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PREHISTORIC LACUSTRINE PILE DWELLINGS IN THE NORTH-WESTERN PART OF THE USSR

Abstract

Six lacustrine pile dwelling sites were discovered and partly excavated in the basins of the Zapadnaya Dvina and Lovat rivers. The multilayered sites belonged to the Usvyaty Neolithic Culture (4,800–4,000 b.p.) and the North-Bielorussian Corded Ware Culture (4,000–3,600 b.p.). The evolution of the sites was closely related to fluctuations in the lake-levels. Submerged sites are being studied by means of underwater archaeology.

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Pile dwellings originally situated in lakes, mires or bogs were a common feature of the Neolithic and Bronze Age in Europe (Guyan 1955). The first dwelling-sites of this kind were discovered in the mid 19th century. By now their number exceeds 500; two thirds being situated within the Alpine zone: in Switzerland, Austria, FRG, France and Italy.

Dwellings of this type existed also in the present territory of the USSR. They occupied a vast area from the Urals to the Baltic Sea and from the Komi ASSR down to the Polish border (Miklyayev 1977). Among the best investigated sites, one may quote Modlona in the Vologda Oblast' (Bryusov 1951), the Sarnate peat-bog in western Latvia (Vankina 1970), Šventoji in north-western Lithuania (Rimantiene 1979, 1980) and several sites in the Lubana depression (Loze 1979, Dolukhanov 1979). In the present article the writers provide an account of joint investigations of several lacustrine pile dwellings in the basins of the Zapadnaya Dvina and Lovat' rivers. These investigations were carried out in the course of the last 20 years by the North-Western Expedition of the State Hermitage Museum.

Since there exists a certain controversy about the nature of 'pile dwellings', it would be useful

to determine what is meant by this term. The term 'pile dwelling' is used to denote prehistoric constructions on platforms resting upon wooden piles or posts, which were originally driven into an aleurite covered lake bottom. In the course of lake transgressions the pile dwellings were usually moved to higher levels. These dwellings could be temporarily drained during seasonal regressions; and if these regressions were of considerable scale and duration, they were transferred again to low-lying levels. In such cases the corresponding archaeological deposits are found often above those belonging to preceding stages.

The writers have uncovered and partly explored six pile dwellings in the area (Fig.1). 5 sites are situated in the lakes and mires connected with the Zapadnaya Dvina basin (Usvyaty IV, Naumovo, Serteya I and II, Dyazditsa). The site of Dubokrai I lies near the source of the Lovat' river. All these sites are located in front of the end-moraine formations of the Vepsy (Pomeranian) stage of the Last Glaciation and are linked to the residual ice-dam lakes of the Kasplya Lake (Kvasov 1979, 11–14).

Usvyaty IV. Miklyayev discovered the site in 1963 and explored it from 1964 to 1967. T.I. Bespalova excavated it in 1974–1975. The site

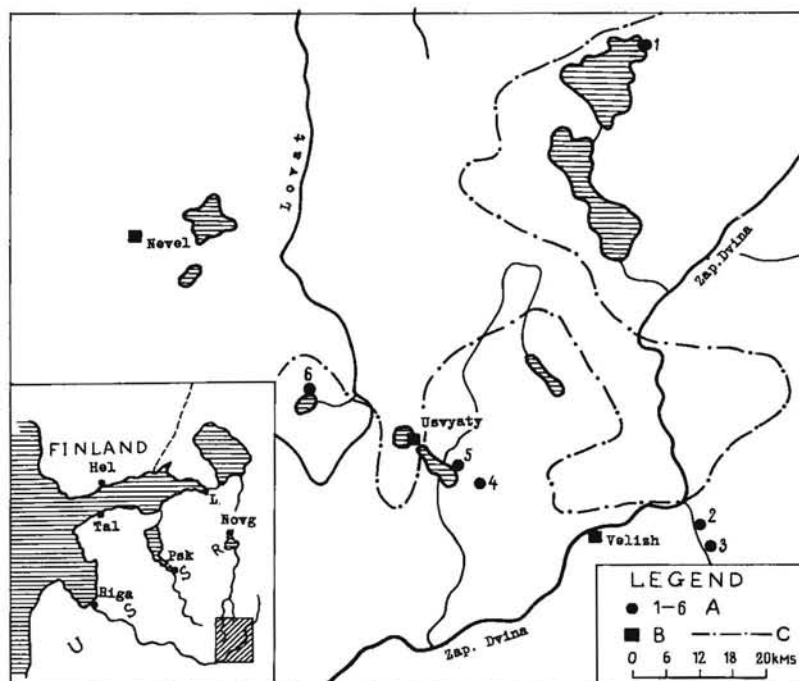


Fig. 1. Lacustrine dwelling-sites. Schematic map.

