash plain, large part of its surface is influenced by drift; various sand. 10. Settlements of Palaeolithic, Mesolithic and Neolithic periods. 11. Kabeliai the 2nd stone age site. 12. Settlements of Neolithic period. 13. Stone Age rites. 14. Settlement of the 1st millenium BC. 15. Kabeliai site. 16. Lake Grūda site.

followed by a dark stripe of peat with sand (the 1st stripe of peat) – the middle cultural layer, 2–5 cm thick (Fig. 3: k). This stripe of peat was palynologically dated to the middle of Boreal. Closer to the drainage channel the black peat layer

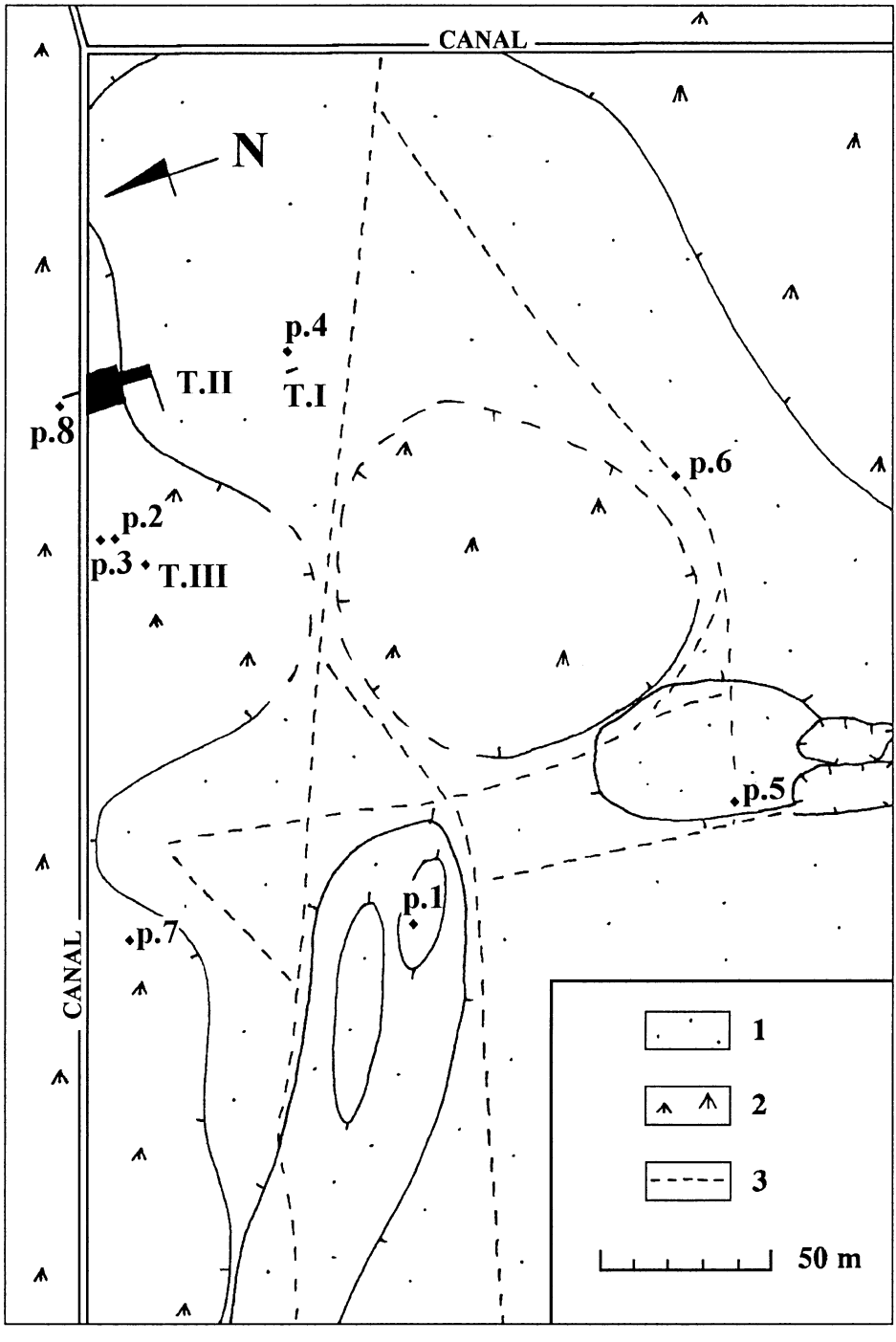

Fig. 2. The situation of investigated tranches in Kabeliai the 2nd stone age site: 1 – a sandy terrace, 2 – a peat field, 3 – forest roads, T. – tranche, p – trial pit.

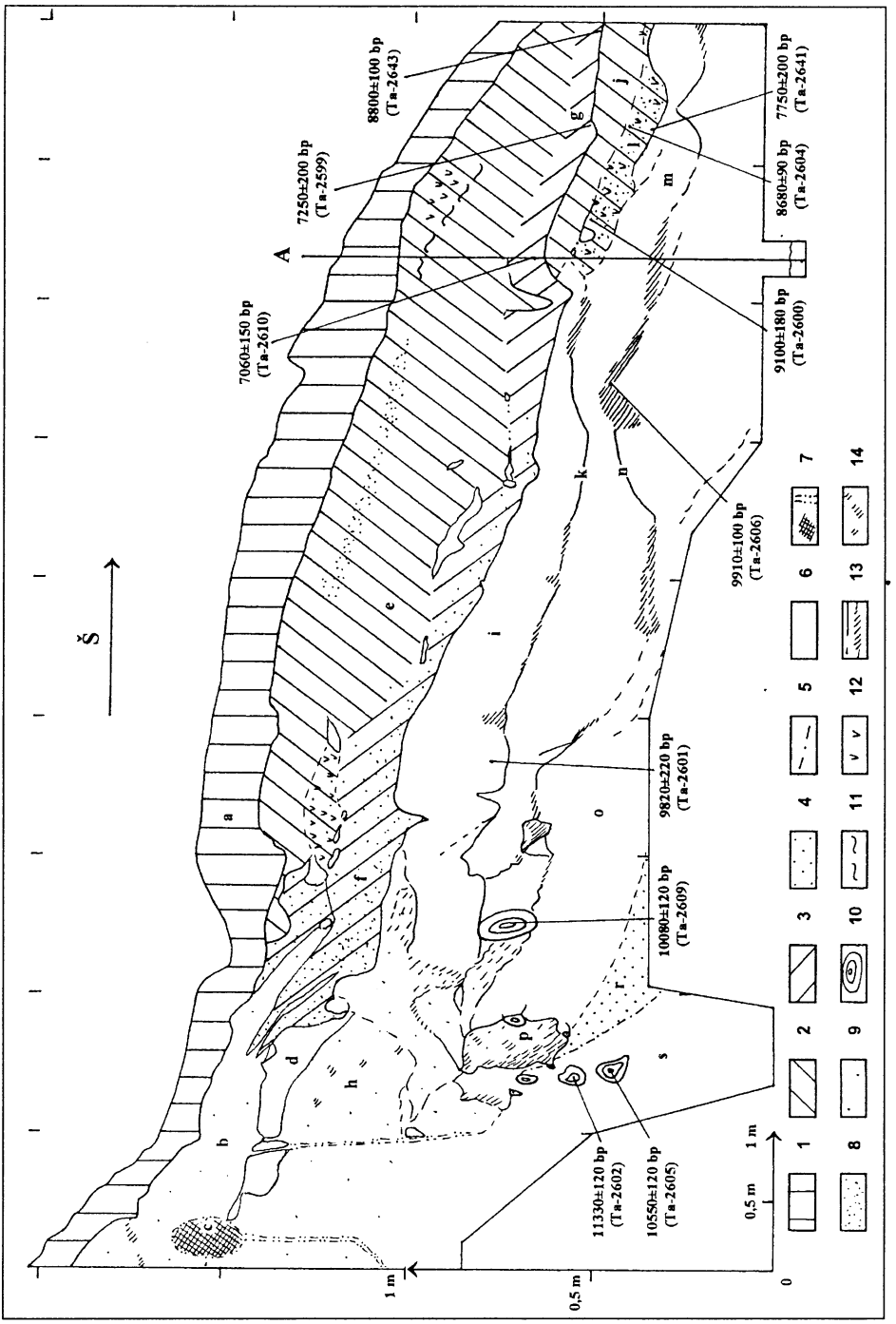

Fig. 3. The crossection in S-N direction of the trenche on the peat field edge in Kabeliai the 2nd stone age site: A – a place of palynological sample core No 3. 1 – ploughed horizon, 2 – brown peat, 3 – black peat, 4 – yellowish sand, 5 – the stripe of aleurite, 6 – white sand, 7 – brownish red orstein stripes and lenses, 8 – particulars of sand in peat layers, 9 – grey and greyish sand, 10 – trunks of pines, 11 – stripe of gyttija, 12 – the concentration of charcoal, 13 – stripes and lenses of peat, 14 – the concentration of washed up particulars of peat.

was underbedded by a thin, 2–3 cm, interlayer of brown peat with gyttija. Towards the central part of the peat field this layer thickened (Fig. 3: j). In the areas closer to the drainage channel this interlayer separated the upper cultural layer, black peat, – from the middle cultural layer consisting of washed out brown peat and sand with charcoal and charred brands (Fig. 3: l). The first stripe of peat gradually converts into a layer of peat with sand, sometimes inconspicuous. The thickness of the brown peat with sand layer considerably varied, depending on the washout, – from 5 to 20 cm. It was overlaying layers of sand and whitish sand with organics (Fig. 3: m, o) and peat stripes among which the second from the top was more distinct (Fig. 3: n). In sample core No 3 it was sand with indistinct darker stripes dated Pre-Boreal, Younger Dryas and Alleröd.

It is difficult to distinguish between the upper and middle cultural layers – and finds – in the zone at the foot of terrace slope because of a few washouts. Somewhat more distinct were the upper and middle horizons in the western part of the trench where it was possible to distinguish the marks of washed away steep slopes. In the foot zone of terrace slope, at the depth of 60–90 cm (depending on a concrete place) the greyish-white sand (Fig. 3: h) has outcrops of grey and dark grey sand (Fig. 3: p) which merge deeper peat stripes and beds. These peat stripes contained flint artefacts of the lower layer and decayed pine trunks. Flint artefacts of the western part of the trench were accumulated in a narrow slopping several centimetres thick stripe along the ancient steep slope in the same level as pine trunks and below – in most cases below the mentioned peat bed. A few layers deposited in different periods could be distinguished under the peat bed. The upper layer was represented by white sand (Fig. 3: o). It was underbedded by a layer of yellow sand (Fig. 3: r) which, in its turn, by a stripe of white dense aleurite (Fig. 3: 5) was separated from the lower layer of fine aleurite-bearing white sand (Fig. 3: s).The most of flint finds of the western part of the trench were contained in deeper layers, whereas in the eastern part of the trench they were found in the upper layers: in white sand under the peat bed and only in the mentioned stripes of peat bed, in a 50 cm wide belt. This difference in stratigraphic distribution of finds occurred, presumably, as a result of diachronic deposition. The finds of the deepest layers were deposited most early. The finds of the lower layer were found up to the depth of 120–130 cm.

The upper layer was represented by a 30–40 cm thick layer of mixed channel soil in the trench on the other bank of the drainage channel. They were underbedded by an up to 65 cm thick layer of brown peat dated to the second stage of Atlantic, Atlantic 2, (in the lower part) to the second stage of Subatlantic, Subatlantic 2, (in the upper part). The underlaying 10–23 cm thick layer of black peat – a horizon of the upper cultural layer without finds – was dated to the first stage of Atlantic, Atlantic 1. 25–35 cm thick layer of brown peat with a 10 cm thick interlayer of charred brands and charcoal was bedded still deeper. It was dated to Boreal. Solitary flint and bone finds of the middle cultural layer were uncovered in the thin layer of peat with sand. This horizon is dated to Preboreal, the deeper sand – to Younger Dryas.

Flint finds

Introduction. Flint finds are divided into four groups. Groups 1–3 include finds from cultural layers (A, B, C) of trenches at the edge of peat field, group 4 – finds

from the terrace edge, ploughed layer of peat field edge, and solitary finds from the terrace slope which could not precisely related with separate layers. The finds of all four groups are described and given in statistical tables as separate blocks. The first block includes flint knapping debitage, the second – preforms and cores, the third – artefacts with secondary working and wastes of secondary working.

