Monasheskaya

This summary is based on E.V. Belyaeva's book "The Mousterian World of the Gubs River Canyon" (1999) which in turn is based on her thesis (1995). Following the earlier work by Liubin and Autlev (1961-1964, 1975-1976), she has directed work at the cave since 1987.

The Gubs canyon is about 4-5 km long and 150-200 metres deep, cut into Jurassic limestone. This cave occupies an area of 390 square metres. The plan (Fig. 7) indicates the position of the excavations in the broad frontal part of the cave. There are two 'cave corridors' which lead back from it. The summary which follows concentrates on the stratigraphy, fauna, and flora, details of which are given in chapters 3 and 4 of Belyaeva's book. The Figures are all taken from the book.

Excavations and stratigraphy

Initial stage (1961-1964)

Cave discovered by P.U. Autlev in 1961. A test pit on the southern edge of the platform in front of the cave along its long axis (5.6 square metres) (Fig. 7: 7 vertical hatch). 3 layers distinguished.

(1) Humus, with mixed archaeological material (flints, Meotian and Mediaeval pottery). 25-30 cm.
(2) Loose sandy loam, also with mixed material and humus lenses. 70 cm.
(3) Compact loam with rubble, directly on bedrock. 50 cm.

In 1964 the cave was visited by a group of archaeologists and geologists. V.M. Muratov cleaned the north wall of the test pit, and described the following more complicated section up to 2 metres thick (Fig. 9).

(1) Humified brown sandy loam with gravel and sharp edged limestone rubble (30-40%). Average rubble size 0.3-0.5 cm. Clear boundary to layer beneath. Up to 70 cm.
(2) Pale greyish sandy loam filled with gravel and limestone rubble (15-20%). Average rubble size 2-5 cm. Up to 35 cm.
(2A) Same, but with browner matrix. 18-35 cm.
(3) Analogous to (2A) but matrix more sandy, pale brown. Contains sub-horizontal lenses of colluvial rubble, as well as stones with no particular orientation. In the top and mid part, many Holocene burrows (krotovinas) with matrix similar to layer 1. Clear contact. Up to 40 cm.
(4) Yellowish brown gravely and clayey sand with rubble (as in layer 3). Individual blocks up to 15 cm in size. Thin rock fall horizons in the upper and mid parts. Matrix up to 50-60%. Clear contact. 40-45 cm.
(5) Greyish-green limestone eluvium (slabs of rubble) with sandy clayey matrix (not more than 15%). 10-15 cm.

The archaeological material from here and from Gubs rockshelter was studied by Liubin, and on this basis he created the Gubs Mousterian culture.

First series of excavations (1975-1976)

31 square metres, most in 1976. N, E, and S of the initial test pit (Fig. 7: 8 diagonal hatch). Grid network set up. 2 new sections. Transverse D-E (= 6-20) north of Muratov's section (Fig. 11). Longitudinal B-D (= 3-6) western side down the slope (Fig. 12). Sequence in agreement with Muratov, but some additional observations.

The difference between layers 2 and 2A in terms of the colour of the matrix is due to the amount of cultural material included in the latter (ash lenses, small bits of charcoal, bone fragments, some decayed) which produces a darker colour, sometimes ash-lilac, and sometimes in the form of lenses.

Layer 3 had fewer archaeological finds, but (as in the layer above) there were many burrows (krotovinas).

Layer 4 was sharply differentiated from layer 3 by a rock fall horizon 10-15 cm thick.

The longitudinal section to the south showed little differentiation between the layers (Fig. 12 left hand side). Instead there is a transition to a practically homogeneous slope colluvium (dark brown loam with rubble). The large stones in the upper part of the deposits at this point indicate roof collapse.

In 1975 it became clear that a large part of the upper Pleistocene deposits had been destroyed by later inhabitants at the site. Within the cave, traces of a travertine floor can be observed on the walls at a height of 2-2.5 metres above the present ground surface. Within these remnants were found a few Upper Palaeolithic artefacts, some charcoal, bones, and shells of Helix. Liubin estimated that up to two thirds of the Pleistocene deposits formerly present in the cave may have been removed in this way.

