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Some Results of New Investigations at the Kapova Cave in the Southern Urals

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INTRODUCTION

In 1982 investigations were resumed at the Kapova Cave in the Urals, which was already widely known for its rock paintings dating from the Upper Palaeolithic period. It is, to date, the only authentic site of its kind in Eastern Europe.

The cave is situated on the western slopes of the southern Urals in the valley of the Belaya River 200 km south of the city of Ufa (fig. 1). It is a cave of a karst type that evolved in limestones of the Devonian and Carboniferous periods. The enormous entrance to the cave facing south-east is in the narrow gorge of the canyon of a U-shaped valley at a distance of 150 m from the Belaya River at a height of 7-8 m above its low-water level (pl. 31). The total length of the cave's passages investigated is 2 km (fig. 2).

Before our expedition the Kapova Cave had been the subject of research by A. V. Ryumin (1961), who discovered the rock paintings in the cave in 1959, and O. N. Bader (1961; 1962; 1963a; 1963b; 1965a; 1965b; 1981; 1986).

From the archaeological point of view the work of O. N. Bader merits particular attention. After analysing over 30 coloured depictions in the cave dating from the

Palaeolithic period (realistic representations of mammoths, horses and other animals, and also stylized depictions of a geometrical character), Bader came to the conclusion that all these depictions had been made using similar red ochre paint. The depictions of animals were in profile and full of movement. The figures of the animals were drawn in silhouette with thickly coloured contours, or in silhouette without clearly marked contours, or in rough outlines. They were drawn to a variety of scales and for the most part did not form compositions. Each of the figures had been drawn on to the rock face separately 'with no visible link to others and not at the same time as the others, over a relatively short period of time'. The geometrical signs also date to the Palaeolithic and were executed at the same time as the animals. Bader compared the Kapova cave art with the monochrome paintings in the Palaeolithic caves in France and gave a rough dating to the Early Magdalenian period. At the same time he noted specific features of the content, style and technique used in the rock art of the Kapova Cave (Bader 1965a).

The task our expedition faced was that of carrying further these investigations. It was essential to examine not only the paintings, which undoubtedly were of profound scientific significance, but also to carry out systematic reconnaissance and excavation inside the cave so as to find a cultural context, without which it

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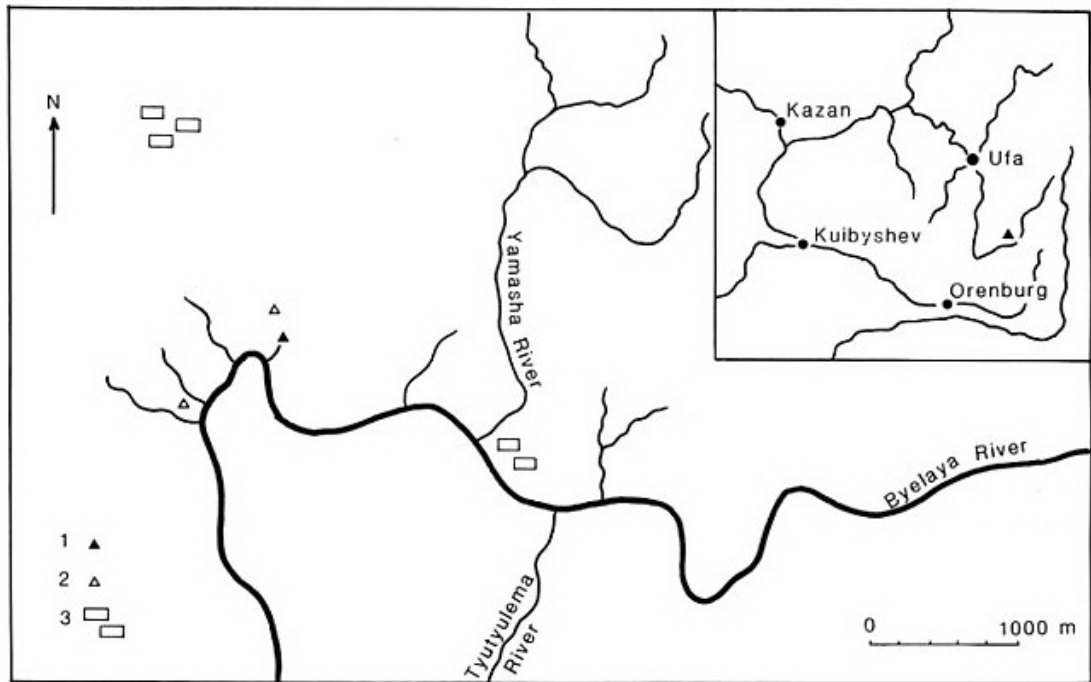


Fig. 1

Location of the Kapova Cave. 1, Kapova Cave; 2, other caves; 3, centres of population

would not be possible to date the rock art. Since we had no access to copies and photographs or of any recorded measurements, all the documentation of the depictions had to be carried out again.

GEOMORPHOLOGY

Attempts had been made to compile a plan of the cave a long time ago. Particularly useful in this connection was the work of the speleological expedition from the University of Bashkiria, led by Y. D. Bogdanovich and I. K. Kudrashov (1966), which was the first that succeeded in plotting a series of vertical sections and compiling a plan of a considerable part of the cave. We carried this surveying work further and prepared a more detailed plan of the cave and its immediate surroundings (Lyakhnitsky and Shchelinsky 1987). Yet the detailed plan of the cave is not yet complete. The work is complicated by the enormous size of the cave.

