Malaya Vorontsovskaya

Summary in Liubin (1989). Reports on the site quoted are Krainov (1947), Soloviev (1956), Liubin (1965, 1966), Liubin and Soloviev (1971), Chistyakov (1986), Liubin and Chistyakov (1985), Muratov and Fridenberg (1984), and Semenov (1972).

Since then Chistyakov's book on "The Mousterian Sites of the North-eastern Part of the Black Sea Region" has been published (1996), as well as a new palynological analysis by G.M. Levkovskaya (1992). These works add to and modify the earlier conclusions in some respects.

This cave is in the foothills on the southern slopes of the Western Caucasus, at the southern end of the limestone ridge named Alek, on the right side of the canyon of the river Vostochnaya Khosta near its source. The site is 16 km from the sea, in the Sochi region of the Krasnodar district. Its height above sea level is 290 metres, and its relative height is 54 metres. Its entrance opens to the south-east towards the river. It was formed in limestone along the line of a tectonic fault. It has the form of a horizontal tunnel about 70 metres in length, consisting of three small halls and six galleries, the width of which varies from 2 to 8 metres, and the height from 1.5 to 6 metres. The Mousterian site in the cave was discovered in 1940 by D.A. Krainov, who excavated a test pit at the entrance (3x2 metres). L.N. Soloviev excavated a trench in 1950-51 also at the entrance (2x6 metres). V.P.Liubin carried out an excavation in 1964-65 (11 square metres near the entrance, and a 2x2 test pit in the mid part of the cave), and in 1983-84 and 1986 D.A. Chistyakov excavated a further 12.5 square metres. The position of the excavations up to 1984 is indicated on the attached plan made by Liubin and Chistyakov (Figure 1B). A second plan was published by Chistyakov (1996, Fig. 2) and is reproduced here (Figure 2). The advantage of this plan is twofold. Firstly, it shows the position of the 1986 excavations, on the southern and eastern sides of Krainov's test pit (vertical hatching). Secondly, it shows in more detail the numeration for the various sections which have been drawn and described in this cave.

At the present time, 34-36 square metres of the cave have been excavated. (It should be noted that the various excavations in part overlap). The excavated area covers the gallery at the mouth of the cave and the entrance to the round hall inside. The mid and far parts of the cave have been investigated by means of test pits (in the first Liubin's 2x2 and in the second a 1x1 put down by V.M. Muratov in 1965). The thickness of the deposits varies from 1 to 1.8 metres.

Stratigraphy

Up to 1989, there were said to be 16 sections, which Liubin described as mostly incomplete, due to the methodological shortcomings of the early works, their fragmentary nature and the lack of agreement among them. Most are published. A number of factors have complicated the correlation between the sections in different areas: a marked facies differentiation of the deposits within a single horizon, the presence of a number of layers which thanks to erosion have been preserved only as remnants along the walls or lenses in erosional pockets, and the increasing complication of the stratigraphic columns the further you go from the entrance, which

Liubin describes as normal in such caves. The elucidation of the relationship between the sections in the gallery at the mouth of the cave and the platform in front of the entrance has also been complicated by the absence of a single longitudinal section through the deposits, the broken up nature of the sections in this part thanks to the trenches dug in 1950-51, and a threefold change which has occurred in the numbering of the layers.

The most complete sequence has been established by Liubin and Chistyakov at the junction of the gallery at the mouth of the cave and the round hall, on the basis of the work done in 1965 and 1983. Transverse sections were drawn along the lines A-B-C, K-L-M, and O-R-X on the plan. The attached section (Figure 1A) is the longitudinal section along the line R-B-L-P. The succession according to Liubin (1989) is as follows.

(1) humified layer, with sharp edged rubble in its mid and lower part. Includes (1a?) an ashy lens up to 35 cm thick. Overall thickness 20-45 cm.
(2) brownish-grey compact loam, up to 40 or 50% packed with rubble. Small limestone blocks, up to 10 or 20 cm in size, in places form lenses. Overall thickness 20-40 cm. Two subdivisions are described separately.
(2a) dark brownish-green lumpy loam, with less rubble, but more blocks, up to 10-35 cm in size, not present everywhere. Up to 30 cm.
(2b) greyish-brown slightly lumpy loam, practically without rubble. That which is present is rounded and sometimes has a dark brown (phosphate?) covering. 5-25 cm.
(3) yellowish-brown loam, more compact and clayey, with alternating lenses of different colours (brown, greyish-green) compactness and extent of rubble filling. In general there is not much rubble, it is rounded, and covered with a dark brown crust. 45-50 cm.
(Z) dark brown lumpy loam, sometimes with gravel coloured black with iron manganese stains. Up to 25 cm.
(Z1) finer loam, light with a violet tinge, present as lenses. Up to 25 cm.
(4) dark brown loam, compact, lumpy, with a small amount of rubble. The rubble (as in Z and Z1) is rounded and corroded. Up to 20 cm.
(5) cave alluvium. Sand, sandy loam, gravel, pebbles. Z, Z1, and 4 lie directly on 5, discordantly, filling pockets in its upper surface. (No thickness given).
(6) reddish loam lenses. Up to 17 cm.
(7) layered travertine on the floor of the cave (phosphoritic sandstone). Up to 10-20 cm. In all layers (particularly Z, Z1, and 4) there are shale pebbles which evidently come from the alluvium at the base.