Finds of the lower cultural layer C. The lower cultural layer is related with the Late Swiderian Culture. This layer yielded 2006 pieces of the debitage, 18 cores and their fragments, 43 artefacts of secondary working and wastes of secondary working (Tables 1–3). Even 76% of the debitage are represented by flint crumbs and chunks (Table 1). This high percentage included a huge number of polished by water round flint grains a few millimetres in diameter. A high number of cortex flakes, 27.27%, proves that a great part of core surface had its cortex removed, i.e., cores were carefully prepared for further processing. 62.5% of the identified pieces of layer C were chipped off of the opposite platform unifacial cores. Blades with marks of opposite platform cores made 8.64% and blades without these marks – 18.64% of all identified pieces, or 31.67% and 68.39% of blades. The numbers concerning not fragmented blades are somewhat different – 42.11% and

No	Type of debitage	Amount	%	%*
1	Primary cortex debitage	60	2.99	27.27
2	Primary crested flakes	1	0.05	0.45
3	Primary crested blades	9	0.45	4.09
4	Primary crested debitage unidentified			
5	Primary flakes	7	0.35	318.00
6	Primary blades	42	2.09	19.09
7	Primary debitage unidentified	1	0.05	
8	Secondary flakes			
9	Secondary blades	1	0.05	0.45
10	Flakes from single platform cores	13	0.65	5.91
11	Flakes from opposite platform cores	1	0.05	0.45
12	Flakes multidirectional	23	1.15	10.45
13	Flakes unidentified	2	0.10	
14	Blades unidirectional	41	2.04	18.64
15	Blades from opposite platform cores	19	0.95	8.64
16	Blades from cores with changed orientation			
17	Blades unidentified			
18	Primary core tablets			
19	Core tables	3	0.15	1.36
20	Flakes < 1,5 cm	82	4.09	
21	Flakes 1,5 < a < 2,5 cm	70	3.49	
22	Unidentified fragments	107	5.33	
23	Crumbs and chunks	1524	75.97	
	Total	2006	100%	100%

Table 1. The statistic table of the debitage of the lower cultural layer C (* without types No. 7, 13, 20–23).

No	Types of preparatory phase & cores	Amount				%				%*			
		for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total
1	Concretions of raw material												
2	Concretions with few removed flakes of indefinite form												
3	Concretions with attributes of core preparation												
4	Concretions with prepared platform & front												
5	Fragments of types No 1–4												
6	Cores of early reduction phase without special surface, front & platform preparation												
7	Single platform conical cores												
8	Single platform handle cores												
9	Single platform cores unidentified	2			3	100			16.7	100			27.3
10	Opposite platform cores with single front	1	4		5	20	80		27.3	20	80		45.5
11	Opposite platform cores with separate fronts		1		1		100		5.56		100		9.09
12	Opposite platform cores unidentified				1				5.56				9.09
13	Single platform cores with changed orientation												
14	Opposite platform cores with changed orientation												
15	Cores with changed orientation unidentified				1				5.56				9.09
16	Amorphous cores												
17	Fragments of cores unidentified		1		7		100		38.4				
	Total	3	6		18	33.3	66.7		99.0	37.5	62.5		100

Table 2. The statistic table of cores and preparatory forms of the lower cultural layer C (* without types No. 1–6, 17).

57.89% respectively. The ratio between the surviving cores is absolutely different: single platform – 27.27%, opposite platform – 63.63%, cores with changed orientation – 9.09% (Table 2). Judging from the uncovered core types an exclusively indirect percussion technique (soft percussion technique) was used. Not a single core for flakes was found. A fact that cores for blades and flakes make up a great part of the total amount of cores was determined by dominance of the opposite platform cores and indirect percussion technique. It is typical that only blades were knapped off of single-platform cores, i.e., such cores were the most favourable ones for production of blades. It should be emphasised that the greater part of cores was represented by typical for Swiderian Culture opposite platform unifacial cores – 45.45% (Fig. 5: 7).

There were 43 artefacts with marks of secondary working and wastes of secondary working uncovered in layer C (Table 3). They prove doubtless prevalence of blade technique: 60.53% of artefacts were made of blades, 28.95% – of flakes, and 10.53% – of parts of cores. Tanged points made 32.56% of the total number

		Amount				%			
		flakes	blades	parts of cores	total	flakes	blades	parts of cores	total
	Debris of secondary working				3				6.98
1	Burin spalls			3				6.98	
	Forms with attributes of secondary working	11	23	4	40	28.95	60.53	10.53	93.02
	Tanged points		14		14		100.00		32.56
2	With distinguished tang		1		1		100.00		7.14
3	Willow leaf shaped	12		12		100.00		85.71	
4	Upper parts	1		1		100.00		7.14	
	Scrapers	5	1		6	83.33	16.67		13.95
5	End scrapers 4			4	100			66.67	
6	Double end scrapers	1		1		100.00		16.67	
7	Fragments unidentified1			1	100			16.67	
	Burins	2	4	2	9	22.22	44.44		20.93
8	Side burins formed by retouch & blows		1		2		100.00		22.22
9	Angular burins formed by retouch & blows	2			2	100.00			22.22
10	Side burins formed by bilateral blows		1		1		100.00		11.11
11	Middle burins formed by blows on broken end		1		1		100.00		11.11
12	Side burins formed by blows on natural end		1	1	2		50.00	50.00	22.22
13	Combined burins		1	1			100.00	11.11	
14	Natural points used as borers	1			1	100.00			2.33
15	Spokeshavers			1	1			100.00	2.33
	Retouched blades		4		4		100.00		9.30
16	Without attributes of opposite platform core								
17	With attributes of opposite platform core		3		3		100.00		100.00
18	Retouched flakes	3			3	100.00			6.98
19	Fragments of tools unidentified				2				4.66
	Total	11	23	4	43	28.95	60.53	10.53	100.00

Table 3. The statistic table of tools and wastes of secondary working of the lower cultural layer C.

of artefacts (Fig. 4: 1–14). Willow leaf shaped points (12) prevailed among them (98.32%). Only one point with a distinguished tang was uncovered (Fig. 4: 5). All tangs were flatly retouched to remove a bulb. Scrapers made 13.95% of all artefacts. 80% scrapers were single ended and made from flakes (Fig. 4: 15, 17), 20% – double-ended from blades (Fig. 4: 16). Burins made 20.93% of artefacts. Technologically and typologically they are rather variable: shaped by retouch and blow, by bilateral blows, blows on broken and natural end, side burins, middle, angular and combined ones (Fig. 5: 1–6). Among other tools we can mention a massive spokeshaver (a scraper for a hard material) made of a part of core, three blades of the opposite platform cores with retouch, three flakes with retouch and three burin spalls.

Finds of the middle cultural layer B. It yielded 202 pieces of the debitage, 34 cores and preforms, 54 artefacts with secondary working and wastes of secondary working (Tables 4–6). Primary cortex flakes made only 7.79%. This value is considerably lower than in the case of layer C and implies that the core surface was not completely cleaned by removing the cortex, if only in the place of percussion

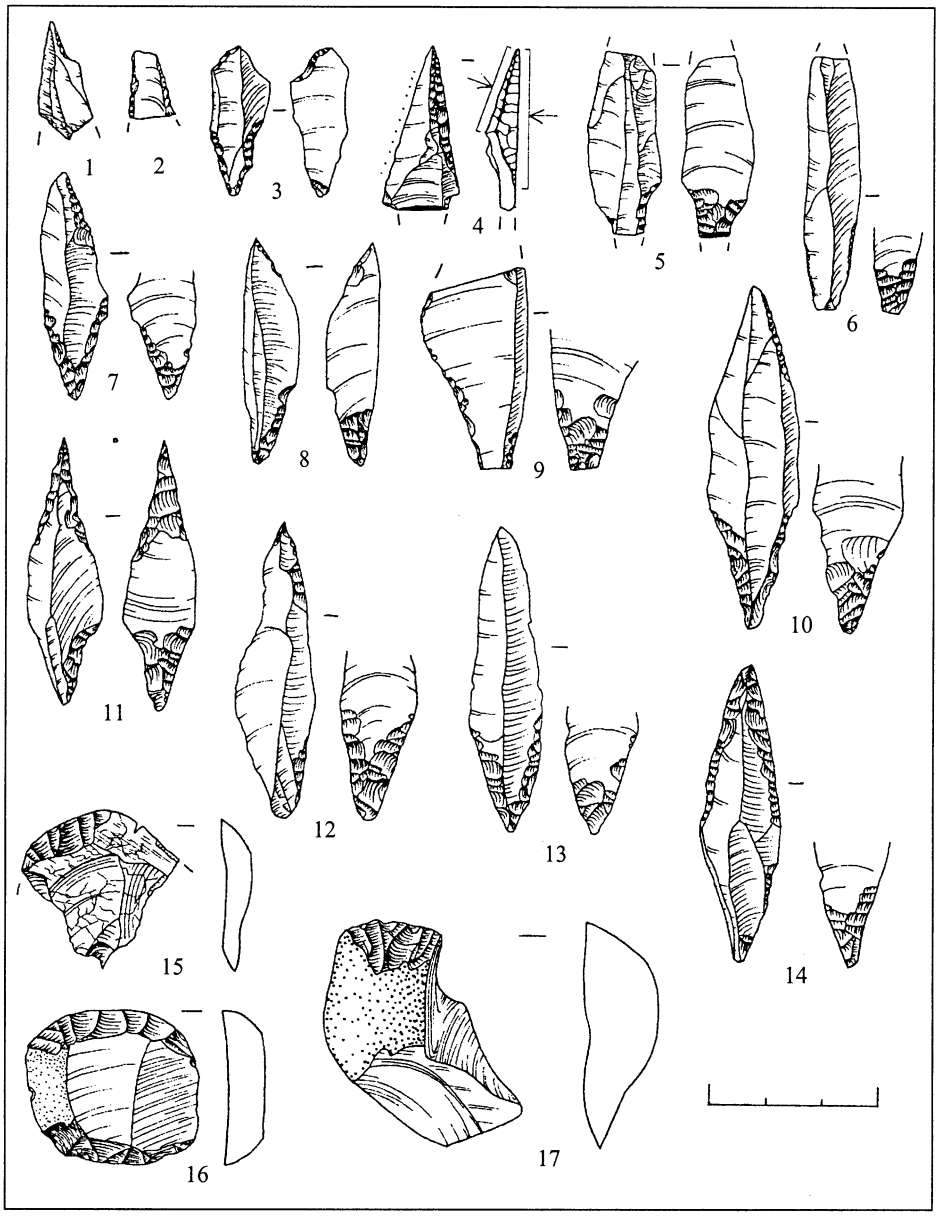

Fig. 4. The artifacts of the Swiderian Culture (No 2–8, 10–17 were found in the lower cultural layer C on the edge of peat field): 1–14 – tanged points, 15–17 – scrapers.

front. This conclusion is proved by the number of primary blades and flakes with the cortex and negatives of other primary pieces on the upper surface. They made up 24% in layer C, and – 42.86% in layer B. Among blades and flakes there prevail ones without attributes of opposite platform cores and with attributes of changed orientation cores. The amount of platform rejuvenation flakes (tablets of core platforms), 6.49%, proves higher requirements for core parameters. A high number of blades, 49.35 %, reveals the importance of blade technique in the primary working.