It is useful to include in the plan not just the shape of the cavities and floors of the cave, but also the earlier

geomorphological levels. Identifying the latter is essential to achieve precise linking of the stages of the cave's formation with the formation of the river terraces on which the cave is situated. Unfortunately there is still no reliable information on the geomorphology of the cave and the river terraces (Gvozdetsky 1986). As a result of this the age of the cave has still not been established, although attempts have been made to resolve this question. The first archaeologist to make public his opinions on the age of the Kapova Cave was G. V. Vakhrushev (1936; 1960). In his opinion it dates from the Upper Pleistocene. Moreover the formation of its first level, complete with rock art, took place at the same time as the accumulation of the first fluvial terrace above the flood-plain of the River Belaya. The drainage of the first level, making it accessible to man, took place at the time of the last lowering of the base level of the local rivers, some time between the 12th and 3rd millennia BC (Vakhrushev 1960). Another point of view was advocated by V. L. Yakhimovich, after she had made surveys of the area around the cave and used the results of the

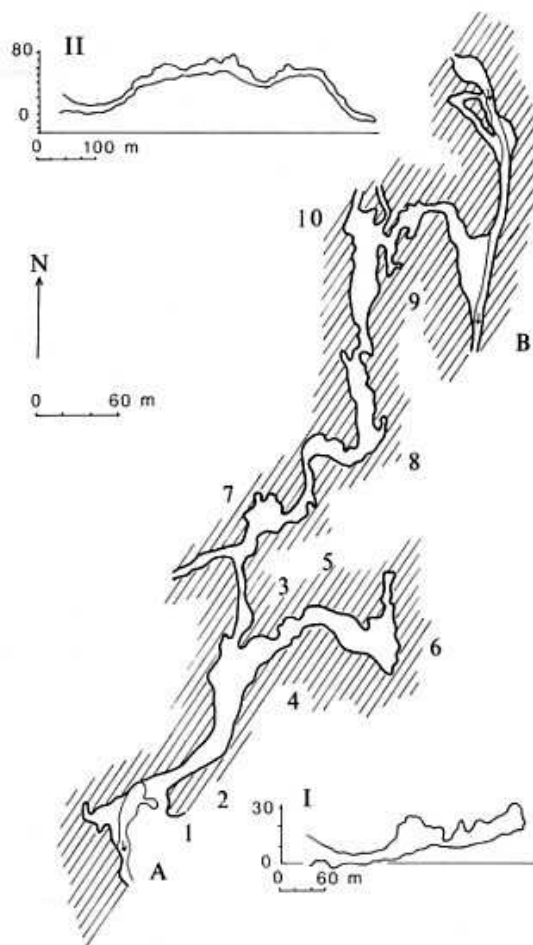


Fig. 2

Plan and profiles of the Kapova Cave. A, B, Shulgan River; 1, entrance to the cave; 2, Main Gallery; 3, Foyer; 4, Domed Hall; 5, Hall of Signs; 6, Hall of Chaos; 7, Hall of Paintings; 8, Diamond Hall; 9, Rainbow Hall; 10, Crystal Hall. I is a longitudinal profile of the first level and II is a longitudinal profile of the second level of the cave

theodolite survey conducted by the University of Bashkiria expedition in her research. With regard to changes in the level of the River Belaya during the Pleistocene period, these, according to Yakhimovich, could only be seen in the shape of a small ledge in the front part of the cave which is at a lower altitude than the floor of the first level of the cave (Bader, 1965b). Yakhimovich's

conclusions seem to be the most likely. The probability that many cavities in the cave are very ancient complicates the task of geological dating of the archaeological complex within the cave, since it is clearly far younger than the cave itself. Therefore other dating techniques are required, associated with archaeological excavation and more detailed study of the rock art.

THE PAINTINGS

More refined data have made it possible to establish more than fifty different kinds of painted art in the cave.

Animals

Animals whose bones have been excavated, include mammoths (figs 4 and 5), horses (figs 4 and 7; pl. 33a), a rhinoceros (fig. 4) and a bison (fig. 5). The paintings are in four separate galleries at distances of between 170 and 300 m from their entrances and on both of the accessible levels of the cave. On the first level they are located in three galleries (the 'Domed Hall', the 'Hall of Signs' and the 'Hall of Chaos') and on the second level in the 'Hall of Paintings' (figs 2, 3 and 6). It is worth noting that it is only possible to reach the second level from the first level by way of a vertical karst passage 1.4 m high, which it is impossible to climb through without a ladder. This suggests that there could have been another, more accessible, passage not connecting to the first level of the cave.

The depictions in both levels, despite the fact that they are at a significant distance from each other, have a number of features in common. Most are fairly low down and were apparently made by people standing on the floor of the cave or on large blocks of limestone next to the wall. Only three or four depictions are comparatively high above the floor and there is no doubt that platforms were used. Depictions are found on both relatively vertical walls and also on steeply sloping walls overhanging the floor of the cave. Some of them are on the roofs of small niches in the lower parts of the walls of the cave.