Legend: A - lacustrine dwelling-sites (1 - Naumovo; 2 - Serteya 1; 3 - Serteya 2; 4 - Dyazditz; 5 - Usvyaty 4; 6 - Dubokrai); B - modern agglomerations; C - limits of the end-morainic zone.

lies on the northern shore of the Usvyaty Lake, which, together with the Uzmen' Lake occupies a swampy lowland, one of the bays of the Kasplye ice-dam lake. End-morainic heights flank

the lowland form to the north, west and south (Fig. 2).

According to the paleogeographical reconstruction by Kvasov (1979, 11-14), the Kasplya Lake, being a part of the larger Orsha-Surazh system, was drained by the Zapadnaya Dvina in the course of the glacial retreat from the terminal formations of the Vepsy stage. During the Early Holocene the lakes occupied but a small part of the lowland. The secondary lake emerged during the second half of the Atlantic vegetational phase. The subsequent evolution resulted in the formation of low-lying terraces and in the deposition of lacustrine and marsh deposits, 1.5 meters thick. They resulted from a series of minor transgressions and regressions of the lake which occurred during the Late Atlantic, Sub-Boreal and Sub-Atlantic vegetational phases (Fig. 3).

The first Holocene transgression led to the deposition of the green sand partly visible on top of the aleurite, the upper portion of which was radiocarbon dated to 12140 ± 200^1 (LU-385) and

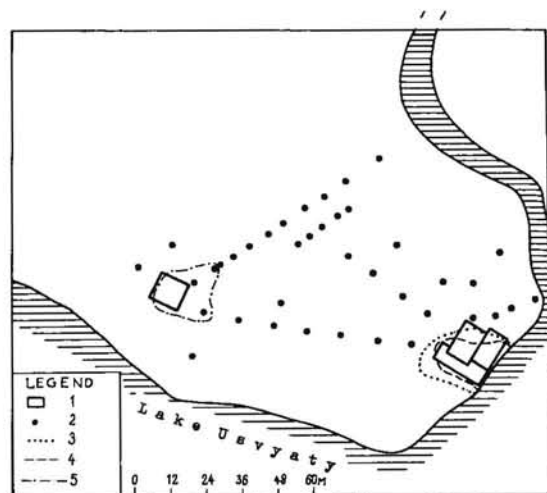


Fig. 2. Usvyaty 4. General setting.

Legend: 1 - excavation blocks; 2 - boreholes; 3 - limits of the cultural layer B; 4 - limits of the cultural layer A; 5 - limits of the cultural layer α .

¹ In the present article uncalibrated radiocarbon dates (b.p.) are used, calculated for the half-life value of 5554 ± 30 .

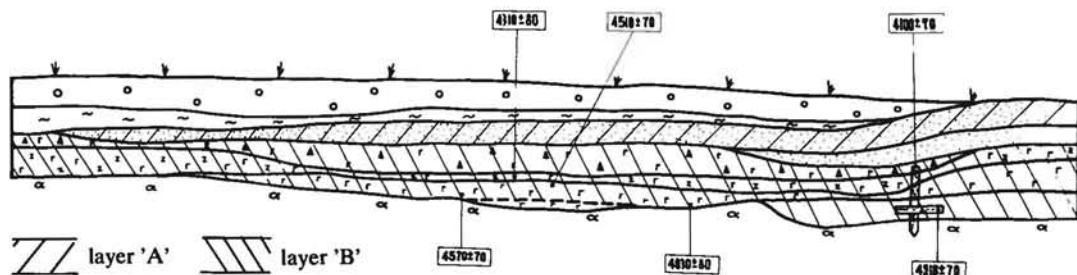


Fig. 3. Usvyaty 4. Cross-section.
Legend: v. Fig. 5.