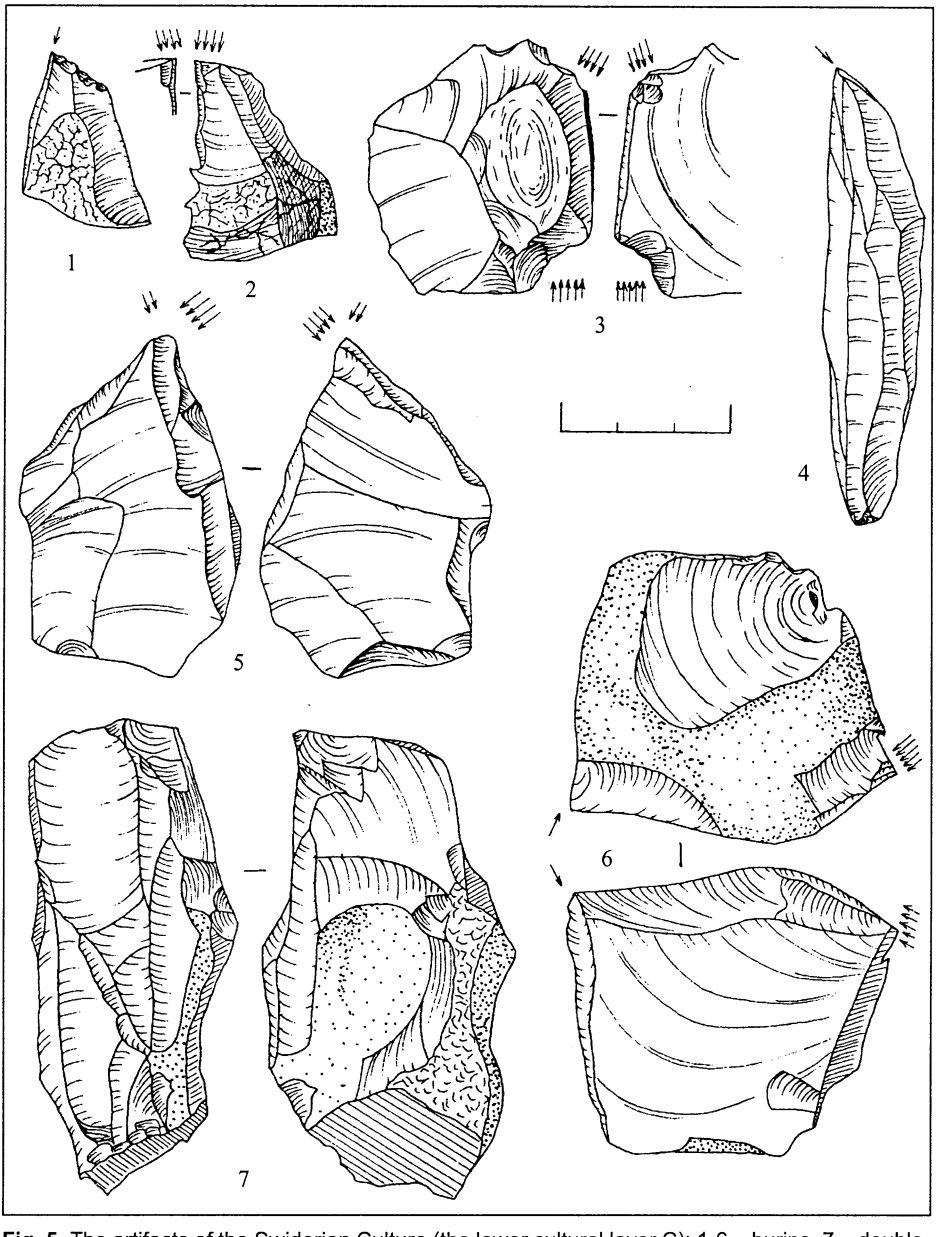

Fig. 5. The artifacts of the Swiderian Culture (the lower cultural layer C): 1-6 – burins, 7 – double-platform unifacial core.

Single platform cores make up 53.85%. Only one type of single platform cores was uncovered – hadlecores (Fig. 7: 3–5). Single platform cores with a changed orientation make up 15.38%, double platform ones – 30.77% (Fig. 7: 2). Cores from which blades and flakes were knapped off make up 54.17%. Cores for blades make up 12.5%, cores for flakes – 33.33%. Most collected cores were of late phase of reduction. This may partly account for the high number of double-platform cores and cores for flakes. 49.02% of all artefacts with marks of secondary working or are

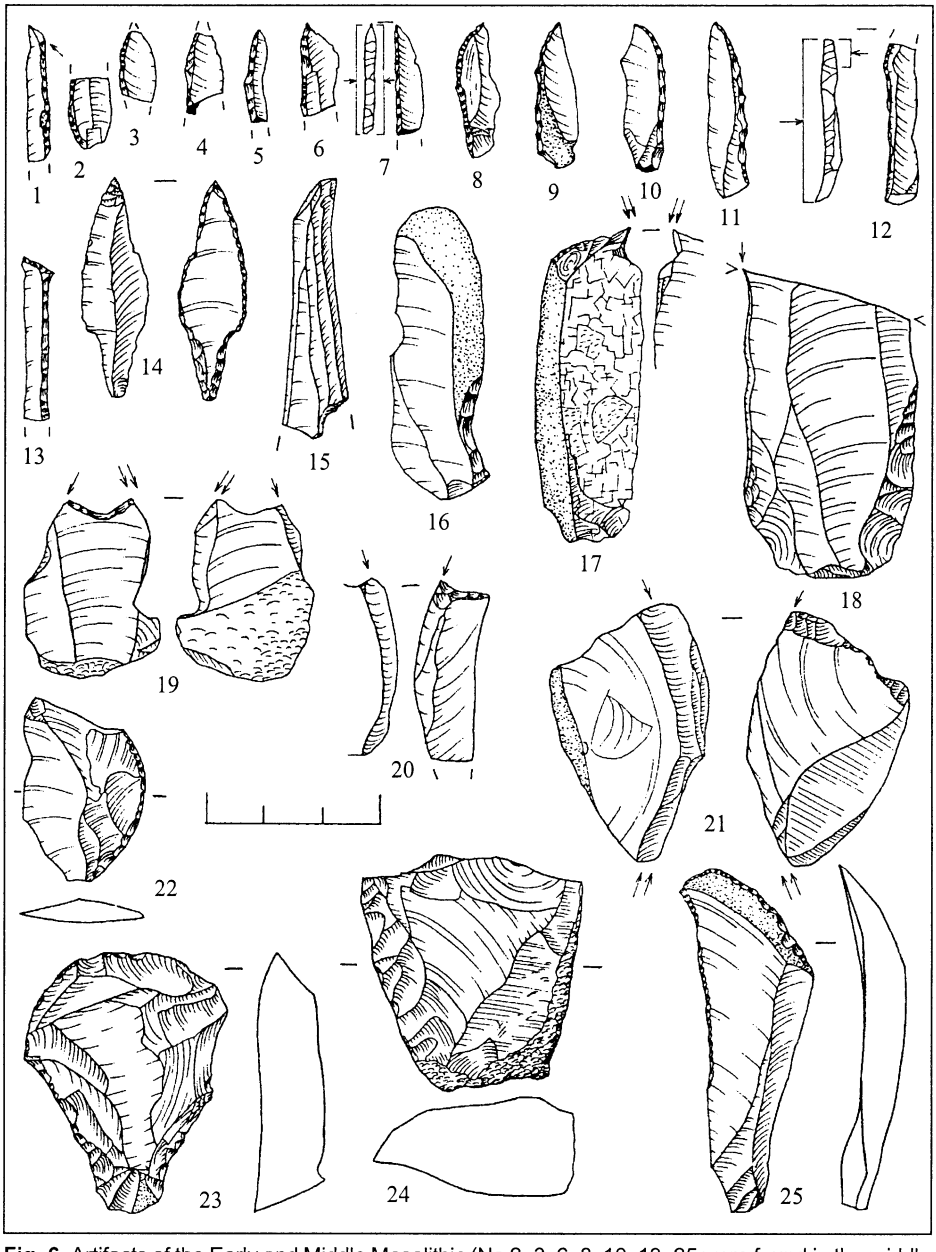

Fig. 6. Artifacts of the Early and Middle Mesolithic (No 2–3, 6–8, 10, 13–25 were found in the middle cultural layer B): 1–12 – microliths of Stawinoga-Kudlajevka type, 13 – an insert, 14 – an atypical point of Pulli type, 15 – a pseudomicroburin, 16 – a blade prepared for division with a microburin technique, 17–21 – burins, 22, 24, 25 – scrapers, 23 – a borer.

made of flakes, 45.01% – of blades and 5.88% – of cores. Layer B yielded one pseudomicroburin (Fig. 6: 15) and two burin spalls. Arrowheads and microliths make up 14.81% among the artefacts of layer B. One atypical tanged point of Pulli type was uncovered. It has an abrupt retouch over the whole blade perimeter, flat retouch

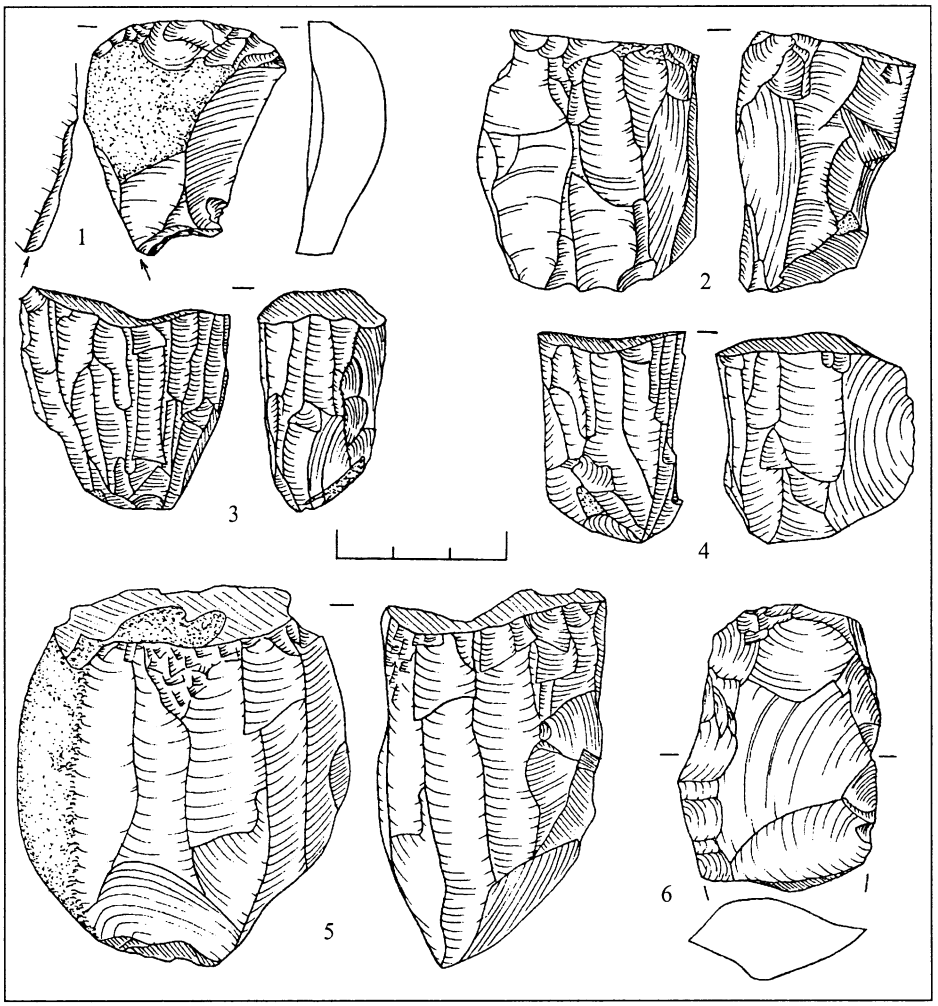

Fig. 7. Artifacts of the Early and Middle Mesolithic (No 1–5 were found in the middle cultural layer B): 1 – a scraper-burin, 2 – a double-platform core, 3–5 – single-platform cores, 6 – a flake axe.

on the upper side of the tip and a needle-shaped tang distinguished by a semi-abrupt retouch (Fig. 6: 14). Five microliths of Stawinoga-Kudlajevka type included 4 made of blades and one of a flake (Fig. 6: 3, 6–8, 10). Other finds included two inserts: a small backed bladelet (Fig. 6: 2) and a backed bladelet with retouched one of ends (Fig. 6: 13). Scrapers made up 7.41% of the uncovered artefacts. They were represented by 2 semi-sided (Fig. 6: 22, 25) and one end scrapers (Fig. 6: 24). Among burins (27.78%) those shaped by retouch and blows (on truncations) made up 53.33% (Fig. 6: 17, 19, 20, 21; Fig. 7: 1). Burins formed by blows on the broken ends made up 6.67% (Fig. 6: 18), by blows on natural ends – 33.33%. All uncovered axes (9.26%) were flake axes (Fig.7: 6; Fig. 8: 1, 2). Blades of three of them (60%) were sharpened by a transversal ("tranchet") facet (Fig. 8: 1). Perforators of layer B made up 7.41% (Fig. 6: 23), spokeshavers – 3.7%, blades with retouch – 9.26%, flakes with retouch – 12.96% of artefacts, fragments of artefacts – 1.85%.