The largest depiction is 1.06 m long, while the smallest is only 6 cm. This smallest depiction is a symbolic sign. The smallest depiction of an animal is 58 cm long.

The depictions on both levels of the cave are in general in a bad state of preservation. Bright colour is only found in isolated depictions, mainly in those which have been covered by a layer of calcite and which have

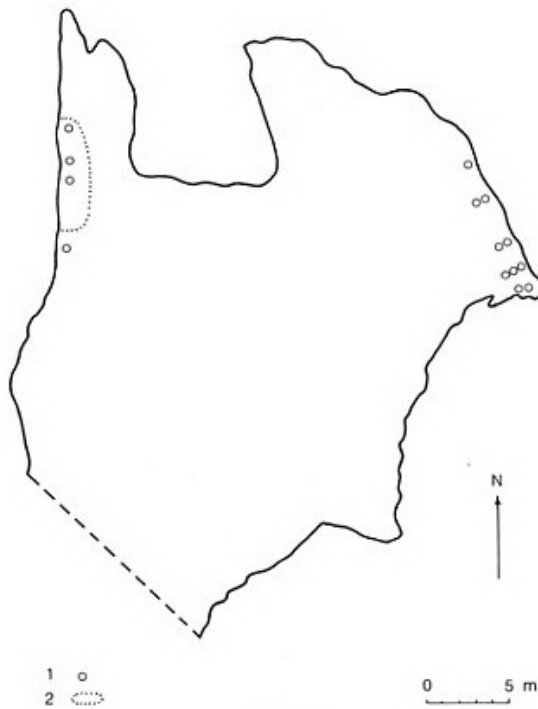


Fig. 3

Distribution of paintings in the Hall of Paintings (2nd level of the cave). 1, depictions on the overhanging walls; 2, location of previous excavations

only recently (ten years ago) been cleared of these deposits. The colour in the majority of the paintings is far less bright, and there are some which hardly stand out against the grey background of the cave wall.

All the rock art in the Kapova Cave has been executed in ochre painted on to walls and roofs consisting of very hard and fissured limestone. Perhaps it is for this reason that there are no low reliefs or engravings. What is interesting is that the wall surfaces have clearly undergone a certain amount of preparation before colour was applied. This preparation consisted in the chipping or filing off, using a rough abrasive, of limestone protuberances and calcite deposits, which clearly prevented the artist from drawing a particular line. Admittedly this technical feature was not widespread and is only found in four of the drawings; moreover the depictions concerned are all within one and the same group, namely the eastern group in the 'Hall of Paintings' on the second level.

The ochre used in the rock art is of two, or perhaps three, different types. For the majority of the depictions a red ochre was used. Yet some of the depictions have been executed in a darker, violet-brown ochre. It is important to note that there are some depictions that have been executed in two different colours, red ochre and a black pigment. The main elements are lines of varying breadths. Some have been finger-traced very carefully, presumably on walls which were then dry. In such cases the paints would not have spread quickly (there were no large drips of paint), but would have seeped more easily into the fissures of the limestone. Today, the walls of the cave are damp (although not all the year round) and in a number of places water is pouring over the depictions. It is clear that in conditions such as these it would have been impossible to execute coloured paintings.

Coloured depictions of animals in the Kapova Cave are on the whole realistic. In particular the mammoths, the most popular animals in Kapova rock art, are easily recognizable; horses have been executed with an expressive power; and paintings of a rhinoceros and a bison can also be made out. The execution of these depictions is at times somewhat primitive or schematic, but nevertheless the animals are animated.

Techniques vary. Distinctions should be drawn between outline representations, outline-profile depictions and true profile depictions. Another type of depiction can also be singled out, that could be defined as 'outline drawing with vertical in-filling'. This latter type of depiction comes into its own most vividly of all in the large figure of a rhinoceros in a group of depictions on the eastern wall of the 'Hall of Paintings' in the second level of the cave. It is difficult to give an unequivocal answer to the question as to whether these various techniques are chronologically significant. It is possible that they reflect a sequence, but it is more likely that they co-existed. Other stylistic features of the representation of animals in Kapova rock art should also be borne in mind. They manifest themselves in the highly schematic portrayal of the legs of the mammoths and rhinoceros (Bader 1965a). Stylistic features are also to be observed in the portrayal of horses, especially their small, narrow and dolphin-like faces; the unnaturally small heads are in stark contrast to the luxuriant manes of these animals. It is difficult to disregard the idea that we are confronted here not only by the specific features of horses of a particular breed, but also by some degree of deliberate distortion of certain characteristics of these animals.