12010±170 (LU-368). The emergence of the initial pile-dwelling took place in the course of the Ist Holocene lake transgression. The following ^{14}C dates were obtained for the constructions of this stage at Usvyaty IV: 4830±80 (TA-242); 4570±70 (TA-105) and 4510±70 (TA-244) (Miklyayev 1971). The subsequent constructions were found in the overlying layer of gyttja; they were situated nearer to the shore, probably due to the constant rise in the lake level. Two ^{14}C dates were obtained for this stage: 4310±80 (TA-243) and 4210±70 (TA-202). The constructions of this stage were completely destroyed by fire.

New constructions arose in their place, found in stratigraphically overlying strata. The new dwellings existed during the regression of the lake and they were destroyed when the water-level rose again. One ^{14}C dating was obtained for this stage: 4100±70 (TA-203).

Naumovo. This site situated on the Zhizhitza Lake was discovered in 1969 by Miklyayev and V.A. Semenov and explored in 1970–1974 and in 1978 (Miklyayev and Semenov 1979) (Fig. 4).

According to available evidence the site emerged later than the one on the Usvyaty Lake. The initial constructions were found in the

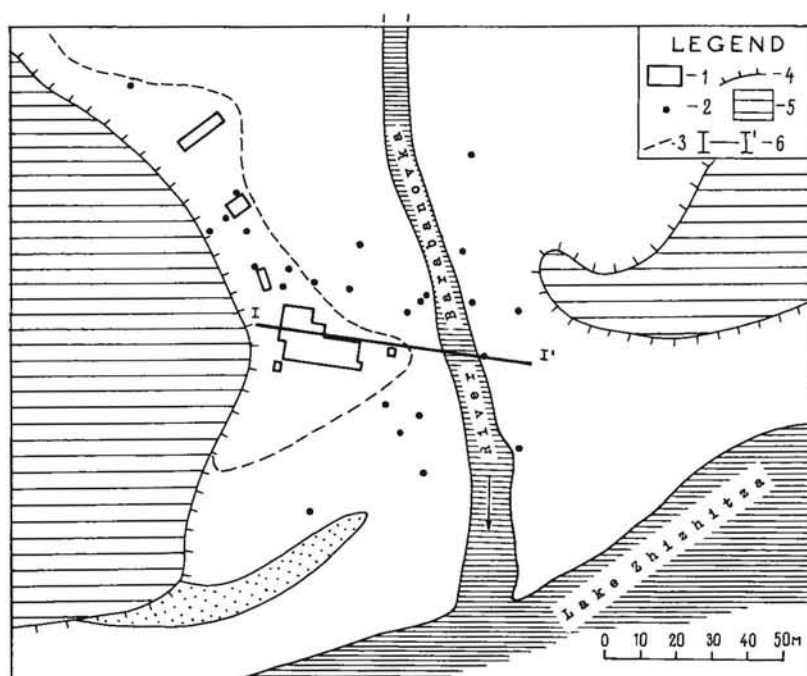


Fig. 4. Naumovo. General setting.
Legend: 1 – excavation blocks; 2 – bore-holes; 3 – limits of the cultural layer; 4 – limits of the flood-plain; 5 – morainic heights; 6 – cross-section I–I'.

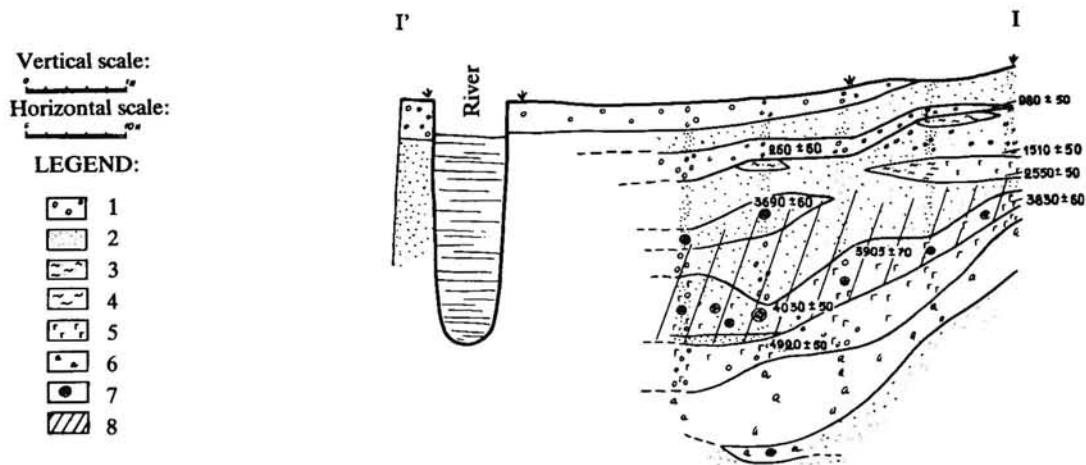


Fig. 5. Naumovo. Cross-section I-I'.