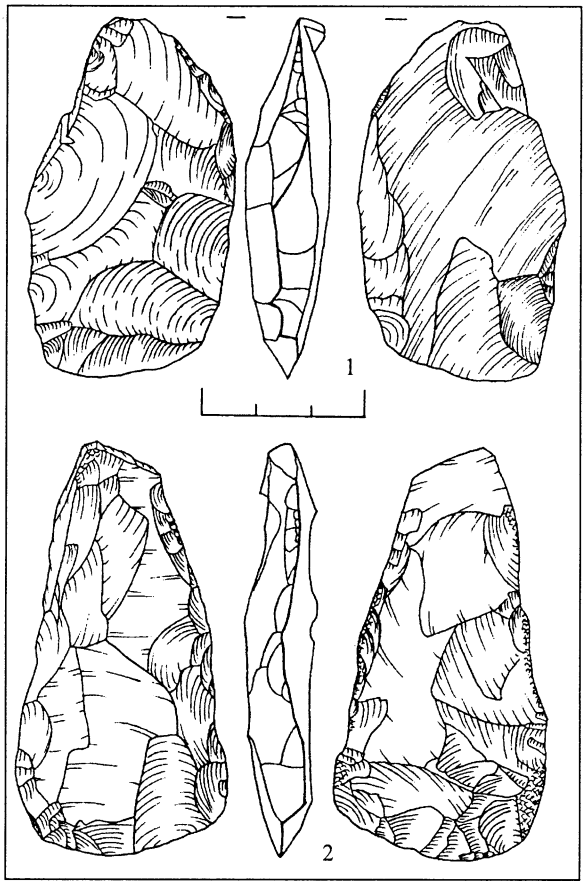

Fig. 8. Flake axes of the middle cultural layer B.

Finds of the upper cultural layer A. The debitage were represented by 765 items, cores and their parts – 47, artefacts with marks of secondary working and wastes of secondary working – 83 (tables 7–9). Blades made up 58.28% of all identified pieces. This is a high index reflecting the prevalence of blade technique. The number of cortex flakes – 10.7%. A comparatively high number of primary crested pieces (lames à crête) – 7.22%, and a relatively low number of primary crested pieces with negatives of other primary crested pieces – 20%, reveal a more careful preparation of cores removing the cortex and preparing a place for knapping front. This was required by the primary working oriented to regular blades: pressure technique and single platform cores for blades. Dominating flakes were the ones knapped off of single platform cores and cores with changed orientation – 10.43% and 10.16% of identified pieces of the debitage. Blades knapped off of single platform cores made up 95.13% of the total number of blades.

The prevailing type of cores in layer A were the single platform ones – 48.28%, including one (3.45%) conical (Fig. 10: 9), 11 (37.93%) handlecores (Fig. 9: 27) and 2 (6.9%) of unidentified types. Cores with a changed orientation were 9 (31.03%), double platform – 6 (20.69%). We can see that double platform cores were, most likely, formed of the single-platform ones in the final stage of core reduction. Flake cores constitute 36%, flake and blade cores – 36%, blade cores – 28% of all cores. It is interesting to note that as much as 72.72% of single platform handle cores were flake cores and only 9.09% – blade cores. This fact can be partly explained by a high degree of reduction of this type of cores. Their average height makes up only 4.15 cm. This is the smallest number among core types of layer A.

61.54% of artefacts with attributes of secondary working and wastes of secondary working were produced of blades, 32.05% – of flakes and 6.41% – of parts of cores. Layer A yielded 4 microliths (4.82%): trapezium made of a flake with retouched base (Fig. 9: 2), lanceolate point with a tip in the lower end of the blade with a broken base and retouched side (Fig. 9: 7), a bladelet (insert) with an abruptly

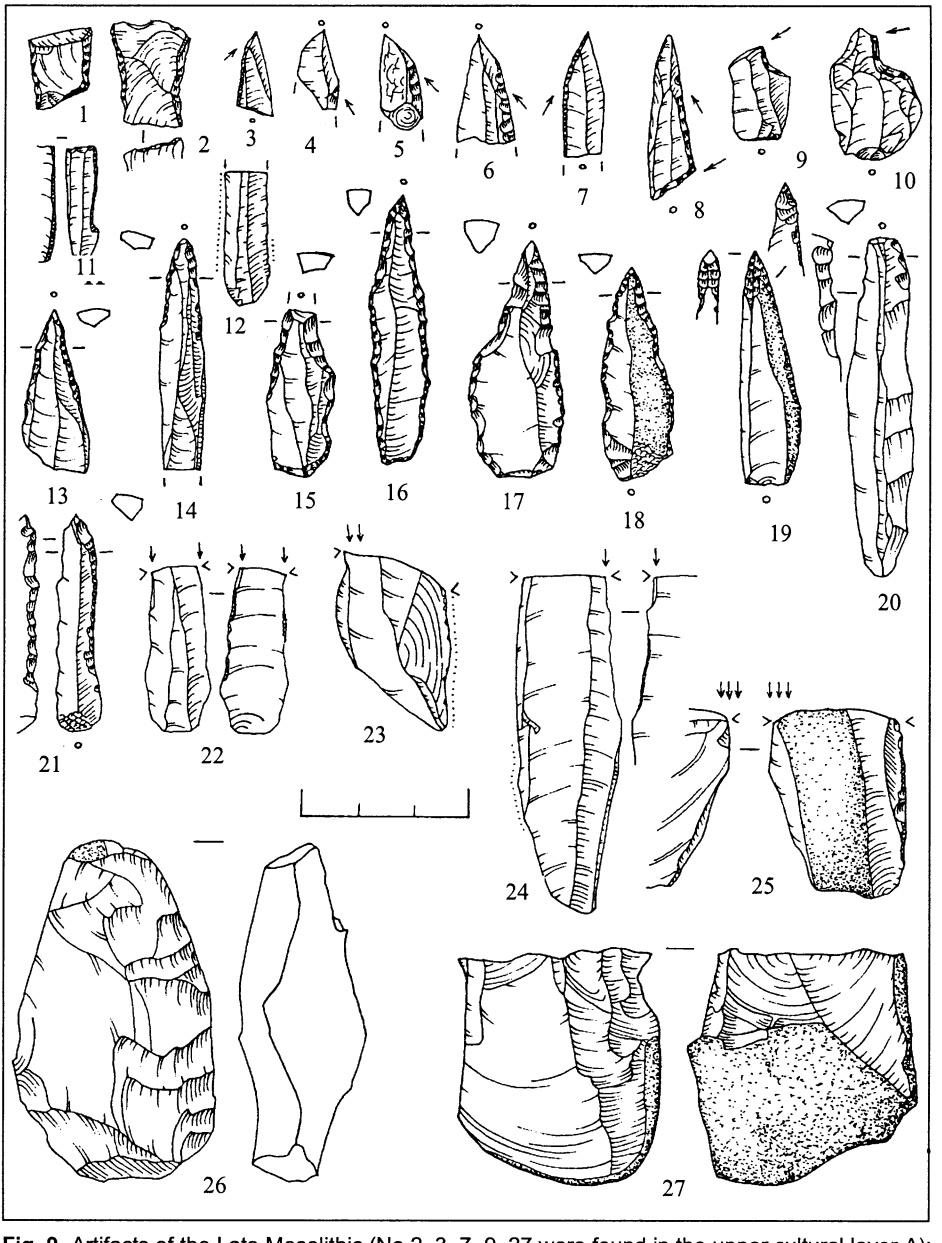

Fig. 9. Artifacts of the Late Mesolithic (No 2–3, 7, 9–27 were found in the upper cultural layer A): 1, 2 – trapezia, 3, 8 – scalene triangular microliths, 4–7 – lancets, 9 – a pseudomicroburin, 10 – a microburin, 11–12 – inserts, 13–21 – perforators, 22–25 – burins, 26 – an oval core axe, 27 – single-platform core.

retouched side (Fig. 9: 12), a bladelet (insert) with a abruptly retouched side and an end (Fig. 9: 11). Uncovered scrapers (16.87%) were of rather variable types (Fig. 10: 1–6, 8). End scrapers prevailing among them – 5 items (45.45%). There were also uncovered one side scraper (9.09%), 2 semisided (18.18%), 3 endsided (27.27%) scrapers and 2 fragments in this layer. Only one scraper was made of a

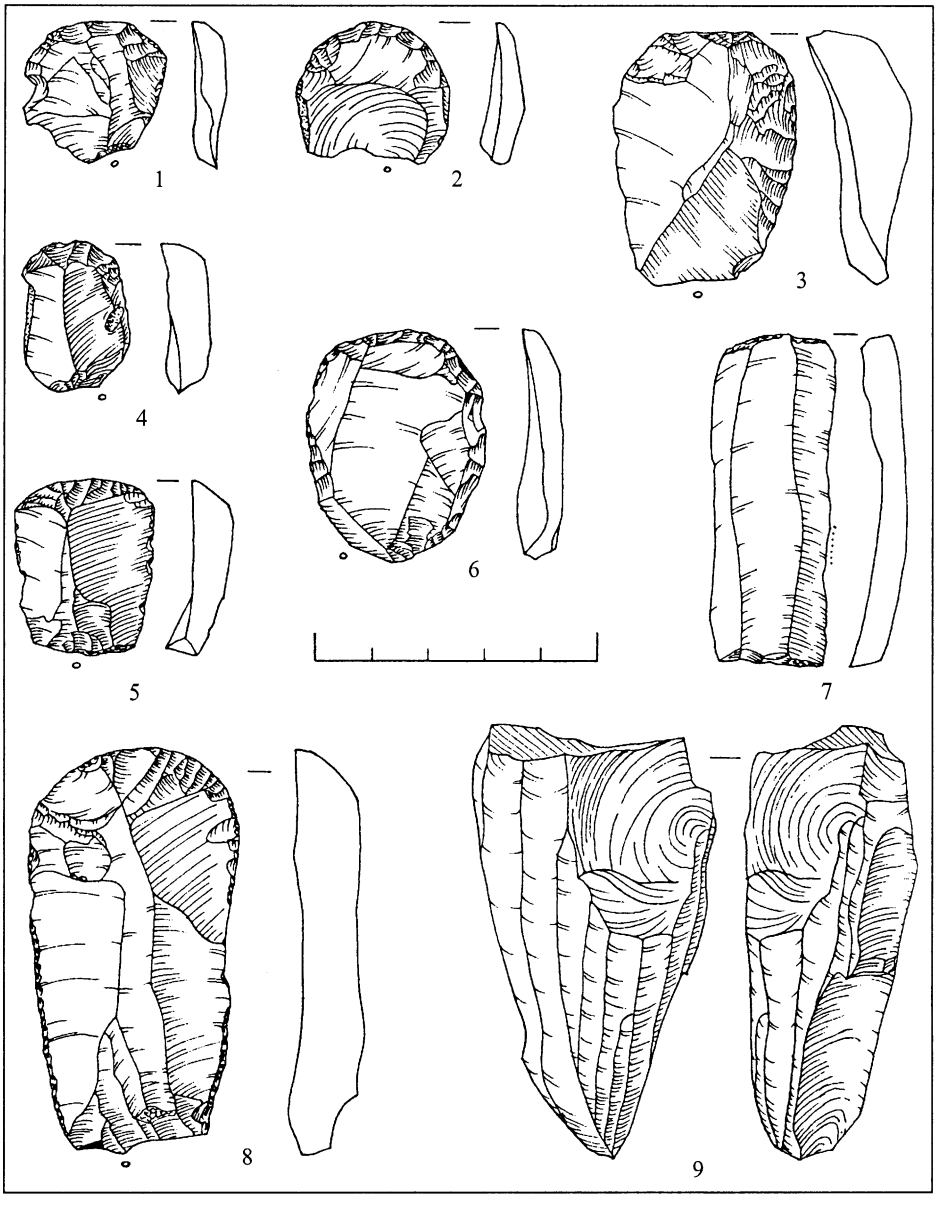

Fig. 10. Artifacts of the Late Mesolithic (the upper cultural layer A): 1–6, 8 – scrapers, 7 – a knife (a double-truncated blade), 9 – conical core.