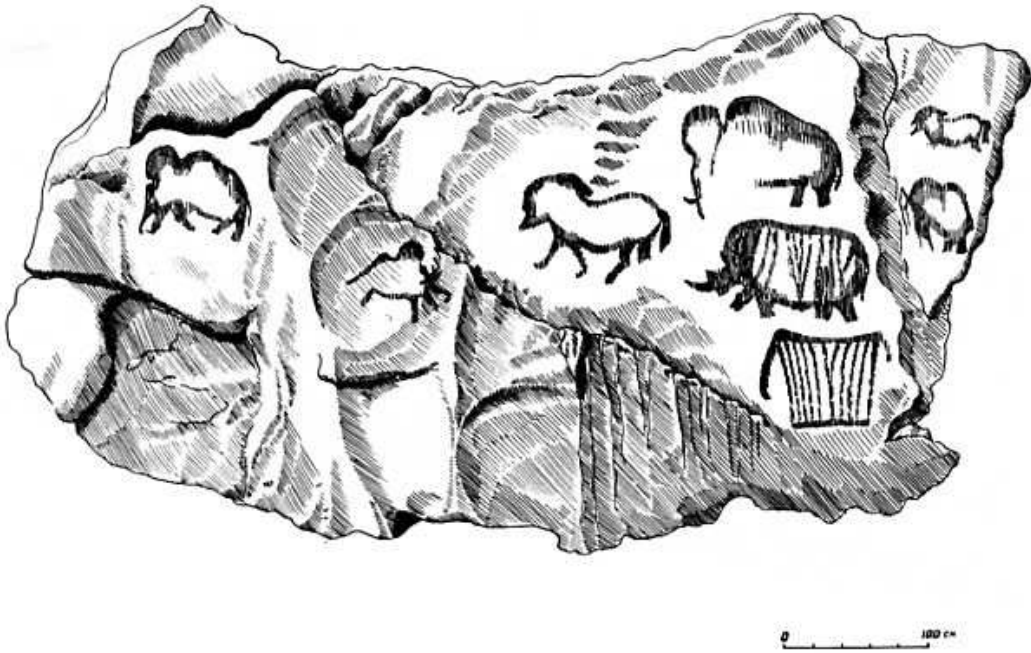


Fig. 4

Eastern group of the rock paintings, executed in red ochre in the Hall of Paintings in the second level of the Kapova Cave. From left to right: 1st mammoth, 2nd mammoth facing right, 1st horse; three figures positioned vertically (from above), 3rd mammoth, rhinoceros, and sign in the form of a truncated cone with loops at the top corners and vertical infilling; two figures, also positioned vertically (from above), 2nd horse and 4th mammoth

Signs

An important and quantitatively predominant component of Kapova rock art is that consisting of the signs which have no close parallels in the geometric signs found in the Palaeolithic rock art of Western Europe. The technique used in executing these signs does not differ from that used to portray the animals, but it is amongst the signs that there are paintings that are executed in a different ochre. So far it is possible to pick out four specific types of symbolic signs represented in Kapova rock art: trapezoids containing lines and a triangle; a truncated cone with loops at the top corners and various lines ruled across it (fig. 4; pl. 33b); a square with loops and a vertical line across the middle; and a triangle with another triangle inside it. The number of signs of the above-mentioned types varies.

The most typical of the signs are those in the shape of a truncated cone with loops and lines drawn across

them. Signs of the other types are found as isolated examples.

It is now thought that the signs and animals are contemporary. At the same time it is quite clear that the symbolic signs are in the main located apart from the drawings, mainly in the three galleries in the first level, while in the second level only one has been found and that the largest.

Distribution

The study of chronological links between specific depictions, whether of the realistic or symbolic sort, and that of their possibly related meanings, demands investigation of their distribution. It is now clear that the depictions are distributed differentially in different parts of the cave. First, there are large groups of depictions with four or more drawings in each; then there are small groups with two or three depictions; and

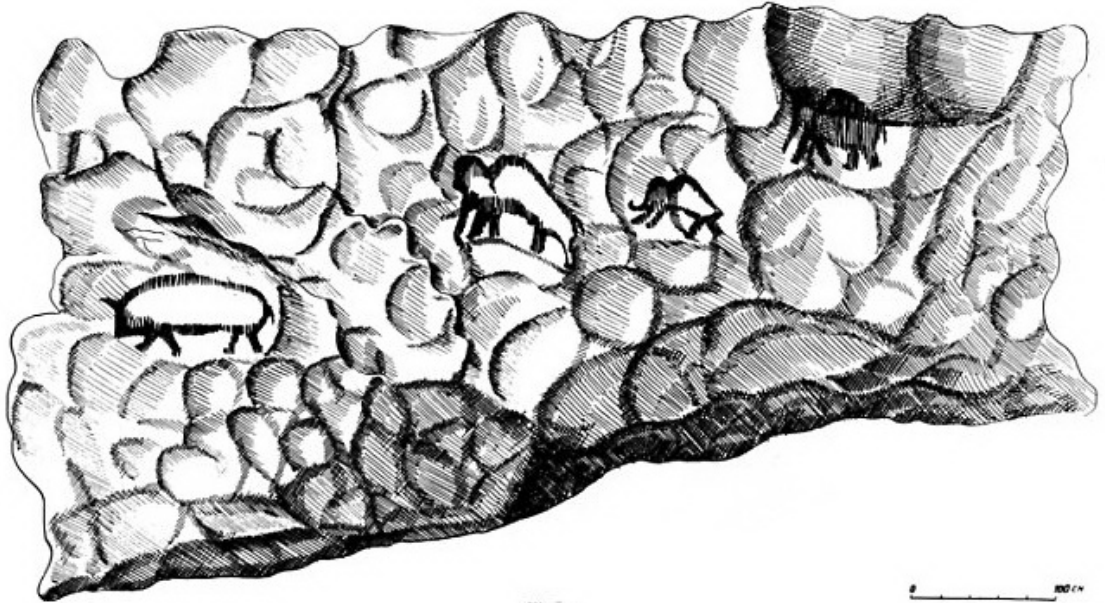


Fig. 5

Western group of rock paintings executed in red ochre in the Hall of Paintings in the second level of the Kapova Cave. From left to right: bison and 1st mammoth; 2nd mammoth, calf; 3rd mammoth