In 1976 there was another surprise, when it became clear that the Mousterian occupation at the base on the east was blocked off by the steep slope of a rock channel (Figs. 7: 6 and 10: 4, the upper edge of this feature, which is referred to as a 'karstic chute', appears at about the height of layer 2).

Renewed excavations (1987-1988)

7 square metres excavated north of the previous trench (Fig. 7: 9 diagonal hatch). Two new transverse sections. Fig. 13 C-T (= 7-35) and Fig. 14 (= 9-23). One longitudinal section on the west side. Fig. 15 D-F (= 7-9). The area actually occupied by the layers was curtailed by the edge of the channel (shown in the block diagram at Fig. 10). The diagram also shows the tendency of the layers to slope down, both E-W (away from the edge of the channel) and N-S (towards the outside of the cave). The succession of layers was in essence the same as before, but some distinctions were made (shown clearly by the numbering of the layers in the four Figures referred to).

Layer 2 could not be reliably subdivided, therefore 2A is not indicated. But layer 3 was divided into two. (3A) the main part of the layer as such. (3B) a sterile rock fall horizon. No change in layer 4. Layer 5 absent. In this part, layer 2 was much destroyed by Holocene pits and krotovinas, as well as a Mediaeval child's grave (Fig. 15: 2). Nonetheless, this layer produced an abundance of archaeological and

faunal material, as well as human remains (Belyaeva, Levkovskaya, Kharitonov, RA, 1992: 3). They are poorly preserved but include 2 phalanges, fragments of vertebrae, ribs, and a mandible?, as well as 2 complete and 11 fragmentary teeth. They have been classified as Neanderthal.

Renewed excavations (1990-1991)

6 square metres excavated west of the long axis dividing the cave (Fig. 7: 10 cross hatch). Transverse section G-D (= 97-69) (Fig. 16 north face). Longitudinal section U-G (= 96-97) (Fig. 17 west face). The position of the two sections is also shown in the block diagram (Fig. 10). The layer succession is basically the same as before, but the longitudinal section U-G does show some idiosyncratic features. The centre of the excavated area was disturbed by a large Holocene pit, which is shown only on the cave plans (Figs. 20-30).

Layer 2 was hardly present in this area. Immediately underlying Holocene layer 1 in the western section, it is replaced by a series of deposits which do not have an analogy elsewhere (Fig. 17: X a-g). These deposits look as though they filled a depression of some sort, and their division into 4 units was suggested by the geologist N.E. Polyakova. Xa consists largely of broken blocks (85-90%) of different sizes. X**b** is a yellow-brown sandy loam (30-40% rubble) of variable thickness. XB is a loose light-coloured sandy loam, filled with rubble (up to 75%). Xg is rather like the underlying 3A-1, but darker. Polyakova's suggestion is that moist conditions, even the presence of stagnant water, might be indicated at this point.

Layer 3A is broadly analogous to the layer of the same name elsewhere, but again at Polyakova's suggestion it has been sub-divided into 6 separate units. 3A-1, 3, and 6 are more or less 'typical' for 3A in general, consisting of yellowish grey-green compact sandy loam, more or less packed with gravel and rubble. 3A-6 has lenses within it which may indicate anthropogenic or possibly soil formation processes. 3A-2 and 4 have more gravel and rubble (up to 70-80%) which makes them looser and gives them a whitish colour. 3A-5 equals what is here termed 3a, the main cultural horizon, dark in colour, with the maximum density of finds. Its maximum thickness is 20-25 cm. The finds include flint tools, with a high proportion of notches and denticulates, fragments of bone, including some which are burnt, and lenses with very small fragments of decomposed or burnt bone.

Layer 3b is sub-divided into a number of units, some with enormous blocks. Layer 4 is as before, the archaeological finds within it continuing right down to bedrock.

Summary

The stratigraphic position is summarised by Belyaeva, who makes the following points.

1. Layers 3 and 4 exist only within the bounds of the rock channel, defined as having a trough-like configuration, with steep sides and a slightly convex base. Layer 2 probably did originally extend beyond it.