Legend: 1 - peat; 2 - sand; 3 - loam; 4 - clay; 5 - gyttja; 6 - aleurite; 7 - wooden piles; 8 - cultural layer.

layers of gyttja synchronous to those which contained the deposits of the late stage of the Usvyaty settlement (Fig. 5). The following dates were obtained for the deposits of the initial constructions at Naumovo: 4030 ± 50 (LE-1007); 3945 ± 70 (TA-583) and 3905 ± 70 (TA-466). The two last measurements were obtained for samples which originated from the constructions destroyed and redeposited in the course of the subsequent transgression. During the following regression the site area was drained. The settlement was abandoned and the new one emerged on a lower level; above the initial one, buried under thick lacustrine deposits. We have three ^{14}C dates for this stage: 3700 ± 70 (TA-816); 3690 ± 60 (LE-1004) and 3620 ± 80 (TA-765).

Serteya 2. The site was discovered by Miklyayev in 1972 as the drainage canal cut the deposits of a mire which had developed inside a former ice-dam lake (Miklyayev 1982). Excavations in the peat-bog were carried out in 1973-1974. Underwater explorations in the canal were under way in 1983-1984.

It was established that the initial settlement emerged here equally later as at Usvyaty. It coincided with the third stage at Usvyaty and the first stage at Neumovo. The following ^{14}C dates correspond to this stage: 4150 ± 80 (TA-817); 4120 ± 60 (TA-633); 4090 ± 60 (TA-632). Constructions of this stage were destroyed in a big fire, in which course a part of the platform (?) resting on piles, fell into the water and was preserved in the gyttja. This construction which was partly demolished by an excavating machine is still visible in the canal wall. Intensive excava-

tions at the site were not conducted due to the great depth of the cultural deposits (ca. 3 meters below the surface).

During the subsequent lake transgression, a layer of sand was accumulated above the deposits of the initial settlement. A new pile dwelling arose during the following regression; it was radiocarbon dated to 3650 ± 70 (TA-634). The new transgression destroyed this settlement and its debris was redeposited near the lake shore, thus forming the archaeological layer A_2 .

Dyazdütza. The site was discovered in 1974 by Miklyayev and T.I. Bepalova. In 1975 an intensive reconnaissance was carried out together with Dolukhanov. Small-scale excavations were conducted in 1976. Large scale excavations were impossible, the mire being constantly waterlogged. Judging from the existing records, the stratigraphy of the site is similar to other lacustrine pile-dwellings in the Zapadnaya Dvina basin.

History of evolution. Summing up the evidence of all lacustrine sites in the area explored so far, one may propose the following scheme of evolution of the lake settlements.

The first Holocene transgression of the lakes occurred after a lengthy regression which lasted from the Pre-Boreal up to the Mid Atlantic. This transgression which was fully studied only at Usvyaty was of a complicated nature. At first it was accompanied by intensive erosion and accumulation and it proceeded at a slow pace. A deposition of olive gyttja occurred in a shallow eutrophic lake. During the course of this transgression the initial pile dwelling came into being. Later on, it was transferred to a higher level and

nearer to the shore, because of a constant rise in the lake-level. No settlements were established either at Naumovo, or at Serteya II. Such settlements probably existed at Dyazditzza, but one cannot be positive, the site being insufficiently explored.

The pile dwelling of the second stage at Usvyaty IV perished in a fire. The new constructions (the third stage), were displaced, due to the fall in the lake-level and thus recovered the deposits of the two preceding stages. Both paleogeographical and archaeological evidence indicate that the settlement of this stage coincided with the regression of the lake; it existed on the marshy flood-plane which was only inundated seasonally.

The initial pile dwelling at Naumovo emerged in the course of this stage. As it seems, the construction started at the final phase of the regressive stage. As far as Serteya II is concerned, there are reasons to suggest that the initial settlement arose there during the preceding transgression. It existed in the initial stage of the following regression and perished in a fire before this regression had reached its lowest stage. At the time of its existence the pile constructions were situated in the shallow off-shore area of the lake.