blade (9%), all of the rest – of flakes. Burins made up 13.25% of all artefacts. Most of them were formed by blows on the broken end (Fig. 9: 22–25) – 8 items (72.72%). Other types were represented by one burin each: side burin formed by retouch and blows, side and angle burins formed by bilateral blows. Perforators made up 14.46% of artefacts. Among them we can mention 4 borers made of blades with a bore-shaped retouch on the tips (Fig. 9: 19–21) and 6 awls of blades with points formed by one-sided retouch (Fig. 9: 13–18). The only uncovered axe

No	Type of debitage	Amount	%	%*
1	Primary cortex debitage	12	5.94	7.79
2	Primary crested flakes			
3	Primary crested blades	5	2.475	3.25
4	Primary crested debitage unidentified			
5	Primary flakes	5	2.475	3.25
6	Primary blades	29	14.36	18.83
7	Primary debitage unidentified	1	0.49	
8	Secondary flakes			
9	Secondary blades			
10	Flakes from single platform cores	27	13.37	17.53
11	Flakes from opposite platform cores	6	2.97	3.90
12	Flakes multidirectional	17	8.42	11.04
13	Flakes unidentified	2	0.99	
14	Blades unidirectional	34	16.83	22.08
15	Blades from opposite platform cores	8	3.96	5.19
16	Blades from cores with changed orientation			
17	Blades unidentified			
18	Primary core tablets	1	0.49	0.65
19	Core tables	10	4.95	6.49
20	Flakes < 1,5 cm	12	5.94	
21	Flakes 1,5 < a < 2,5 cm	12	5.94	
22	Unidentified fragments	14	6.93	
23	Crumbs and chunks	7	3.47	
	Total	202	100%	100%

Table 4. The statistic table of the debitage of the middle cultural layer B (* without types No 7, 13,20–23).

was a core type one with a lens-shaped section (oval) (Fig. 9: 26). We should also mention a knife made of a large blade with truncated ends (Fig. 10: 7). 3 spokeshavers (3.61%), 18 blades with retouch also were found. Waste products of secondary working were represented by one microburin (Fig. 9: 10), 2 pseudomicroburins (Fig. 9: 9) and a burin spall.

Finds from trenches at the terrace edge and not attributed more precise finds from peat field edge. The finds from trenches at the terrace edge and not attributed more precise finds from peat field edge (a terrace slope) were: 3960 items of the debitage, 67 cores and their fragments, 204 artefacts and wastes of secondary working (Tables 10–12). The types and distribution of these finds reveal that they belonged to different periods.

Other finds

In cultural layer A and B we uncovered a few small broken up boulders and cracked sandstone slabs (remains of whetstones) destroyed by bog acids. Cultural

No	Types of preparatory phase & cores	Amount				%				%*			
		for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total
1	Concretions of raw material				1				2.94				
2	Concretions with few removed flakes of indefinite form												
3	Concretions with attributes of core preparation												
4	Concretions with prepared platform & front												
5	Fragments of types No 1–4												
6	Cores of early reduction phase without special surface, front & platform preparation												
7	Single platform conical cores												
8	Single platform handle cores	3	5	5	13	23.1	38.5	38.5	38.20	23.1	38.5	38.5	50.00
9	Single platform cores unidentified				1				2.94				3.85
10	Opposite platform cores with single front		6	2	8		75	25	23.50		75.0	25.0	30.80
11	Opposite platform cores with separate fronts												
12	Opposite platform cores unidentified												
13	Single platform cores with changed orientation		1	1	2		50	50	5.88		50.0	50.0	7.69
14	Opposite platform cores with changed orientation												
15	Cores with changed orientation unidentified		1		2		100		5.88		100.0		7.69
16	Amorphous cores												
17	Fragments of cores unidentified				7		2		20.6				
	Total	3	13	8	34	12.5	54.2	33.3	100.00	12.5	54.2	33.3	100.00

Table 5. The statistic table of cores and preparatory forms of the middle cultural layer B (* without types No 1–6, 17).

layer B – brown peat and sand layer – at a greater distance from the terrace slope contained pine splinters (perhaps fragments of weirs) and fragments of timber with cut marks (among lots of charcoals and charred brands).

Osteological material

10 animal bones (Table 13) were uncovered in cultural layer B of a trench at the peat field. The ratio of species corresponds to the fauna composition characteristic of East Baltic and Polish settlements of the end of Pre-Boreal – the first half of Boreal.

Chronology

In determining the chronology of Kabeliai the 2nd stone age site we may base ourselves on the data of radiocarbon and palynological analysis as well as

No	Type	Amount				%			
		flakes	blades	parts of cores	total	flakes	blades	parts of cores	total
	Debris of secondary working	1	1		3	50	50		5,56
1	Pseudomicroburins in proximal ends of blades		1		1		100		1,85
2	Burin spalls	1			2	100			3,7
	Forms with attributes of secondary working	24	22	3	51	48,98	44,9	6,12	94,44
	Microliths & tanged points	1	7		8	12,5	87,5		14,81
3	Tanged point of Pulli type		1		1		100		12,5
4	Microliths of Stawinoga type	1	4		5	20	80		62,5
5	Insert with retouched 1 side		1		1		100		12,5
6	Inserts with abruptly retouched side and 1 of ends		1		1		100		12,5
	Scrapers	1	1	1	4	33,33	33,33	33,33	7,41
7	Semisided	1	1		2	50	50		50
8	End side scrapers			1	1			100	25
9	Fragments unidentified				1				25
	Burins	7	6	2	15	46,67	40	13,33	27,78
10	Formed by retouch & blows	3	4		8	42,86	57,14		53,33
11	Formed by blows on broken end		2		2		100		6,67
12	Formed by blows on natural end	3		2	5	50	50		33,33
	Perforators	1	3		4	33,33	66,67		7,41
13	Borers formed by alternating retouch		1		1		100		25
14	Borers formed by retouch on 1 of surfaces		1		1		100		25
15	Natural points used as borers	1	1		2	50	50		50
16	Grandukai	2			2	100			3,7
	Flake axes	5			5	100			9,26
17	With tranchet facet	3			3	100			60
18	Without tranchet facet	2			2	100			40
	Retouched blades		5		5		100		9,26
19	Without attributes of opposite platform core		1		1		100		50
20	With attributes of opposite platform core		1		1		100		50
21	Retouched flakes	7			7	100			12,96
22	Fragments of tools unidentified				1				1,85
	Total	25	23	3	54	49,02	45,01	5,88	100

Table 6. The statistic table of tools and wastes of secondary working of the middle cultural layer B.

on comparative typological and technological analysis of flint find complexes. A radiocarbon analysis was applied to 27 samples taken in Kabeliai 2 site (Tables 14, 15). Five samples were taken from pine trunks deposited together with flint finds of the lower cultural layer C: Ta-2602 11330±120 bp cal. 11433(11289)11158 BC, Ta-2605 10550±120 bp cal. 10665(10526)10367 BC, Ta-2608 10140±120 bp cal. 10162(9859)9173 BC, Ta-2609 10080±120 bp cal. 10047(9650, 9404, 9397)9092 BC, Ta-2607 9820±100 bp cal. 9059(9044)9007 BC. Two obtained dates, in author's opinion, are indirectly related to the material of the lower cultural layer C (Fig. 3). One of them was determined from a charred wood fragment found in the 2nd peat stripe (Ta-2606 9910±100 bp cal. 9372(9056)9042 BC). The another was from a charred wood fragment contained in the first peat stripe (Ta-2601 9820±220 bp cal. 9501(9044)8670 BC). Five C-14 dates of charcoal and charred brands taken from washed up layers around cultural layer C show time of transgression, when

No	Type of debitage	Amount	%	%*
1	Primary cortex debitage	40	5.23	10.7
2	Primary crested flakes	3	0.39	0.8
3	Primary crested blades	24	3.14	6.42
4	Primary crested debitage unidentified	2	0.26	
5	Primary flakes	21	2.75	5.61
6	Primary blades	75	9.8	20.05
7	Primary debitage unidentified			
8	Secondary flakes			
9	Secondary blades	1	0.13	0.27
10	Flakes from single platform cores	39	5.1	10.43
11	Flakes from opposite platform cores	9	1.18	2.41
12	Flakes multidirectional	38	4.97	10.16
13	Flakes unidentified	2	0.26	
14	Blades unidirectional	113	14.77	30.21
15	Blades from opposite platform cores	6	0.78	1.6
16	Blades from cores with changed orientation			
17	Blades unidentified			
18	Primary core tablets			
19	Core tables	5	0.65	1.34
20	Flakes < 1,5 cm	122	15.95	
21	Flakes 1,5 < a < 2,5 cm	102	13.33	
22	Unidentified fragments	128	16.73	
23	Crumbs and chunks	35	4.58	
	Total	765	100%	100%

Table 7. The statistic table of the debitage of the upper cultural layer A (* without types No 7, 13, 20–23).

remains of Swiderian site were destroyed by transgressing water of the lake: Ki-7599 7880±80 bp cal. 6994(6629)6565 BC, Ki-7601 9370±80 bp cal. 8496(84110)8269 BC, Ki-7596 9400±80 bp cal. 8586(8423)8280 BC, Ki-7597 9470±80 bp cal. 8847(8523)8413 BC, Ki-7598 9500±80 bp cal. 8911(8588, 8564, 8533)8428 BC. The date Ki-7599, I suppose, is wrong (maybe because of bad cleared sample). The interpretation of dates from lower layer C is rather complicated. According to uncallibrated C-14 dates the earliest settlement existed there approximatly at the very end of Younger Dryas – the very beginning of Pre-Boreal and soon after was flooded by the rising lake water. Typological and technological data do not contradict this dating of layer C: usage of indirect percussion technique for producing of irregular blades of opposite platform unifacial cores and typical tanged willow leave shaped points with undistinguished tangs (Sulgostowska 1989: 96–99; Schild 1987: 279; Fischer 1991: 107, 112, Fig. 11.10; Зализняк 1989: 74–75). An alternative interpretation is based on comparison of callibrated dates from Kabeliai 2C layer with the latest data from Scandinavian clay varve chronology. If the date of the drainage of the Baltic Ice Lake (10640 BP) is correct (Matiskainen 1996: 252), than Swiderian site existed in the 2nd half of the Younger Dryas.

No	Types of preparatory phase & cores	Amount				%				%*			
		for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total
1	Concretions of raw material				2				4.26				
2	Concretions with few removed flakes of indefinite form				2				4.26				
3	Concretions with attributes of core preparation												
4	Concretions with prepared platform & front												
5	Fragments of types No 1–4												
6	Cores of early reduction phase without special surface, front & platform preparation				1								
7	Single platform conical cores		1		1		100		2.13		100		3.45
8	Single platform handle cores	1	2	8	11	9.09	18.2	72.7	23.4	9.09	18.2	72.7	37.9
9	Single platform cores unidentified	1	1		2	50	50		4.26	50	50		6.9
10	Opposite platform cores with single front	2	2		5	50	50		10.6	50	50		17.2
11	Opposite platform cores with separate fronts		1		1		100		2.13		100		3.45
12	Opposite platform cores unidentified												
13	Single platform cores with changed orientation	1	1	1	4	33.3	33.3	33.3	8.51	33.3	33.3	33.3	13.8
14	Opposite platform cores with changed orientation												
15	Cores with changed orientation unidentified	2	1		5	66.7	33.3		10.6	66.7	33.3		17.2
16	Amorphous cores												
17	Fragments of cores unidentified				13				27.7				
	Total	7	9	9	47	28	36	36	100	28	36	36	100

Table 8. The statistic table of cores and preparatory forms of the upper cultural layer A (* without types No 1–6, 17).