2. Except for the upper part of the U-G section and in regard to horizon 3a, the overall stratigraphy does not differ substantially from that established by Muratov in 1964. In Belyaeva's excavations, layers 2A and 5 were not recognised, but 3 was divided into 3A and B. Basically, there are three Mousterian layers: 2, 3 (A and B), and 4. The total thickness of the deposits varies from 70 cm (inside) to 1.70 metres (outside). Layers 2 and 4 vary in thickness from 20 to 35 cm. 3A is 20-80 cm, 3B is 15-40/60 cm thick, the latter due to differing degrees of roof fall.

3. The characteristics of the numbered layers are as follows.

(1) Humified sandy loam, with mixed archaeological material.
(2) Pale grey/brownish sandy loam, a lilac tinge in places, filled with fine sharp edged rubble, plus fragments of bone, which sometimes give it a loose texture.
(3A) Pale yellowish grey/green more compact sandy loam, less rubble than in 2, but more medium and large pieces. Mostly sharp edged, but more corroded than in 2, sometimes with a yellowish patina.
(3B) Limestone rubble of all sizes, mainly sharp edged, but the large blocks are weathered. A cold phase is indicated.
(4) Yellowish brown clayey loam with sand and gravel. Less rubble than in 3A, but more rounded and weathered, with manganese stains and some small stalactite fragments.

4. There are no clear signs of erosion, except possibly in the upper part of the U-G section. This is indicated, among other things, by the presence of many krotovinas, which are of both Holocene and Pleistocene origin. The archaeological material is in situ. In Liubin's opinion, Muratov's section indicates a basically dry climate. He thought that layer 2 was possibly an exception in this respect, but Belyaeva doubts that.

5. There is a difference of opinion over the interpretation to be given to the upper part of the U-G section. In Polyakova's view, this may be an erosional hollow. If so, the only source of the water could have been the karst corridor-cave on the west (Fig. 7). But since there are no signs of the continuation of this feature, Belyaeva doubts this. She prefers to regard the 'saucer-shaped' depression as possibly artificial, the result of dwelling construction.

The plans showing the distribution of the finds indicate that the main concentration was on the west, in the area excavated by Belyaeva in 1990-1991, especially in layer 3a. In layer 3A-1 however there were clear traces of three hearths along the eastern side of the rock channel in the area excavated in 1987-1988.

Fauna

There are a large number of bones, but they have not produced much information because of their condition, broken up and poorly preserved. They are not heavily fossilised, which, it is suggested, may in part be due to the existence of so many krotovinas. That may have increased the acidity of the soil. One consequence of this is that the bones have little collagen, which led to the failure of C14 dating attempts in Moscow and St Petersburg. According to an e-mail message, they were 'impossibly young dates', 5-15 kyr BP. The bones from 1961 were determined by

N.K. Vereshchagin and I.G. Pidoplichko, those from subsequent years by G.F. Baryshnikov and A.V. Panteleev.

The large mammals include predominant Bison (3A), Equus (2), Cervus elaphus (2 and 3A), Capreolus capreolus (3A), Capra caucasica (2 and 4), and Megaloceros (4). The rodents (unlike the large mammals) produced enough remains for a meaningful analysis, and the results are presented in the attached Table. All together there were 788 bones, 603 from the Pleistocene layers. There are three stratigraphic groups. Group 1: layers 4 and 3B. Group 2: layers 3A (horizons 1-3) and 2. Group 3: layer 1 and the Holocene krotovinas. A comparison of the rodents present (or present in large numbers) in these groups reveals significant climatic changes over time.

Group 1. A cold environment, indicated by the presence of Microtus arvicola, Citellus musicus, Cricetus cricetus, Cricetulus migratorius, and the absence of Apodemus. Group 2. An open steppe environment, indicated by the presence of Ochotona pusilla, Spalax microphtalmus, Spermophilus, Chionomys nivalis, and the sparsity of wooded forms, although there were always some woods in the vicinity. Group 3. Clear dominance of woodland forms, particularly Apodemus spp. There were specimens of Arvicola terrestris in all groups, indicating the presence of water sources nearby including the floodplain of the river Gubs.