finally, isolated depictions. In the second level of the cave, where the depictions are, in our view, older, they are distributed in two large groups (figs 4 and 5). In the first level most depictions are either clustered in small groups or singly. So far there are no unequivocal data testifying to the fact that the depictions (whether realistic or symbolic) in the distinct groups date from different periods.

EXCAVATION

What is the chronological framework of the Kapova rock art? On the basis of parallels with Upper Palaeolithic Franco-Cantabrian cave art and despite the distinctive regional characteristics of technique and style the Kapova art is clearly of Palaeolithic date.

Excavation in one of the galleries containing depictions in the first level of the cave, revealed a well-preserved cultural stratum of the Upper Palaeolithic, deposited in clear stratigraphic conditions.

Geology, biota and dating

The cultural stratum was found in the 'Hall of Signs' 210 m from the cave entrance (fig. 6). It is to be found *in*

situ in a layer of loose deposits 0.5 m from the surface. The maximum thickness of the stratum is 15–20 cm, but more frequently it is between 5 and 10 cm. It lies beneath a cover of heavy loam. In the lower part of the section the loam is layered and higher up it is covered by a thin water-laid loam. The total thickness of the disclosed section including the cultural stratum is approximately 3.5 m.

The fact that most of these deposits date from the Pleistocene period may be taken as proved. Palaeomagnetic sampling of the deposits has made it possible to distinguish two oscillations in the geo-magnetic field. Both oscillations are to be found beneath the cultural stratum. There are grounds for assuming that one of them, near the bottom of the section is likely to date to 40,000–42,000 years ago, while the other (in the middle of the section) appears to be of 24,000–26,000 years ago. The cultural stratum is deposited above this latter oscillation. It is clearly identifiable in the section and consists of partly grey and partly dark grey loam and in places it is reddish on account of the ochre scattered through it, and the whole of it is saturated with charcoal. In the loam there is a large amount of gravel and small splinters of calcite; sharp pieces of

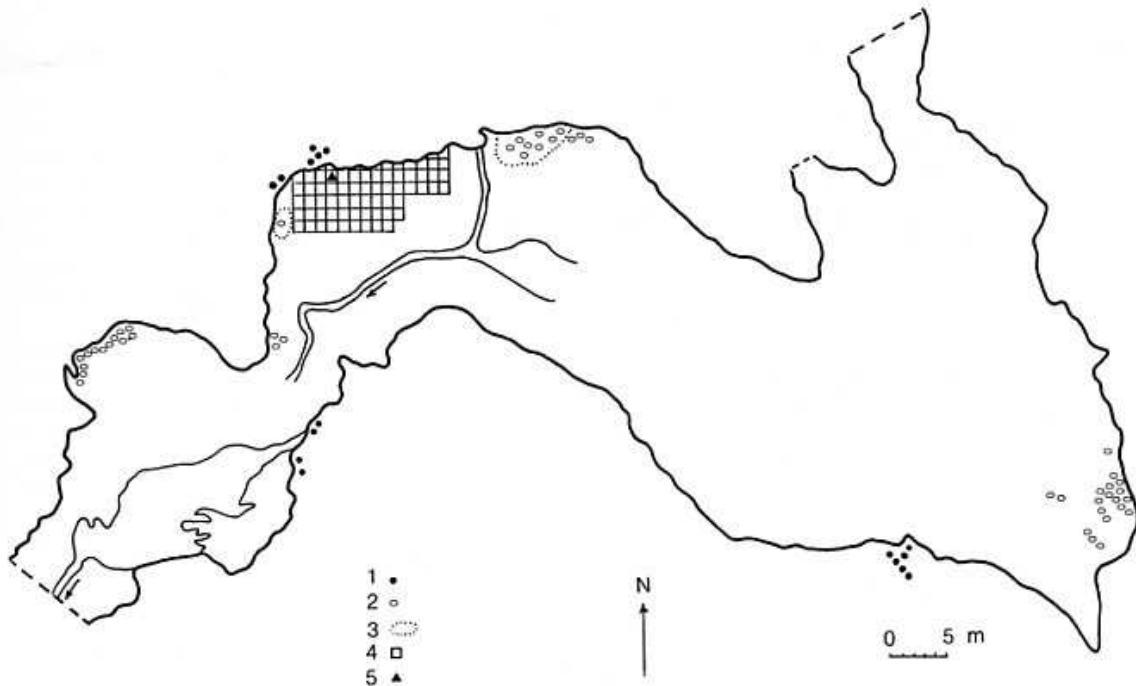


Fig. 6

Distribution of the paintings in the Domed Hall, the Hall of Signs and the Hall of Chaos (first level of the cave). 1, depictions on the vertical walls; 2, depictions on the overhanging walls and ceilings; 3, locations of previous excavations; 4, location of 1982-86 excavations; 5, position of stone bearing a coloured depiction found in the cultural stratum

crushed stone and lumps of limestone are also to be found.