Judging from the pottery assemblages the construction of the pile-dwelling at Dyazditzza started roughly at the same time as at Usvyaty. Archaeological deposits found in the strata which corresponded both to the transgression I and the regression II, are considered to belong to a single archaeological 'layer B'. The archaeological material retrieved belongs to the neolithic 'Usvyaty Culture'.

During the transgression II which followed, the deposits of the 3rd stage of construction of the layer B were covered with sand, on the top of which the archaeological 'layer A' was found. There exists a clear cultural continuity between the two layers, which is particularly obvious in the pottery. There exists a small amount of pottery which combines the typological features of both layers, indicating the existence of a 'transitional' layer. At Usvyaty, we failed to uncover pile constructions which would correspond to such a transitional layer. Such constructions in a stratigraphically clear position were established at Naumovo. No transitional pottery was found at Serteya; probably there was an interruption in the construction of pile-dwellings. Such pottery was brought to light at Dyazditzza and one may suggest that the transitional layer exists there.

There was a large-scale reconstruction of pile

dwellings during the following regression III. The constructions of this stage were not explored at Usvyaty. Judging from the survey data, the corresponding layers are situated to the east of the excavated area; these layers are extremely waterlogged and difficult to penetrate. At other sites (Naumovo, Serteya II and probably, Dyazditzza) such layers exist.

During the subsequent transgression III, which was both strong and sudden, the constructions belonging to layer A were destroyed and often redeposited.

The pile dwellings of the transitional layer and of layer A are regarded as belonging to the North-Bielorussian Culture, which was a variety of the Corded Ware cultures.

A different situation was typical of the Dobukrai site, situated at Lake Sennitsa, one of the lakes from which the Lovat' river takes its sources. The site was discovered by an amateur archaeologist, I.A. Voshchillo, in 1975. This site, as well as other sites by the same lake have been investigated since 1976 (Miklyayev 1982). The exploration of the off-shore area of the lake by means of underwater archaeology proved the existence of all types of pottery typical of the Zapadnaya Dvina sites, as well as of numerous piles. The excavations of a peat-bog on the littoral indicated that only the marginal zone of settlement was represented there. In several test-pits a reversed stratigraphy was established: Usvyatian pottery being deposited above the North-Bielorussian one. The existing evidence suggests the conclusion that Dobukrai I was a pile-dwelling, the history of which was similar to that of other Dvinian lacustrine sites. For unknown reasons, it was demolished considerably and redeposited during the course of a late transgression. During the redeposition a 'reversed' stratigraphy emerged on the periphery of the site. The greater part of the dwelling-site remained intact; it is now submerged under Lake Sennitsa and may be studied only by the methods of underwater archaeology.

Settlement and subsistence patterns. The spatial analysis of lacustrine pile dwellings in the study area reveals a clear-cut subsistence pattern. It follows from an evaluation of the landscape of the catchment area, limited for foraging societies to a two-hour walking distance from the central hunting lodge, ca. 10 kms (Zvelebil 1983, 74). In all cases the catchment area of our sites includes three distinct landscape types: 1) lake plus low-lying terraces and off-shore mires; 2) end-morainic formations with predominantly clayey

soils; 3) glaciofluvial plains with podzolic sandy soils (Fig. 6).

As follows from the pollen-analytical data (Dolukhanov et al. 1984), the existence of the pile-dwellings coincided with the maximal extension of broad-leaved species, which were, probably, mainly restricted to the end-morainic uplands. Pine forests occupied the sandy glaciofluvial plains.

The layers of the pile-dwellings contained the remains of 40 species of animals and birds (Vereshchagin et al. 1979). They included large mammals: elk, brown bear and wild pig, the hunting of which provided the bulk of the meat diet. Among the fur animals one may note marten; otter and squirrel. Judging from the age groups, elk was hunted throughout the year.

The number of fish bones indicates the considerable economic significance of fishing; pike, perch and pike-perch were the most common. Food gathering (particularly of hazel-nut and water chestnut) was of considerable significance as well. M. Guman has identified at least 30



Fig. 6. Naumovo. Site catchment.
Legend: 1 – end-morainic upland;
2 – glaciofluvial plain.