From the middle cultural layer B (the first peat stripe, also peat and sand layer) 4 samples of charcoal and charred brands were dated in Tartu lab.: Ta-2600 9100±180 bp cal. 8340(8084)7971 BC, Ta-2604 8680±90 bp cal. 7895(7691, 7664, 7633)7547 BC, Ta-2641 7750±200 bp cal. 6991(6540, 6515, 6498)6384 BC, Ta-2644 8190±60 bp cal. 7292(...)7043 BC. One sample of charred brand was analysed in Kiev lab.: Ki-7600 9410±80 bp cal. 8821(8428)8350 BC. Other 6 samples of bone and teeth form this layer were analysed in Kiev lab.: Ki-7590 7970±80 bp cal. 7031(...)6636 BC, Ki-7592 8060±80 bp cal. 7130(7032)6780 BC, Ki-7591 8540±85 bp cal, 7580(7539)7493 BC, Ki-77593 9120±85 bp cal. 8325(8088)8037 BC, Ki-7594 9230±90 bp cal. 8383(...)8090 BC, Ki-7595 9280±90 bp cal. 8414(8340, 8302, 8268)8098 BC. By my mind, 2 dates of bones (Ki-7590, Ki-7592) are not corect because of possible bad samples. These samples were found close to disturbed slope of drainage channel.

From the upper cultural layer A four samples were analysed. While dating the peat from the palynological sample core No 3 taken from the middle of the black peat layer we obtained the date: Ta-2610 7060±150 bp cal. 6009(5943, 5908, 5885)5724

No	Type	Amount				%			
		flakes	blades	parts of cores	total	flakes	blades	parts of cores	total
	Debris of secondary working	1	3		4	25	75		4.82
1	Microburins								
	In distal end of blade		1		1		100		1.2
2	Pseudomicroburins		2		2		100		2.41
	In proximal end of blade	1		1		100		50	
	In distal end of blade	1		1		100		50	
	Burin spalls								
3	With facets of other burin spalls	1			1	100			1.2
	Forms with attributes of secondary working**	24	45	5	79	32.43	60.81	6.76	95.18
	Microliths**	1	3		4	25	75		4.82
4	Middle size trapezia of flakes with retouched base	1			1	100			25
5	Lanceolates with broken base, ret. side & microb. fc.		1		1		100		25
6	Lanceolates with retouched tip in prox. end of blade*		1		1				
7	Microliths of Stawinoga type*		1		1				
8	Inserts with abruptly retouched side		1		1		100		25
9	Inserts with abruptly retouched side and 1 of ends		1		1		100		25
	Scrapers	10	1		14	90.9	9.09		16.87
10	End scrapers	3	1		5	75	25		45.45
11	Side scrapers	1			1	100			9.09
12	Semisided scrapers	2			2	100			18.18
13	End side scrpers	3			3	100			27.27
14	Fragments	1			2				
	Burins	3	7	1	11	27.27	63.63	9.09	13.25
15	Side burins formed by retouch & blows	1			1	100			9.09
16	Side burins formed by bilateral blows			1	1			100	9.09
17	Angular burins formed by bilateral blows		1		1		100		9.09
18	Burins formed by blows on broken end	2	6		8	25	75		72.72
	Perforators		11	1	12		91.66	8.33	14.46
19	Borers formed by alternating retouch		4		4		100		33.33
20	Natural points used as borers		1	1	2		50	50	16.66
21	Awls formed by retouch	6		6		100		50	
	Other types								
22	Spokeshaves	1		2	3	33.33		66.66	3.61
23	Knive of blade with abruptly retouched ends		1		1		100		1.2
24	Core axe			1	1			100	1.2
	Retouched blades		18		18		100		21.69
25	Without attributes of opposite platform core		9		9		100		81.82
26	With attributes of opposite platform core		2		2		100		18.18
27	Retouched flakes 9			9	100			10.84	
28	Fragments of tools unidentified		4	1	6		80	20	7.23
	Total**	25	48	5	83	32.05	61.54	6.41	100

Table 9. The statistic table of tools and wastes of secondary working of the upper cultural layer (* these types of microliths were found in layer A, but by typological criteria they obviously could be attached to the complex of layer B; ** without types No 6, 7).

BC. This date shows time when upper cultural layer A was sealed by peat forming processes. The charred wood particles from the lower part of black peat layer were dated: Ta-2599 7250±200 bp cal. 6227(6102, 6099, 6045)5879 BC, Ta-2642

No	Type of debitage	Amount	%	%*
1	Primary cortex debitage	6	0.15	1.19
2	Primary crested flakes	3	0.08	0.6
3	Primary crested blades	33	0.83	6.56
4	Primary crested debitage unidentified	3	0.08	
5	Primary flakes	8	0.2	1.59
6	Primary blades	149	3.76	29.62
7	Primary debitage unidentified	2	0.05	
8	Secondary flakes	1	0.03	0.2
9	Flakes, crumbs and chunks	3450	87.12	
10	Blades uniderectional	265	6.69	52.68
11	Blades from opposite platform cores	29	0.73	5.77
12	Blades unidentified	2	0.05	
13	Core tablets	9	0.23	1.79
	Total	3960	100%	100%

Table 10. The statistic table of the debitage from trenches at the terrace edge and not attributed more precisely finds from peat field edge (a terrace slope) (* without types No 4, 7, 9, 12).

No	Types of preparatory phase & cores	Amount				%				%*			
		for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total	for blades	for blad. & flak.	for flakes	total
1	Concretions of raw material												
2	Concretions with few removed flakes of indefinite form												
3	Concretions with attributes of core preparation												
4	Concretions with prepared platform & front												
5	Fragments of types No 1–4												
6	Cores of early reduction phase without special surface, front & platform preparation												
7	Single platform conical cores												
8	Single platform handle cores	3	4	8	15	20	26.7	53.3	22.4	20	26.7	53.3	35.7
9	Single platform cores unidentified		1	1	3		50	50	4.48		50	50	7.14
10	Opposite platform cores with single front		8	3	11		72.7	27.3	16.4		72.7	27.3	26.2
11	Opposite platform cores with separate fronts		1		1		100		1.49		100		2.38
12	Opposite platform cores unidentified												
13	Single platform cores with changed orientation		2	3	5		40	60	7.46		40	60	11.9
14	Opposite platform cores with changed orientation		1		1		100		1.49		100		2.38
15	Cores with changed orientation unidentified		2	2	5		50	50	7.46		50	50	11.9
16	Amorphous cores				1				1.49				2.38
17	Fragments of cores unidentified				25				37.3				
	Total	3	19	17	67	7.69	48.7	43.59	100	7.69	48.71	43.59	100

Table 11. The statistic table of cores and preparatory forms from trenches at the terrace edge and not attributed more precisely finds from peat field edge (a terrace slope) (* without types No 1–6, 17).

No	Type	Amount				%			
		flakes	blades	parts of cores	total	flakes	blades	parts of cores	total
	Debris of secondary working		18	1	31		94.74	5.26	15.2
1	Microburins		11		11		100		5.39
	In proximal end of blade		5		5		100		50
	In distal end of blade		5		5		100		50
2	Pseudomicroburins		7		7		100		3.43
	In proximal end of blade		3		3		100		42.86
	In distal end of blade		4		4		100		57.14
3	Burin spalls				13				6.37
	With retouched side			1	6			100	46.15
	With retouched side & facet of other burin spalls				1				7.69
	With retouch in proximal end of spall				1				7.69
	With facet of other burin spalls				4				30.77
	Without attributes mentioned above				1				7.69
	Forms with attributes of secondary working	51	100	6	173	32.48	63.69	3.82	84.8
	Tanged points		4		4		100		1.96
5	Fragments of upper part		1		1		100		25
6	Fragments with obliquely retouched tip in 1 of sides		1		1		100		25
7	Fragm. with flatly retouched lower surface of tip		1		1		100		25
8	Willow leaf shaped points, bulb removed by flat retouch		1		1		100		25
	Arrowheads with flatly retouched surfaces	3			3	100			1.47
9	Triangular	2			2	100			66.66
10	Leafshaped	1			1	100			33.33
	Microliths	2	35		37	5.41	94.59		18.14
11	Middle size symmetric trapezia of blades		1		1		100		2.63
12	Lanceolates with microburin facet:		4		4		100		10.53
	lanceolates with microburin facet & broken base and unretouched sides		1		1		100		2.63
13	Microliths of Stawinoga type		7		7		100		21.05
14	Microliths of Komornica type	1			1	100			2.63
15	Triangular microliths		2		2		100		5.26
16	Microlithis inserts:	1	21		22	4.55	95.45		57.89
	With abruptly retouched side:		14		14		100		36.84
	with tip		1		1		100		2.63
	without tip		6		6		100		15.79
	With abruptly retouched side and 1 of ends		1		1		100		2.63
	With abruptly retouched 1 of ends	1	6		7	14.29	85.71		18.42
	Scrapers	10	7	1	22	55.56	38.89	5.56	10.78
17	End scrapers	4	6		11	40	60		55
18	Semisided		1		1		100		5
19	Side scrapers	2			2	100			10
20	Semirounded	1			1	100			5
21	Fragments unidentified	2		1	5	66.66		33.33	25
	Burins	7	6	3	19	43.75	37.5	18.75	9.31
22	Side burins, formed by retouch & blow			1	1			100	5.26
23	Angular burins, formed by retouch & blow	1	1	1	4	33.33	33.33	33.33	21.05
24	Middle burins, formed by bilateral blows	1			1	100			5.26
25	Angular burins formed on angle of broken end	4	1		5	80	20		26.32
26	Burins formed by blows on natural end	1		1	3	50		50	15.79
27	Angular burins, formed by blows on natural end	1		1	2	50		50	10.52
28	Combined burins	2	1		3	66.66	33.33		15.79
29	Combined angular burins		1		1		100		5.26
30	Fragments unidentified				1				5.26

No	Type	Amount				%			
		flakes	blades	parts of cores	total	flakes	blades	parts of cores	total
	Perforators		4		4		100		1.96
31	Borers formed by alternating retouch		1		1		100		25
32	Natural points used as borers		1		1		100		25
33	Awls formed by retouch		1		1		100		25
34	Natural points used as awls		1		1		100		25
35	Spokeshavers	3		1	4	75		25	1.96
36	Knives	1			1	100			0.49
	Axes	2			2	100			0.98
37	Flake axes	1			1	100			50
38	Core axes	1			1	100			50
	Retouched blades		36		36		100		17.66
39	Without attributes of opposite platform core		8		8		100		66.66
40	With attributes of opposite platform core		4		4		100		33.33
41	Retouched flakes	15			15	100			7.35
42	Fragments of tools unidentified	9	6	1	26	56.25	37.5	6.25	12.75
	Total	51	117	7	204	29.14	66.86	4	100

Table 12. The statistic table of tools and wastes of secondary working from trenches at the terrace edge and not attributed more precisely finds from peat field edge (a terrace slope).

8320±50 bp cal. 7473(7418, 7343, 7325)7294 BC, Ta-2643 8800±100 bp cal. 7966(7908, 7750)7695 BC.

The radiocarbon dating makes it possible to assume that the fragments of charred wood in the middle and upper cultural layers were partly mixed up by washing or mechanical impact. Also we can state strong evidence of occupation in the area during the second half Pre-Boreal (7330–7150 bc) and maybe some continuous occupations of short duration up to the middle of Atlantic 1 period.

According to the pollen analysis data the middle cultural layer B was formed in Pre-Boreal and Boreal. It seems likely that its part closer to the shore, between the terrace slope and drainage channel, was deposited for a longer time and finished only in the middle of Boreal. Archaeological data do not contradict this dating. The Pulli type arrowheads and this type settlements in the East Baltic area have so far been dated by the methods of natural sciences to the middle and the second half of Pre-Boreal and, perhaps, beginning of Boreal (Jaanits 1980: 389; Brzozowski 1995: 7; Заторска 1981: 54; Zagorska 1992: 100). Microliths of Stawinoga-Kudlajevka and Komornica types and settlements of these cultural groups were most widely spread in the second half of Pre-Boreal – Boreal and episodically existed in later periods (Kozłowski 1989:130–131; Zalizniak 1991: 26–28). The absence of trapezia in the middle cultural layer B and presence of one such item in layer A proves once more the dates of these layers determined by palynological analysis. C-14 date determined from the peat of palynological sample core No 3 (Ta-2610) reveals the end of existence of the late Mesolithic settlement, because the sample was taken from the middle of black peat layer, whereas the finds were contained in the lower part of this layer.