Tree pollen (50-60%) was predominant in the cultural stratum. Grass pollen accounted for no more than 40% and spores for no more than 20%. Among the tree pollen the most common was pine (up to 30%). The proportion of fir or birch pollen was far smaller. Only isolated grains of broad-leaved trees such as oak or elm were encountered. Among the grasses pollen of periglacial plants was found alongside pollen of xerophytes and isolated examples of mesophilous herbs. This particular range seems to include representatives of tundra, forest and steppe groupings and in many respects was similar to the range of vegetation that existed in the Russian plains during the deglaciation of the last Ice Age.

Among the most important osteological finds were a piece of a tusk (*Mammuthus primigenius*) and animal bones (*Ursus spelaeus*, *Lepus* sp., *Vulpes vulpes* L.,

Alopex lagopus L., *Dicrostonyx torquatus* Pal., *Marmota bobac* Mul. and other species). The presence of *Dicrostonyx torquatus* Pal. and *Alopex lagopus* L. was particularly interesting, as indicating periglacial conditions at the time when the cultural stratum formed. The faunal remains in the cultural stratum fit in with the palynological data. In the environs of the cave there were expanses of steppe with, in the valley of the river, thickets of bushes and forests. The predominance of animals associated with steppe and semi-desert bears witness to dry, continental climate. It is important to note that the animal bones in the cultural stratum were broken and charred, including many of the rodent bones, which testifies to the fact that men were using these small animals for food.

There are two radio-carbon dates from charcoal for the cultural stratum, 14,680±150 (LE-3443) and 13,930±300 (GIN-4853).

Archaeology

The cultural stratum has been investigated over an area of approximately 50 m². No traces of structures were found, but there were the remains of large fires. One of these with a diameter of nearly one metre coincided with a natural depression in the ancient surface of the floor. Other places where fires had been made were smaller. Artefacts from the cultural layer constitute an informative collection of 201 objects. They are of non-local flint and jasper, and local limestone and sandstone. There were no cores. The largest proportion of the artefacts were small and medium-sized blades, and some occasional large ones. Among the tools found were points, scrapers, plano-convex tools, blades with blunted edges and certain other artefacts that had been reworked, which were isolated examples (figs 7 and 8). Two bone tools were also found, a large tool of a scraper type made from a tubular bone of a cave bear and a crudely worked awl.

In this range of archaeological finds there were also some that were unexpected for an Upper Palaeolithic site. In particular there were four unique small beads (less than 1 cm long) made from attractive green serpentine, a comparatively soft and easily worked stone, similar to steatite. Three of them were of the same type, cylindrical and fashioned with a fine two-sided boring-tool. One bead was very small, flat and made from brown serpentine; the hole inside it had also been bored (pl. 34a).

Another unusual find was that of fragments of a clay cup. The artefact had suffered as a result of the erosion of the cultural stratum. Only the lower part of the artefact had been preserved, which means that it was not possible to reconstruct its shape completely. The part of the artefact that has been preserved is round with a convex base, 6 cm in diameter and about 2 cm high. The sides are thin, 6 mm (pl. 34b). Judging by the tri-colour nature of the fragments, the cup must have been slightly fired on both sides. The cup was found standing upright (in a working position). It might have been an oil lamp, and its size and shape allow for such an interpretation, despite the fact that it had no handle (one of the distinctive characteristics of such lamps in the French palaeolithic caves; Beaune *et al.* 1986). It is however possible that this part of the artefact had been lost. In addition, this artefact, unlike all other known lamps, is made not from stone but from clay, which is bound to have had an effect on its shape and construction. At the same time the possibility should not be ruled out that it could have been used for mixing pigments.

Pointers to this are the traces of pigment at the bottom of the cup.

The artefact is similar to a stone cup preserved intact and more obviously a cup used for pigments, being larger and deeper. This, however, was found on the surface among stones in a neighbouring gallery (where rock art was also found), not far from the excavations. Its shape in cross-section is approximately oval and it has a convex base. The cup is 9.1 cm long, 6.9 cm wide and 3.7 cm high (pl. 34c). It was made of the same greenish serpentine as the beads, suggesting that it also derived from the cultural stratum.

Another find in the cultural stratum is extremely important, namely a block of limestone that in ancient times had fallen from the wall and on which has been preserved a fragment of a small (approximately 1.5 cm long) painted depiction (of a mammoth?) similar to some of the paintings found on the wall of the cave (fig. 6).

Finally, in the cultural stratum mineral colours were found, not only as a colouring of the stratum itself, but also as lumps of ochre, some of which were fairly large (up to 2 cm across). These were of the same shade of red and mauve-brown as the painting on the cave walls.