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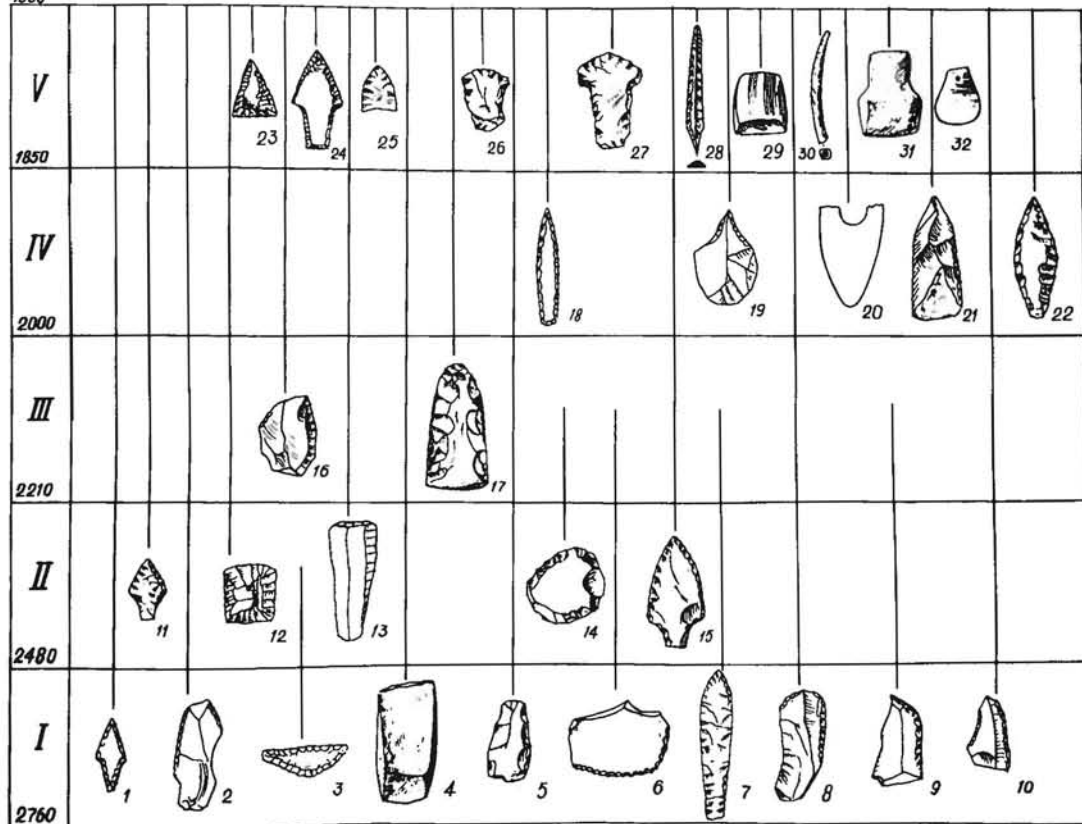


Fig. 7. Evolution of the lithic industry.