C-14 and pollen analysis reveal continuous occupation (several settlements of short duration) in the area at the end of Pre-Boreal – the first stage of Atlantic

Species	Amount	%
Elk (Alces Alces)	4	57.14
Red deer (Cervus Elaphus)	1	14.29
Beaver (Castor Fiber)	2	28.57
Unidentified	3	
Total	10	100

Table 13. The middle cultural layer B. Faunal remains.

(Atlantic 1). Cultural layer B and finds it contains could be dated to the 2nd half of Pre Boreal – the 1st half of Boreal. Cultural layer A and finds it contains – the end of Boreal – the 1st half of Atlantic 1 period.

According to typological criteria the uncovered solitary triangular arrowheads with flatly retouched surface and pottery from the trenches at the terrace edge should be dated to the end of the Neolithic – the Early Bronze Age.

Cultural attribution

The complex of flint finds from the lower cultural layer C should be ascribed to the late stage of Swiderian Culture. Judging from a not numerous artefacts –

No	Lab. No	bp	BC	material
1	Ta-2610	7060±150	6009 (5943, 5908, 5885) 5724	peat
2	Ta-2599	7250±200	6227 (6102, 6099, 6045) 5879	charred brand
3	Ta-2641	7750±200	6991 (6540, 6515, 6498) 6384	charred brand
4	Ki-7599	7880±80	6994 (6629) 6565	charcoal
5	Ki-7590	7970±80	7031 (6995, 6955, 6941, 6926, 6868, 6843, 6777) 6636	bone
6	Ki-7592	8060±80	7130 (7032) 6780	bone
7	Ta-2644	8190±60	7292 (7241, 7223, 7201, 7180, 7142, 7119, 7096) 7043	charred brand
8	Ta-2642	8320±50	7473 (7418, 7343, 7325) 7294	charred brand
9	Ki-7591	8540±85	7580 (7539) 7493	bone
10	Ta-2604	8680±90	7895 (7691, 7664, 7633) 7547	charred brand
11	Ta-2643	8800±100	7966 (7908, 7750) 7695	charred brand
12	Ta-2600	9100±180	8340 (8084) 7971	charcoal
13	Ki-7593	9120±85	8325 (8088) 8037	bone
14	Ki-7594	9230±90	8383 (8329, 8312, 8246, 8231, 8208) 8090	bone
15	Ki-7595	9280±90	8114 (8340, 83002, 8268) 8098	bone
16	Ki-7601	9370±80	8496 (8410) 8269	charcoal
17	Ki-7596	9400±80	8586 (8423) 8280	charcoal
18	Ki-7600	9410±80	8821 (8428) 8350	charred brand
19	Ki-7597	9470±80	8847 (8523) 8413	charcoal
20	Ki-7598	9500±80	8911 (8588, 8564, 8533) 8428	charred brand
21	Ta-2601	9820±220	9501 (9044) 8670	charred brand
22	Ta-2607	9820±100	9059 (9044) 9007	wood
23	Ta-2606	9910±100	9327 (9056) 9042	charred brand
24	Ta-2609	10080±120	10047 (9650, 9404, 9397) 9092	wood
25	Ta-2608	10140±120	10162 (9859) 9173	wood
26	Ta-2605	10550±120	10665 (10526) 10367	wood
27	Ta-2602	11330±120	11433 (11289) 11158	wood

Table 14. C-14 dates from Kabeliai the 2nd stone age site.

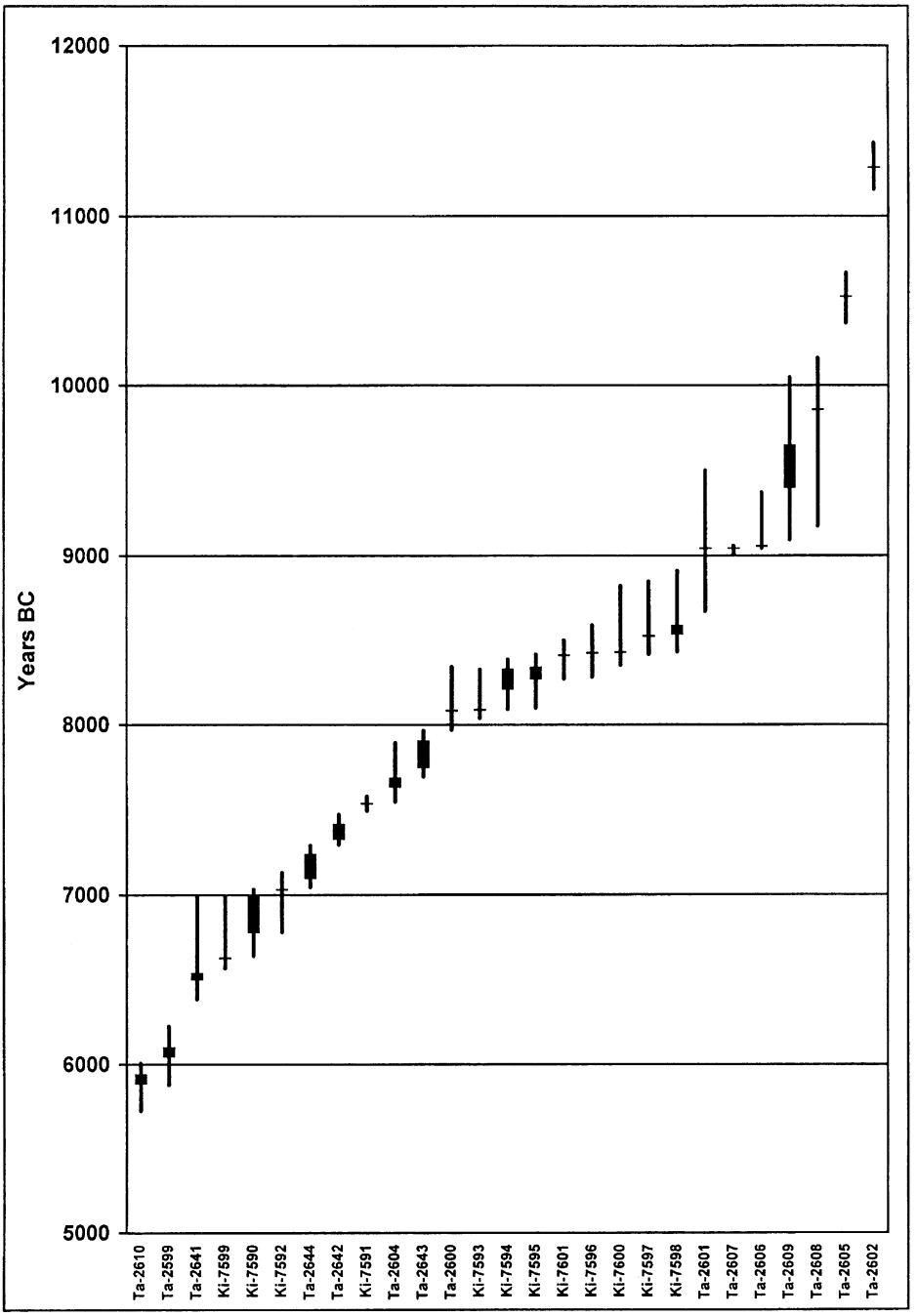

Table 15. The evolvent of calibrated C-14 dates from Kabeliai 2 stone age site.

arrowheads in the first place – we may assert that this complex includes finds of one settlement of short duration. According to the radiocarbon dating this settlement existed approximately at the end of Younger Dryas – the very beginning of Pre-Boreal. Its flint inventory does not yet reveal the influence of mesolithic traditions.

The data of palynological and C-14 analysis reveal that the formation of the middle cultural layer B was long and complicated. Its find complex probably includes finds of several settlements what existed in a long period of time – from a few hundred to a one thousand years (the 2nd half of Pre-Boreal – the middle of Boreal). However, the flint inventory of layer B is rather homogeneous. Perhaps this may by accounted for by a small number of items. However, all typologically and culturally significant types of finds were found in series. This emphasizes that their nature is not accidental. A comparison with materials of mesolithic sites of Lithuania and neighbouring areas reveals that layer B of Kabeliai 2 site contains artefacts characteristic as to Kudlajevka Culture as well as to Kunda Culture. I suppose that this fact reveals that area of lake were used by communities of both early mesolithic cultures. But artefacts of Kudlajewka Culture make up the bigger part of the collection.

Materials of Kunda Culture are represented by rather atypical tanged point of Pulli type, an insert made of bladelet (Fig. 6: 13), regular blades, cores for blade production with pressure technique, artefacts made of regular blades. Flint inventories of standard sites of the Kunda Culture sites are characterized by a highly developed blade technique with using of single platform conical cores for producing of blades, a dominance of angular burins, formed by blows on a broken end of a blade, and end scrapers. The number of parts of blades is rather high. Typical microlits of Kunda Culture are: inserts – backed bladelets, sometimes with abruptly retouched ends, high scalene triangulars, tanged points of Pulli type produced of regular blades. In standard sites of Kunda Culture (Pulli, Zvejnieki II) traces of microburin technique are absent. Evidently, microliths were formed by means of blade breaking and abrupt retouch.

In the middle layer of Kabeliai the 2nd site there prevail single-platform cores and double-platform ones. Half of the tools are made of flakes. Flake cores, flake and blade cores are still more numerous. This fact reveals features of flint processing characteristic to Kudlajewka Culture: direct percussion technique for irregular blade production. Burins formed on retouched base are dominant. Typical type of artefacts – flake axes of tranche type. Among microlithic types of points Stawinoga-Kudlajevka type stands out. They are often formed by means of microburin technique and double-sided abrupt retouch. Besides, two microliths of Komornica type were uncovered in the site. Similar traits of flint processing technique and typological composition of complexes are found in sites of Stawinoga type in the Northeastern Poland (Więckowska 1975: 352–378) and sites of Kudlajevka Culture in Polese (Зализняк 1991: 10–28). Many solitary finds of microliths of Stawinoga and Komornica type and their small collections are known from south and central Lithuania. They were collected from the surface or during excavations of sites of other periods. Few sites of Kudlajewka Culture have been recently excavated in Lithuania: Pypliai 1 (the lower layer), Kabeliai 23. Sites and stray finds of points of Kunda Culture were spread troughout the whole East Baltic area: Estonia, Latvia and Lithuania. A few of them are known in northeastern Poland, northwestern Byelorussia and southern Finland.

The following traits characteristic of the flint complex are uncovered in the upper cultural layer A: a highly developed blade technique, using handlecores and

conical cores for producing of regular blades, wide usage of microburin technique. Characteristic types of tools: trapezia, lanceolates, microburins, backed and truncated bladelets, angular burins, oval core axes, large series of perforators. On the background of chronology of this complex, the first stage of Atlantic, and the above mentioned pecularities of flint complex may be related to the late mesolithic Janislawice Culture. However, few microliths uncovered in the cultural layer in the peat field create no premises for specification and detalization of these relations. The Janislawice Culture was spread through the Middle and Northern Poland, northern part of the Ukraine, Byelorussia, southern Lithuania in Atlantic period (Kozłowski 1989: 154–165; Więckowska 1975: 378–393; Зализняк 1991: 28–42; Rimantienė 1995: 67–71). Recent investigations make it possible to include also northern Lithuania and Latvia into this cultural area (Ostrauskas 1996: 210).

Literature

Brazaitis, D. 1998. Pyplių piliakalnio papėdės gyvenvietės. In: *Lietuvos archeologija* 15. Vilnius, 87–106.

Brzozowski, J., Siemasko, J. 1995. The Mesolithic site at Miłuki – research results. Paper presented during the international conference "Recent Research on the Stone and Early Bronze ages in the South-easthern Subbalticum", Supraśl (Poland), September 1994. Suwałki.

Fischer, A. 1991. Pioneers in deglaciated landscapes: The expantion and adaptation of Late Palaeolithic societies in Southern Scandinavia. In: *The Late Glacial in north-west Europe*, 100–121.

Jaanits, K. 1980. Die mesolithischen Siedlungsplätze mit Feuersteininventar in Estland. In: *Veröffentlichungen des Museums Für Ur- und Ffühgeschichte*. Potsdam, Band 14/15/1980, 389–399.