CONCLUSIONS

The combined evidence of archaeology, radio-carbon dates and other scientific analyses suggests that the cultural stratum of the Kapova Cave as well as the rock art (at least that in the first level of the cave) belong to the final stage of the Valdai Glaciation (perhaps the Dryas Glaciation) and thus to the late stage of the Upper Palaeolithic period in Eastern Europe. It is still difficult to be certain as to the exact period from which the cultural stratum derives. The range of archaeology is unusual, without close parallels in the Urals. The question as to the exact period to which the cultural stratum belongs is still unclear, and the answer probably lies in the nature of the use of the site. As for the details of the stone industry, it is typical of the Upper Palaeolithic in the Urals and near-by. In particular it is similar to the stone industry of the Galitsky settlement at Ostrovsky in the foothills of the Urals on the Chusovaya River, where East European regional traditions are represented (Rogachov and Ankovich 1984), although it is not fully within those traditions. In our view the Kapova stone industry is younger than that at Ostrovsky and possibly contains elements of a southern tradition of technology.

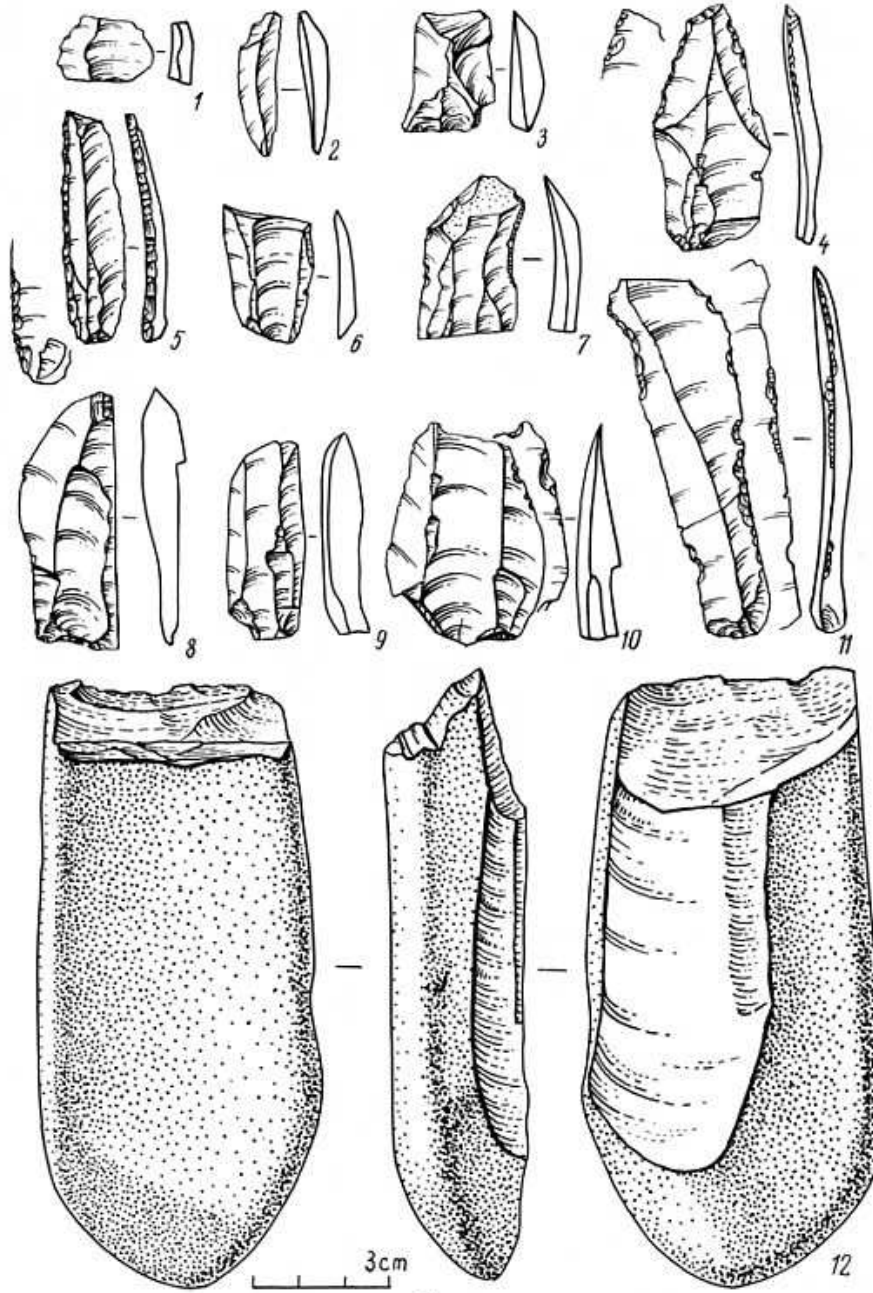


Fig. 7

Stone artefacts from the cultural stratum of the Kapova Cave