70 bird bones were identified, belonging to the following species, according to habitat. Woodland. Erithacus rubecula, Certhia familiaris, Coccothraustes coccothraustes, Loxia curvirostra, Pyrrhula pyrrhula. Meadow-steppe. Alauda arvensis. Cliffs. Apus apus, Columba livia, Delichon urbica.

Pollen and Spores

Determinations by G.M. Levkovskaya. In 1990-1991 13 samples were obtained from section U-G (of which 11 have been reported) and 2 samples from section D-F. These results have to be evaluated in the light of further samples obtained in 1987-1988, firstly from layer 2 in section C-T, at the point where the Neanderthal remains were found (Belyaeva, Levkovskaya, Kharitonov, 1992, RA: 3), and secondly from layer 4, when material was collected during the course of the excavations at that time. The cave is now situated in a deciduous wooded zone, but it is clear that in the past the picture was different.

Layer 4

Sample **1**. Lower part of the layer. AP 28%, NAP 70%, spores 2%. AP mainly alder, oak, willow, plus Alnaster. NAP mainly emergent or water plants. Dominant Sagittaria. Many Nymphaea, Carex, Liliaceae. A few Plantago. Spores. Lycopodium clavatum, this now is characteristic of the upper wooded or sub-Alpine zone in the Caucasus. Overall, the climate was colder than at present, but the cave was in a wooded area, indicated clearly by the presence of alder. There were damp meadows in the vicinity. Alnaster is currently not found in the Caucasus, its nearest place of occurrence being in the sub-Alpine Carpathian mountains. It is considered that its pollen grains will have been blown in by the wind from higher up the slope, and that it cannot determine the overall characterisation given for the site at this time.

Sample **2**. Upper part of the layer. AP 28%, NAP 51%, spores 21%. AP mainly alder and birch, plus pine and hornbeam. NAP characterised as a mesophilous varied herbaceous assemblage. Juncus, Sanguisorba, Veronica, Pyrola, Geum, Cichorium, Carex, Liliaceae, Labiatae, Chenopodiaceae. Spores. Equisetum and Botrychium. A colder damp climate is indicated, corresponding to the lower part of the sub-Alpine belt.

There is some apparent contradiction between these results and those earlier obtained for the same layer in 1987-1988. Three samples from square 7 were analysed at that time.

(1) 5-8 cm from bedrock. AP slightly more than NAP. Alder, Betula cf. verricosa, Larix. NAP. Chenopodiaceae, Asteraceae, Caryophyllaceae, Lutraceae.

(2) 10 cm higher. AP dominant. Hazel, hornbeam, lime, alder, pine. NAP. Asteraceae. Spores. Botrychium. In general, an improvement in the climate, indicating the presence of deciduous woodland.

(3) Upper part of layer 4. AP still dominant. Hazel, hornbeam, oak, birch, Ostrya, Alnaster. There is an indication of a worsening climate.

All together, Levkovskaya considered that the three samples revealed interstadial conditions, the climatically most favourable being sample 2. The picture obtained in 1990-1991 is distinctly colder than that. The paradox is resolved by Belyaeva when she postulates that the samples from square 7 represent the earlier part of layer 4, whereas the samples from the U-G section represent the later part. It is clear that the overlying layer 3B is significantly colder, and the U-G samples would be approaching it. The sampled areas are in different parts of the cave, and some displacement of the deposits also cannot be excluded. It is on this basis that in her general summary Belyaeva claims that human occupation at the site began in the first of three climatically more favourable phases.

Layer 3B

Sample **3**. Rockfall horizon. AP 14% NAP 86%. AP alder, birch, Ostrya, Alnaster. NAP characterised as mesophilous varied herbaceous assemblage. Carex, Portulaca, Liliaceae, Leguminosae, Ericaceae, Chenopodiaceae, Gramineae, Cyperaceae. Climate very cold and damp, cave near the boundary of the sub-Alpine and Alpine zones. Trees and bushes in some places.