Muratov and Fridenberg (1984, quoted in Liubin 1989) divide the deposits in the cave into three parts. (1) horizons 1-3 exfoliated. (2) horizon 4 exfoliated and colluvial. (3) horizons 5 and 6 alluvial. Horizon 5 (our Z, Z1, and 4) they consider due to stream action within the cave. In Liubin's view, it is difficult to agree with this, since Mousterian artefacts were found here, together with the remains of 4 food refuse dumps. In his view, the first people settled in the cave only after the water which created the alluvial deposits had ceased to flow in it.

Layer 1 contained archaeological material of different ages: above, Cherkessian pottery, below, a few Upper Palaeolithic type flints. Layers 2, 2a, 2b, 3, Z, Z1, and 4 are Mousterian. Layers 5, 6, and 7 were sterile.

In addition to this R-B-L-P profile, account should be taken of three more profiles, all near the cave entrance, since among other things they feature in Levkovskaya's revised account of the pollen record. First is the transverse section V'-U'-G' established in 1984 (Chistyakov, Fig. 10; here Figure 3). Second are the longitudinal and transverse sections D-Z and Z-V''-U'' obtained in 1986 (Chistyakov, Figs. 96 and 97; here Figure 4). The results of the excavations of 1986 are reported in Appendix 2 of Chistyakov's book, compiled by his widow Zh.K. Chistyakova (1996, pages 131-133). Broadly speaking, the last two sequences are similar to V'-U'-G', hence the latter only will be summarised here, but attention will be drawn to any significant differences which are present in the other two sections.

(I) light grey loam, with sharp edged rubble. Mixed archaeological material, including ceramics, domestic and wild animal bones.

(II) grey brown loam, with sharp edged rubble. Upper Mousterian layer.

Lens (α) thin layers together forming a grey ashy deposit. Described by Soloviev as a hearth. While not totally rejecting the idea, Chistyakov is inclined to regard this as an epi-genetic alteration of layer III, not connected with human activity.

(III) three horizons, where (1) and (3) are similar to each other and (2) is distinct. (1) and (3) are light yellow loams, packed with medium-rounded carbonate-coated rubble. (2) is a slightly darker loam, practically without rubble, but with greenish shale and sandstone pebbles.

Lens (β) greyish yellow sandy loam without rubble. [confusingly enough, there is a lens (α) at this point in section Z-V''-U'', described as a grey ashy and brown layered deposit, not specifically said to be the equivalent of (β)]

(IV) dark brown loam, with very little rubble. Pebbles at the base in an alluvial matrix. Archaeological material throughout. Basal in situ Mousterian layer.

(V) oblique to (IV), remnants of natural alluvial deposit, lilac-grey. A few archaeological remains at the top are regarded as displaced.

(VI) Yellow ? eluvial deposit, only 1-2 cm thick.

"H" **not** shown except in section D-Z, again obliquely truncated, remnants of natural alluvial deposit, light yellow loam, loose in texture.

In his account, Chistyakov emphasised that the deposits in general had undergone significant water action. This was shown for example by the refitting of an artefact from two pieces present in two different layers of the Z-V''-U'' section (1996, Fig. 104, 3 a and b).

Fauna

The fauna from layers 2-4 (excavations of 1950-51 and 1964) was studied by N.M. Yermolova, I.M.Gromov, N.I. Burchak-Abramovich, and E.A. Tsepkin. The remains are typical for food debris: small fragments of long bones, skulls, and other elements which had no nutritional value. There is a small spectrum of species represented. Rodents. Microtus roberti Thom.-gud. Satun. Mammals. Ursus spelaeus, Canis lupus, Martes sp., Cervus elaphus, Capreolus capreolus, Capra

caucasica, Alces alces, Sus scrofa. Birds. Anas platyrhyncha L., Anas querquedula L., Aquila chrysaetos L., Pyrrhocorax pyrrhocorax L. Fish. Salmo trutta labrax. 95% of the bones belong to cave bear, the only other relatively frequent species being Capra caucasica.

The fauna from the lower part of layer 1 includes Ursus spelaeus, Capra caucasica, Alces alces, Pyrrhocorax, and Microtus roberti. As mentioned in Liubin and Soloviev (1971) the finds from layers Z1 and 4 also included Sus scrofa and Capreolus capreolus. The picture obtained from these studies requires filling out with the results obtained in the excavations of 1965, 1983-84, and 1986, when a more abundant material was found.