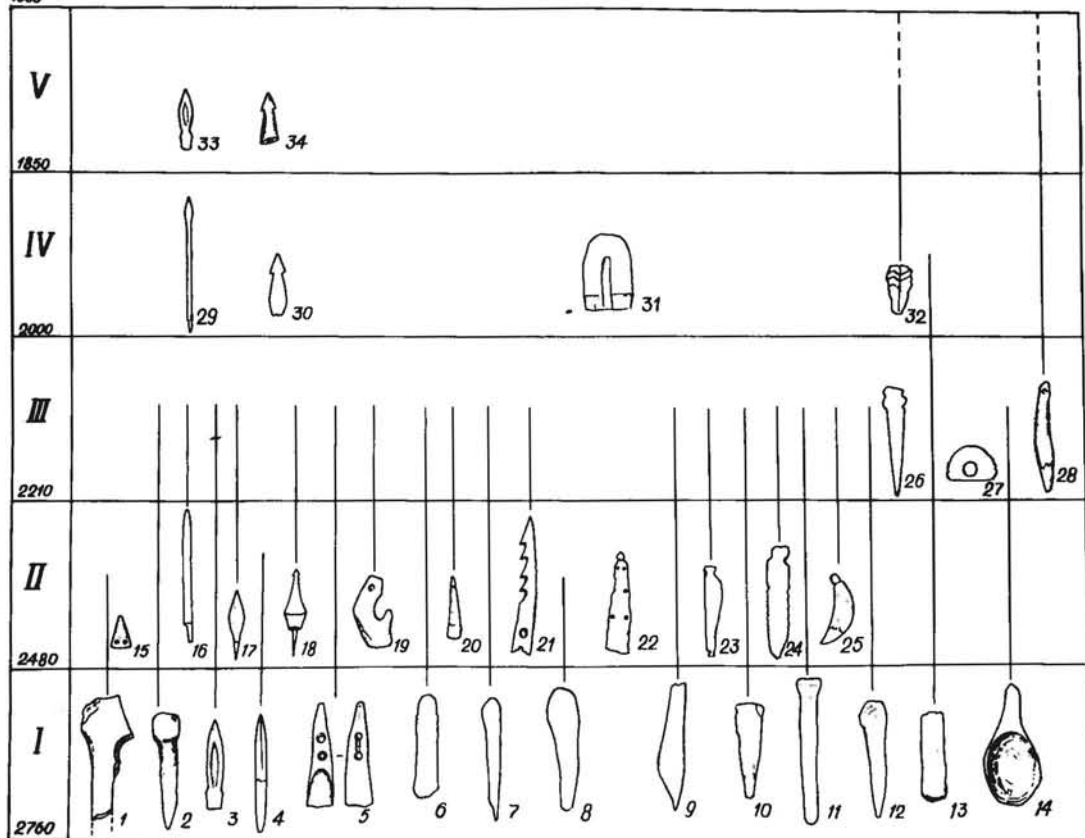


Fig. 8. Evolution of bone-and-antler industry.

species of edible plants in the cultural layers (Dolukhanov et al. 1984). The bones of domesticated animals (sheep, goat, pig and cattle) are reported in the layers of the North-Bielorussian Culture. Their total number never exceeded 14%. No traces of agriculture are detectable.

Material culture. The lithic industry comprises 32 types of implements (Fig. 7). 10 types existed at the initial stage. 26 types were in use at the final one but only 6 of these were known during all of the stages.

The bone and antler industry includes a total of 150 implements (Fig. 8). 14 types existed at the initial stage. 11 new types emerged at the 2nd stage. They did not survive the 3rd stage, when 3 new types came into being. Only one of these reached the final (5th) stage. Three new types evolved at the 4th stage. Only one of these reached the 5th stage, when two new types appeared. Hence one may conclude, that the rise of the bone and antler industry occurred at the 2nd stage. Its sharp decrease coincided with

the transition from the 3rd to the 4th stage. In other words, the bone and antler industry was more typical of the Usvyaty Culture (1st-3rd stages), while the developed lithic industry was more characteristic of the North-Bielorussian Culture (4th-5th stages).

Pottery. A total of approximately 50,000 potsherds were analysed (Fig. 9). The following attributes were taken into account: the tempering of the ceramic paste, (viz., sand, crushed shells, organic matter, crushed pottery - chamotte), the elements of ornament (pits, strokes, tilted dots, comb impressions, incised lines) and the ornamental patterns. The character of lamination and of junctions, as well as the shape of the vessels were also considered.

Four types of shape could be distinguished at the 1st stage; of which two types are reported at all the stages, whereas two others disappeared in the course of the 3rd stage. Two new types emerged at the 4th stage, and one at the 5th. 17 main ornamental patterns were distinguished at