Kabailienė, M., Stančikaitė, M., Ostrauskas, T. 1997. Living conditions and activity of man in the environs of Lake Grūda in the end of Late Glacial and Holocene. In: *Geologija* 21. Vilnius, 32–43.

Kobusiewicz, M. Kabaciński, J. 1993. Chwalim. Subboreal Hunter-Gatherers of the Polish Plain. Poznań.

Kozłowski, S. K. 1989. Mesolithic in Poland. A new Approach. Łodz.

Matiskainen, H. 1996. Discrepancies in Deglaciation Chronology and the Appearance of Man in Finland. In: *The Earliest Settlements of Scandinavia*. Stockholm, 251–262.

Ostrauskas, T. 1993. Šaltaliūnės akmens amžiaus stovyklavietės tyrinėjimai 1992 metais. In: *VU Istorijos fakulteto Archeologijos ir Etnologijos katedros archeologiniai tyrinėjimai 1992 metais*. Vilnius.

Ostrauskas, T. 1995. Šaltaliūnės akmens amžiaus gyvenvietė. In: *Baltų archeologija. Naujausių tyrimų rezultatai. Konferencijos medžiaga. Vilnius. 1994 m. kovo 30 d.*, Vilnius, 5–14.

Ostrauskas, T. 1996. Vakarų Lietuvos mezolitas. In: *Lietuvos archeologija* 14. Vilnius, 192–212.

Ostrauskas, T. 1998a. Pietų Lietuvos paleolitas ir mezolitas. In: *Lietuvos archeologija* 16. Vilnius, 7–18.

Ostrauskas, T. 1998b. Kabelių senovės gyvenvietė 2-oji. *Lietuvos archeologija* 16. Vilnius, 19–66.

Price, T. D. 1987. The Mesolithic of Western Europe. In: *Journal of World Prehistory 1/3*, 225–305.

Rimantienė, R. 1984. Akmens amžius Lietuvoje. Vilnius.

Schild, R., Królik, H., Marczak, M. 1985. Kopalnia krzemienia czekoladowego w Tomaszowe. Wroclaw.

Schild, R. 1987. Main Lines, Controversies and Needs of Research. In: *Late Glacial in Central Europe*. Culture and Environment. Wrocław, 277–282.

Schild, R. 1996. Radiochronology of the Early Mesolithic in Poland. In: *The Earliest Settlements of Scandinavia.* Acta Archaeologica Lundensia, Series in 8° 24, 285–295.

Sulgostowska, Z. 1989. Prahistoria międzyrzecza Wisły, Niemna i Dniestru u schyłku plejstocenu. Warszawa.

Šatavičius, E. 1994. Akademiškumo linkint. In: *Baltų archeologija* 2, 25–29.

Šatavičius, E. 1997. Vėlyvoji Svidrų kultūra. In: *Kultūros paminklai* 4, 3–15.

Więckowska, H. 1975. Społeczności lowiecko-rybackie wczesnego holocenu. In: *Prahistoria ziem Polskich I. Paleolit i mezolit.* Wrocław, 339–348.

Zagorska, I. 1992. The Mesolithic in Latvia. In: *Acta Archaeologica* 63. Kobenhavn, 97–117.

Загорска, И. А. 1981. Ранний мезолит на территории Латвии. In: *Latvijas PSR Zinatnu Akademijas Vestis* 2 (403), 53–65.

Зализняк, Л. Л. 1989. Охотники на северного оленя Украинского Полесья эпохи финального палеолита. Киев.

Зализняк, Л. Л. 1991. Население Полесья в мезолите. Киев.

Остраускас, Т. 1993. Мезолит Северной Литвы. In: Шляхи розвитку слов'янских народів 4. Київ, 46–48.

Римантене, Р. К. 1971. Палеолит и мезолит Литвы. Вильнюс.

Римантене, Р. К. 1977. Основные черты мезолита Литвы. In: *Краткие сообщения Института Археологии* 149. Москва, 66–69.

Сорокин, А. Н. 1990. Бутовская мезолитическая культура. Москва.

Kabelių 2-oji akmens amžiaus gyvenvietė

TOMAS OSTRAUSKAS

Santrauka

Per paskutinįjį XX a. dešimtmetį Lietuvoje suaktyvėjus mezolito tyrimams buvo ištirta nemažai gyvenviečių, kurių tyrimų medžiaga nebetelpa į jau seniai nusistovėjusias viduriniojo akmens amžiaus kultūrinės-chronologinės periodizacijos schemas. Archeologai yra priversti jas peržiūrėti. Bene svarbiausias čia – Kabelių (Varėnos r.) 2-osios akmens amžiaus gyvenvietės – pirmosios Lietuvos daugiasluoksnės vėlyvojo paleolito ir mezolito durpyninės gyvenvietės vaidmuo.

Šios gyvenvietės tyrimų metu ežero pakrantėje ir terasos šlaite buvo aptikti trys kultūriniai sluoksniai. 27 radioaktyviosios anglies bandiniai (14–15 lent.) ir 3 žiedadulkių bandinių stulpelių analizė leido gana detaliai atkurti kultūrinių sluoksnių susiformavimą ir apgyvendinimo raidą. Apatiniame kultūriniame sluoksnyje C

buvo aptikti į siaurą 50–10 cm pločio juostelę suplauti Svidrų kultūros titnago radiniai (4–5 pav.). Šio kultūrinio sluoksnio komplekse vyravo skeltinė technika. Skeltės buvo nuskeliamos nuo dvigalių skaldytinių. Tarp radinių su antriniu apdirbimu išsiskyrė įkotiniai strėlių antgaliai su neišskirta įkote. Taip pat aptikta galinių ir dvigalių gremžtukų, šoninių ir vidurinių rėžtukų. Radinių kompleksas būdingas vėlyvosios Svidrų kultūros fazės gyvenvietėms. Penki C-14 bandiniai buvo paimti iš pušų kamienų, suplautų kartu su Svidrų kultūros radiniais: Ta-2602 11330±120 bp cal. 11433(11289)11158 BC, Ta-2605 10550±120 bp cal. 10665(10526)10367 BC, Ta-2608 10140±120 bp cal. 10162(9859)9173 BC, Ta-2609 10080±120 bp cal. 10047(9650, 9404, 9397)9092 BC, Ta-2607 9820±100 bp cal. 9059(9044)9007 BC. Dvi datos nustatytos ištyrus nuodėgulį ir anglis, autoriaus nuomone, gali būti netiesiogiai susijusios su vėlyvojo paleolito gyvenvietės radiniais (3 pav.): Ta-2606 9910±100 bp cal. 9372(9056)9042 BC, Ta-2601 9820±220 bp cal. 9501(9044)8670 BC. 5 datos iš anglių ir nuodėgulių greičiausiai parodo ežero transgresijos laiką, kada buvo suplautas apatinis kultūrinis sluoksnis: Ki-7599 7880±80 bp cal. 6994(6629)6565 BC, Ki-7601 9370±80 bp cal. 8496(84110)8269 BC, Ki-7596 9400±80 bp cal. 8586(8423)8280 BC, Ki-7597 9470±80 bp cal. 8847(8523)8413 BC, Ki-7598 9500±80 bp cal. 8911(8588, 8564, 8533)8428 BC (data Ki-7599 greičiausiai yra neteisinga dėl blogo pavyzdžio). Pagal nekalibruotas C-14 datas Svidrų kultūros gyvenvietė greičiausiai gyvavo pačioje Vėlyvojo Driaso pabaigoje ar Preborealio pradžioje. Kita interpretacija yra paremta kalibruotų datų palyginimu su Skandinavijos juostuotųjų molių chronologija (Matiskainen 1996: 252). Šiuo atveju gyvenvietė egzistavo Vėlyvojo Driaso laikotarpio antrojoje pusėje.

Atlikta 11 bandinių iš vidurinio kultūrinio sluoksnio B C-14 analizė: Ta-2600 9100±180 bp cal. 8340(8084)7971 BC, Ta-2604 8680±90 bp cal. 7895(7691, 7664, 7633)7547 BC, Ta-2641 7750±200 bp cal. 6991(6540, 6515, 6498)6384 BC, Ta-2644 8190±60 bp cal. 7292(...)7043 BC, Ki-7600 9410±80 bp cal. 8821(8428)8350 BC, Ki-7590 7970±80 bp cal. 7031(...)6636 BC, Ki-7592 8060±80 bp cal. 7130(7032)6780 BC, Ki-7591 8540±85 bp cal, 7580(7539)7493 BC, Ki-77593 9120±85 bp cal. 8325(8088)8037 BC, Ki-7594 9230±90 bp cal. 8383(...)8090 BC, Ki-7595 9280±90 bp cal. 8414(8340, 8302, 8268)8098 BC (datos Ki-7590 ir Ki-7592 galbūt yra neteisingos, nes bandiniai buvo netoli melioracijos kanalo šlaito paviršiaus). Remiantis žiedadulkių analize, šis kultūrinis sluoksnis buvo datuotas Preborealiu (toliau nuo kranto) ir Borealio pirmąja puse. Šiame kultūriniame sluoksnyje surinkti dviems kultūroms būdingi titnago radiniai. Su Kundos kultūra sietina preciziška skeltine nuspaudimo technika pasižyminti mažesnioji radinių grupė: įkotinis Pulio tipo antgalis, ašmenėliai ir kt. (6: 2, 13–15 pav.). Tačiau dauguma radinių iš kultūrinio sluoksnio B sietini su Kudlajevkos kultūra. Šiai grupei būdinga nuoskalinė technika naudojant tiesioginio mušimo ruošinių nuskėlimo būdą. Tarp radinių būdingesni Kudlajevkos tipo mikrolitai (6: 1, 3–12 pav.), retušu ir nuskėlimais suformuoti rėžtukai, nuoskaliniai kirveliai (7: 6; 8 pav.). Sprendžiant pagal C-14 datas ir radinius, vidurinis kultūrinis sluoksnis – tai keleto ar keliolikos Preborealio 2-osios pusės – Borealio 1-osios pusės stovyklaviečių palikimas.

Viršutiniame kultūriniame sluoksnyje A buvo surinkti mezolitinės Janislavicų kultūros titnago radiniai (9–10 pav.). Jiems būdinga išvystyta skeltinė ir mikrorėštukinė technikos. Tarp radinių pažymėtini trapecijos, lancetai, ašmenėliai, didelė perforatorių serija, ovalinis kirvelis, kampiniai rėžtukai. Nuodėguliai iš šio kultūrinio sluoksnio buvo datuoti: Ta-2599 7250±200 bp cal. 6227(6102, 6099, 6045)5879 BC,

Ta-2642 8320±50 bp cal. 7473(7418, 7343, 7325)7294 BC, Ta-2643 8800±100 bp cal. 7966(7908, 7750)7695 BC. Durpių bandinys iš kultūrinio sluoksnio A viršutinės dalies datuotas: Ta-2610 7060±150 bp cal. 6009(5943, 5908, 5885)5724 BC. Atlikus žiedadulkių analizę, šis kultūrinis sluoksnis buvo datuotas Atlančio 1 periodu. Taigi viršutinis kultūrinis sluoksnis A susiformavo Borealio laikotarpio pabaigoje – Atlančio 1 laikotarpio pirmojoje pusėje. Radiniai iš šio kultūrinio sluoksnio greičiausiai sietini su keliomis vėlyvojo mezolito Janislavicų kultūros stovyklavietėmis.

Kabelių 2-osios gyvenvietės tyrimai parodė, kad ankstyvajame mezolite ir vidurinio mezolito pradžioje, Preborealio laikotarpio 2-oje pusėje – Borealio laikotarpio 1-oje pusėje, Pietų Lietuvoje gyveno 2 kultūrų, Kundos ir Kudlajevkos, žmonių bendruomenės. Vėlyvajame mezolite (Borealio pabaiga – Atlančio laikotarpio 1 periodas), šioje teritorijoje gyveno Janislavicų kultūros žmonių grupės.

Tomas Ostrauskas
Department of Archaeology
Lithuanian Institute of History
Kražių str. 5 LT-2001 Vilnius
Lithuania
tomasos@takas.lt