Palynology

Results were obtained by M.N. Klapchuk (1970) and G.M. Levkovskaya (as reported by Liubin 1989, without any specific reference being given). Klapchuk obtained 7 samples from section A-B-C in 1965. Levkovskaya obtained 15 samples from section O-P-X in 1983 and 11 from section V'-U'-G' in 1984. Klapchuk's results as reported by Liubin were as follows.

(1) Layer 4 lower part. AP predominant 89%. Coniferous 65% (Abies 61%, Picea 3%, Pinus 1%). Deciduous 35% (lime 32%, oak 3%).
(2) Layer 4 upper part and layer 3. NAP 20%, AP 80%. Coniferous: Abies 91%, Pinus 3%.
(3) Layer 2a. AP 99%. Coniferous 22% (Pinus 20%, Abies 2%.) Deciduous 77% (beech 34%, hornbeam 32%, oak 8%, elm 3%, hazel, etc.).
(4) Layer 2. AP 43%. Coniferous 65% (Pinus 36%).

Levkovskaya, according to Liubin, generalised the results from all three sections (n=33) and distinguished 7 pollen horizons, which he described in summary fashion (1989, 81). Levkovskaya's general conclusion was that there were two climatic optima, divided by a phase of colder and more continental climate. Liubin was critical of these results on the grounds that she had generalised the pollen characteristics of two distinct sectors, inside and outside the cave. The sectors were in fact separated from each other by the 1950-1951 trench, and had a different layer numbering, as well as differences in their stratigraphic columns. Levkovskaya's conclusions in his view also did not take into account the characteristics of the upper part of layer 2 and the lower part of layer 1 (where, according to Klapchuk, there was a new worsening of the climate, Pinus for the first time reaching 36%).

In her new study (1992) Levkovskaya confined herself to two available sections in the outer portion of the cave, leaving aside A-B-C and O-P-X. The sections were V'-U'-G' (again) and Z-V''-U'' (Chistyakov's excavations of 1986). Since the sections are very close together, she combined the results, agreeing that they were the most representative. She distinguished ten pollen zones (from the base up) which could be amalgamated into six groups, as follows. %s refer to AP, NAP, and spores taken together. Levkovskaya emphasised that this sequence could not be regarded as final, since the interior of the cave has not been taken into account, but nonetheless a fairly comprehensive scheme is proposed.

Group 1.
Pollen zone I. Lens "H". [as already pointed out, this lens is in fact in section D-Z]. The oldest deposits in the cave.
AP dominant. Juglans regia up to 42%, Pterocarya pterocarpa up to 10%. Alnus, Taxus, Buxus, Ulmus. NAP up to 30%. A warm moist climate with prominent exotics. Probably last interglacial. **Optimum 1**.

Group 2.
Probably two phases, not homogeneous.
Pollen zone II. Layer V and base of IV.
First phase, AP 83%, NAP 17%. Alnus 52%, Taxus 18%, Quercus and Carpinus.
Second phase, AP has no deciduous species, Picea, Alnus, Betula, Pinus.
A climate colder than "H".
Pollen zone III.
Layer IV base. Pollen grains few.
Carpinus orientalis, Paliuris spina Christi. Xerophytic bushes in dry areas. G.N. Lisitsyna found charcoal of Juniperus.
Pollen zone IV.
Layer IV mid.
AP 65%, NAP 35%. Juglans regia 25%, Buxus 20%, Alnus 13%, Fraxinus 7%. NAP dominant Cyperaceae. A warm interstadial. Some redeposition of interglacial pollen grains cannot be excluded, although the preservation conditions are uniformly good. **Optimum 2**.

Group 3.
Pollen zone IV.
Layer IV top.
AP 42%, NAP 0, spores 58%. Markedly distinct. AP has no deciduous species, mainly Picea and Pinus. Spores of mushrooms indicate that the cave floor was damp. The predominance of 'dark' coniferous species shows that that this was a moist cold climate, with a mean annual temperature >3.5°C colder than present.
Pollen zone V.
Lens (β) Layer III (3). Similar in some ways to zone IV.
AP 36%, with coniferous and deciduous species. Pinus, Fagus, Ulmus, Quercus, Tilia, Carpinus, Zelcova. NAP dominant Polypodiaceae and Cyperaceae, plus Compositae and Gramineae. Some pollen and spores are indicative of damp meadows, Sanguisorba, Sphagnum, Myriophyllum.
G.N. Lisitsyna found charcoal of Pinus and Fraxinus.
The presence of deciduous trees indicates some improvement. A moist cool interstadial. **Optimum 3**.
Pollen zone VI.
Layer III (2). Base of layer only. Not unlike top part of V.
AP 33%, dominant 'dark' coniferous species, no deciduous. Spores mainly mushroom. A climatic worsening indicated.
The group as a whole is compared with a phase recognised at the Dzigutsky peat bog in the Sukhumi region, when the 'dark' coniferous belt occupied quite a low altitude. The age of this phase is estimated at about 47-38,000 BP.