Layers 3A and 3a

Sample **4**. Base of 3A. Suddenness of climatic change suggests that there is a break in sedimentation between this layer and 3B, or perhaps some erosion. AP shows pronounced dominance of deciduous trees including Juglans regia, a species which is exotic to the area. An optimum warming is in evidence. AP 63%, NAP 33%, spores 4%. AP includes 68% deciduous species. Juglans regia 26%, elm 24%, alder 22%. Plus Pterocarya 6% (this is a Kolchid element) and hornbeam, lime, ash, birch, hazel, oleaster, oak. Xerophytes (also exotic to the area) Pistacia and Celtis. NAP dominant

Umbelliferae, plus Pedicularis, Plantago, Carex, Myriophyllum, Orhidaceae, and Liliaceae. Spores. Filicales, some Lycopodium. In general, the lower part of the wooded zone is indicated, damper than at present.

Sample **5**. 3A. A decline from the optimum. Dominated by NAP, indicating open country, but much is indeterminable. AP similar to preceding sample, but the deciduous proportion now is 53%. Dominant Juglans regia, plus alder, elm, birch, willow, hornbeam, oak, Cornus. No Pterocarya, Pistacia, or Celtis. NAP dominant varied herbaceous assemblage, including Carex, Thalictrum, Pedicularis, Artemisia, Chenopodiaceae. Spores, a little Lycopodium. This is a wooded steppe.

Sample **6**. 3A. Final phase of warm episode. In general, similar to preceding. AP, deciduous proportion now 33%. Juglans regia 17%, plus alder, elm, birch, oak. A little Pistacia and Alnaster. NAP more or less as before, again much indeterminate. Carex, Liliaceae, Umbelliferae, Leguminosae. Mixture of steppe and woodland of Central Asian type.

Samples **7** and **8**. Lens 3a. Many charcoal fragments, but the pollen grains are not blackened. AP dominant, and deciduous species dominant within it. Mainly Juglans regia, plus Carpinus, Pterocarya, Juniperus, Buxus, Berberis, Picea, birch and elm. This is another climatic optimum, Belyaeva's third and last, but the question is left open as to its exact status. It may be another phase of the optimum witnessed in sample 4, or it may be completely independent (a little cooler, as shown by the presence of Picea). An anthropogenic effect cannot be excluded.

Sample **9**. Top of 3A. AP, only a few grains of alder. NAP, Carex, Pyrola, Chenopodiaceae, Gramineae. May be signs of climatic worsening.

Layer X

Samples **12** and **13**. Very few traces of pollens or spores.

Layer 2

Samples **15** and **16**. These samples were taken from the section D-F. They are generally similar to the material collected from the vicinity of the Neanderthal remains. There is a marked predominance in all three samples of xerophilous NAP, including Plantago, Ephedra, Euphorbia, Chenopodiaceae. Samples 15 and 16 have less species variability: AP 20%, NAP 57%, spores 23%. AP includes elm, alder, birch, oak, hornbeam, Buxus, Pistacia. NAP also includes Carex, Ranunculaceae, Leguminosae, Liliaceae. Up to 20 NAP taxa were present in the Neanderthal sample, which may in part be due to anthropogenic factors. Spores include Dryopteris, Sphagnaceae and other mosses, and Filicales. In general, the conclusion is that the landscape at this time was open, woods were confined to the Gubs river valley, and the climate was dry and cool.

Archaeology

There are >42,000 Mousterian artefacts, mostly small flakes. A detailed description is given of 888 retouched stone tools. Raw material dominated by local

dark nodular chert of small size and low quality (90-94%) the remainder being multicoloured flint of higher quality that was imported. Identified tools are dominated by sidescrapers. The most intense occupation occurred in layer 3a. Liubin's concept of a Mousterian Gubs culture (with comparisons to Barakaevskaya and Gubs rockshelter 1) is defended. The climatic oscillations shown in the pollen analysis, among other things, leads to the suggestion that the occupation of this cave can be dated broadly to the end of oxygen isotope stage 3.

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