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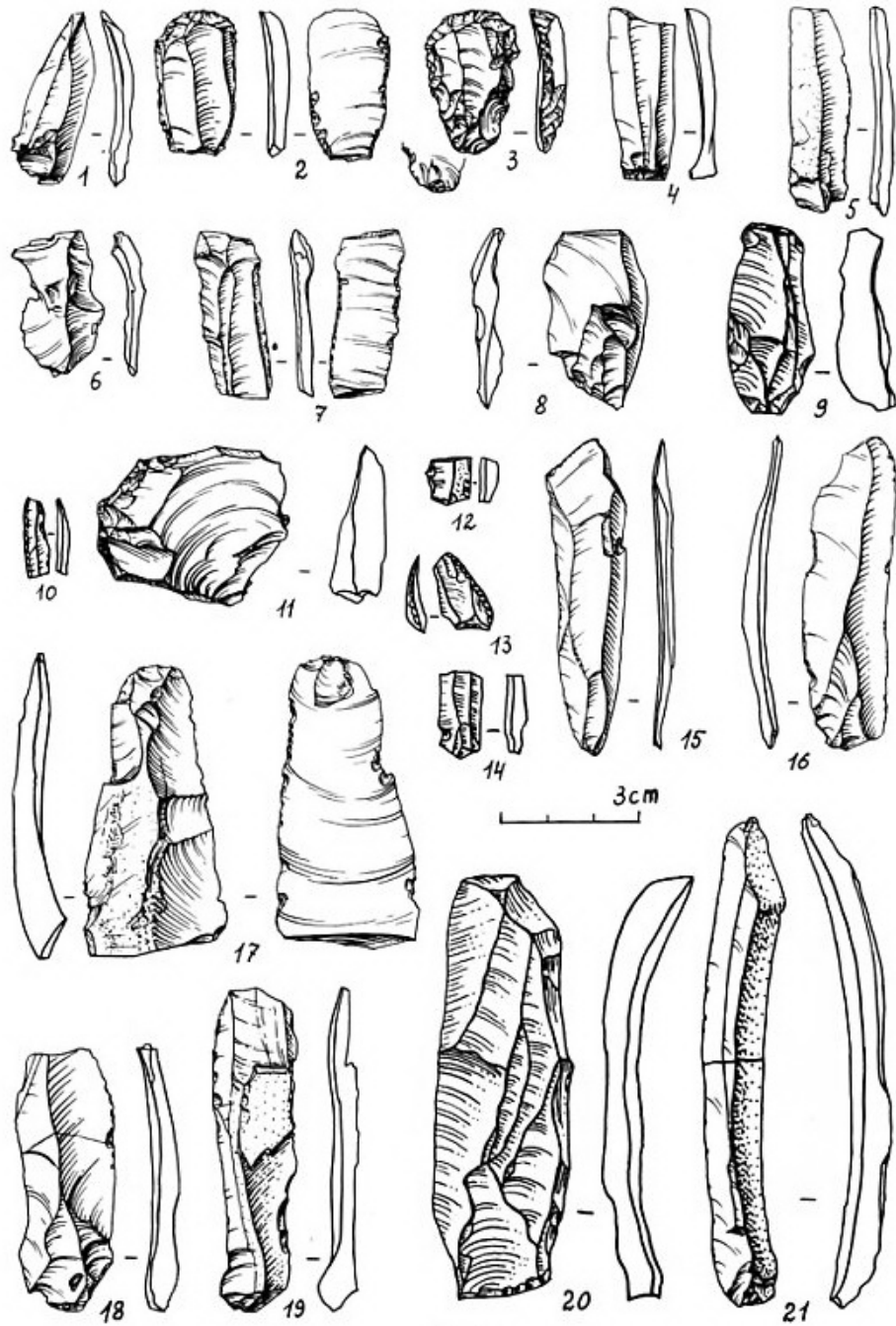


Fig. 8

Stone artefacts from the cultural stratum of the Kapova Cave

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This paper was translated from Russian by Kathy Judelson.



Entrance to the Kapova Cave

PLATE 32



(a) 2nd mammoth in the eastern group of paintings in the Kapova Cave



(b) 3rd mammoth in the eastern group of paintings in the Kapova Cave

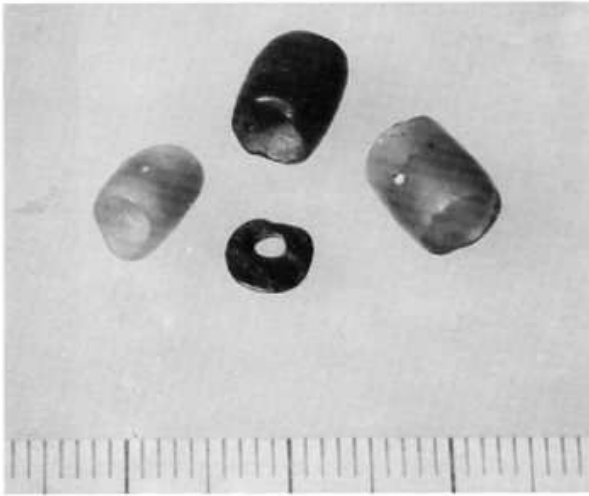
PLATE 33



(a) 1st horse in the eastern group of paintings in the Hall of Paintings in the second level of the Kapova Cave



(b) The group of rock paintings executed in red and brown ochre and black pigments on the southern wall in the Hall of Chaos in the first level of the Kapova Cave. From left to right: a symbolic sign in the form of a truncated cone with loops at the top corners and vertical in-filling; (from above), 1st horse, a sign in the form of a truncated cone with loops at the top corners and vertical in-filling, and 2nd horse (58 cm long)



(a) Stone beads made from greenish and brownish serpentine found in the cultural stratum (scale in cm and mm)



(b) a clay cup from the cultural stratum, still embedded in the loam, in which it was found



(c) a stone cup made from greenish serpentine, found on the floor of the cave