Group 4.
Pollen zone VII.
Layer III (1).
AP 14.4%, including dwarf species, NAP 25.6%, spores 60%, mainly mushroom.
NAP Gramineae, Cyperaceae, Ranunculaceae, Myriophyllum.
A sub-Alpine climate is indicated.
Still on the basis of a comparison to Dzigutsky, it is suggested that this phase can be dated to around 38-35,000 BP. There is a radiocarbon date of 35,470+/-590 BP (LU-545) in the corresponding level at Dzigutsky, which would compare well with the date from layer III in section F-R-Z at Malaya Vorontsovskaya.

Group 5.
Pollen zone VIII.
Lens (α). A sharp boundary between this and the preceding pollen zone.
AP 75%, deciduous 20%, 'dark' coniferous 14%. A varied spectrum, including dominant Corylus and Tilia, plus Abies, Picea, Carpinus, Carpinus orientalis, Quercus, Castanea, Staphylea, Acer, Ostrya, and rare Juglans.
NAP dominant Asteracea and Chenopodiaceae, later varia.
Two phases can be discerned in what was a moderately warm interstadial. In the first deciduous AP exceeded Abies, in the second the roles were reversed.
It is suggested that this phase is equivalent to Klapchuk's layer 2a inside the cave, and that chronologically it might cover the period from about 32 to 28,000 BP.
Optimum 4.

Group 6.
Pollen zone IX.
Layer 2. Another sharp boundary between this and the preceding pollen zone.
AP 18.2%, NAP 9.2%?, spores 72.6%, mainly mushroom, also Woodsia.
AP mainly deciduous, including Tilia, Fagus, Quercus, Corylus, plus Alnus, Betula, and Juniper.
NAP dominant Liliaceae, including Verbascum thapsus and Armeria.
G.N. Lisitsyna found charcoal of Juniper, Pinus, and Ulmus.
A cold stage.
Pollen zone X.
Layer 1.
AP, dominant deciduous, including Carpinus, Ulmus, Quercus, Fagus, Corylus, plus Alnus, Betula, Buxus, Ligustrum, and Jasminum.
NAP dominant varia, including Liliaceae, Compositae, and Campanula.
Many mushroom spores again, plus Polypodiaceae.
G.N. Lisitsyna found charcoal of Pinus.
In general, similar to the preceding phase, but more wooded. Suggested to date to about 14,000 BP, on the basis of the radiocarbon date from layer 1 in section K-L-M.

<u>Archaeology</u>

3666 artefacts from 1950-1951, 1964-1965, 1983-1984; 434 more found in 1986. Raw material: flint 76.2%, plus shale, limestone, and cemented silt (alevrolit). Most tools (88.6%) are small (up to 5 cm) which may be explained by a severe lack of raw material, and therefore much utilisation and re-utilisation. Some of the artefacts also show signs of natural damage including pseudo-retouch and polishing. Liubin

and Soloviev (1971) have characterised the industry in all layers as a Denticulate Mousterian, whereas Chistyakov calls it a Typical Mousterian with many denticulates. Not Levallois. IR=35-45.

Palaeogeography and dating

Liubin comments that the stratigraphic data indicate repeated changes in the natural environment. The cave was situated at different times in deciduous and then in coniferous woods, then at the boundary of wooded and sub-Alpine zones. Today it is in the lower part of the moist sub-tropical Kolkhid wooded zone, and the coniferous zone begins at a height of 900-1000 metres, hence one can speak of important shifts in the zones over time.

There are two radiocarbon dates. (1) LE-700 14,100 +/- 100 BP. Charcoal from a hearth in layer 1, section K-L-M. (2) GR-6031 35,680 +/- 480 BP. Burnt bone from a hearth in layer 3, section F-RZ-Z.

2004 sampling strategy in relation to stratigraphy.

Samples were taken from the O-P-X section at the back of the cave, in a position approximating to the line O-P. The layer numbering follows that of the longitudinal section R-B-L-P, with the exclusion of layer Z.

first version 21 June 2004; revised 16 August 2005.

Malaya Vorontsovskaya cave (according to Liubin and Chistyakov). A: longitudinal section along the line R-B-L-P. B: Plan of the mouth of the cave. (a) (diagonal hatching) 1964-1965 excavation. (b) (vertical hatching) 1983-1984 excavation. On the left hand side (on the platform) are the areas excavated by Krainov (1940) and Soloviev (1950-1951).