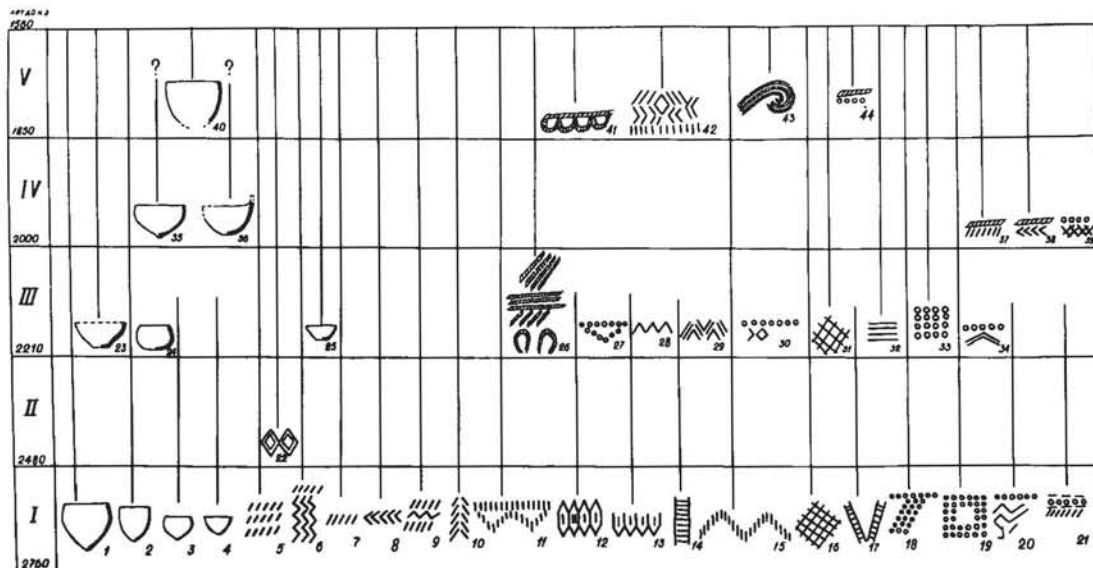


Fig. 9. Evolution of the pottery assemblage.

the initial stage, 12 patterns remained unchanged throughout the existence of the pile-dwellings. One new pattern appeared at the 2nd stage, and remained in use later on. Nine new patterns appeared at the 3rd stage and only three of them were of long duration.

The number of elements of ornamentation was the greatest (27) at the 3rd stage. It became less so (19) at the 4th stage, and increased (reaching 22) at the 5th stage.

During the 1st stage the tempering of the ceramic paste consisted of crushed shells and organic matter. The 'fish-plate' joint bands were consequently processed by a 'spatula-and-anvil' technique. The technology remained basically the same at the 2nd stage. Organic matter was used more often as tempering. Organic tempering became a dominant feature at the 3rd stage. In certain cases the surface of the vessels was smoothed. Sand tempering was first used at the 4th stage. The band junctions were partly superimposed. Sand tempering prevailed at the 4th stage. The superimposed bands were subsequently smoothed.

Calculation of the similarity indices (Dolukhanov and Miklyayev 1977) has shown that the lowest values of these for all the categories of the material culture coincided with the transition from the 3rd to the 4th stages, i.e. with the transition from the Usvyaty to the North-Bielorussian cultures. The most abrupt changes at this level were observed in the ceramic tempering

and in the bone/antler industry, while the curves of the ornamentation elements and of the lithic industry were smooth.

The ornamental patterns of the entire pottery corpus were later processed by means of the multivariate analysis technique (Dolukhanov and Fonyakov 1984). The total of 108 ornamental patterns, including 16 groups and 32 subgroups were processed. The projection onto the space of the main components has produced two clearly distinguishable clusters, corresponding to the Usvyaty and the North-Bielorussian cultures respectively, as well as an intermediate group.

Based on the aforesaid analyses the conclusion was reached that the transition from the Usvyaty to the North-Bielorussian cultures was a gradual one. One may see it as an appearance of a new cultural tradition which was rapidly absorbed by an old one, the latter being the most stable.

Survey work. The prospecting of the lake-dwellings should be centered in the areas most suitable for this kind of dwelling-sites. As follows from the above-mentioned location pattern of these sites, they were mainly restricted to the off-shore areas of the eutrophic lakes, the marginal zones, of the end-morainic uplands bordering on the glaciofluvial plains. The selected areas should be thoroughly investigated by means of intensive borings (various types of light piston samples may be used for this purpose),

supplemented, where possible, by test-pits. It should be remembered that the cultural layers are often situated below the present lake levels and therefore are exceedingly waterlogged. Closely-set boreholes have enabled us in several cases (e.g. Dyadzitsa) to locate the site and to determine its limits without recourse to large-scale excavations.

Where the dwelling sites are partly or totally submerged under present-day lakes (Serteya, Dubokrai) the technique of under water archaeology should be used. In our case, the location of the recovered material presented the greatest problem. We establish a grid network on the surface of the lake, which was a continuation of one on solid ground. The vertices of the theodolite-measured grids were marked by cork-floats.

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ABBREVIATIONS

- АСГЭ = Археологический сборник Государственного Эрмитажа
 МИА = Материалы и исследования по археологии СССР