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THE CHRONOLOGICAL DIVISION OF THE LATE PALAEOLITHIC SITES FROM THE MOLDAVIAN DNIESTER AREA

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The palaeolithic sites of the Moldavian Dniester zone are situated southwards from such well-known multilayered campsites of the Middle Dniester as Cormani IV, Molodova I and V (fig. 1 : 1). Their position is determined by the southern part of the Middle Dniester area, where a very high density of the palaeolithic sites is observered (fig. 1 : 2-6), and by the Lower Dniester area, which is mainly represented by scarce localities, lying on the margin of the plateau (fig. 1 : 7-9).

The first palaeolithic sites on the right bank part of Moldavia were discovered at the end of the 20-ies by the Romanian investigators N.Moroshan (1938) and C. Ambnrojevici. In the post-war period their survey was continued by the soviet archaeologists A. Chernysh (1973), N. Ketraru (1973) and G. Grigoryeva (1975, 1980). During the recent ten years the intensive investigation has been executed by I. Borziac (1983,1992) and I. Sapojnicov (1987, 1994). Their many-years search was crowned with the discovery of 108 late palaeolithic sites. Ten basical sites underwent a complex stationary survey.

Up to the recent time the late palaeolithic sites of the Moldavian Dniester area have been distributed on the chronological scale without a reliable stratigraphic referencing. The possibility of the radiocarbon dating for some sites, surveyed within the recent years, gives the chance to correct the relative age of a number of the basis sites, and a very high information capacity of the generalized stratigraphic correlations. At the same time the majority of the well-known late palaeolithic sites can be synchronized with the respective subdivisions of the stratigraphic diagrams picturing the upper pleistocene depositions (Ivanova 1980; Rogachev, Anikovich 1984). It would be preferable to accentuate the Bryansk Interstadial (31.000 - 24.000 B.P.) and the Early Ostashkovo period (23.000 - 20.000 B.P.), the Lascaux interval together with the final phase of the coldest stage of the Ostashkovo glaciation (18.000 - 17.000 B.P.), the Late Glacial period (16.000 - 10.000 B.P.), stressing its final part.

It is not an easy task to determine the time of the Late Palaeolithic in the Dniester zone of Moldavia. It can be explained to some extent by the scantiness of the sources. Only two sites, dated back to the Bryansk Interstadial - Early Ostashcovo period, are known by the present time. The former of these two sites, which is unanimously believed to date from the initial part of the Late Palaeolithic is represented by the site of Climautsi (I. Borziac 1974; Grigoryeva 1975; Anikovich 1991). However its typological age is not confirmed by a substantial geologic investigation. The latter site of Climautsi II has a reliable geostratigrafic referencing and is dated on the basis of C^{14}. The both sites are situated on the territory of the village of Lower Climautsi near the mouth of one of the right-bank Dniester tributaries (fig. 1 : 5).

3680 artefacts, including 519 tools were collected from the site of Climautsi I, associated with level II of the river terrace. The probe trench, made by I. Borziac (1981) and reaching the limetone bed of the terrace, permits the concentration of the palaeolithic objects to be traced back in the layer of yellow-brown thick carbonate loam in the depth of 0,9-2,1 m (fig. 2 : 1). The location of the layer immediately above the limestone plates admits the probable loess of more ancient depositions and its dark coloration admits its identification with the underdeveloped fossilized soil. Under condition that these suppositions are

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confirmed, the formation time of this layer and the cultural remains related to it will be in complete conformity with the typological age of the site. The stable representative component of archaic and denticulated-notched pieces (37%) including various kinds of side-scrapers, narrow elongated bifaces, natural backed knifes, beak-formed pieces and atypical point was registrered in respect of the Climatusi I industry. The majority of them have direct analogies in the upper layer of the site of Stinka I and the location of Shipot attributed by N. Anisyutkin (1969, 1975) to the final Middle Palaeolithic and by I. Borziac (1975) to the transitional stage from Middle to the Late Palaeolithic. The archaism of the industry is also manifested in the knapping technique, particularly in the wide use of discoid cores, in producing flakes with large bulbs of percussion and faceted striking platforms, in relatively numerous levallois flakes. The collection of the late palaeolithic tools - carinated end scrapers, end-scrapers with nose, dihedral multifaceted burins, massive points and individula retouched microblades is diagnostic at the same time. The mentioned features bring together Climautsi I and the complexes of Zelyony Khutor I and II (Sapojnicov 1987), which are earlier within the limits of the epoch.

The position of the site of Climautsi II is connected with the landslide slope, which is associated with level III of the river terrace. Its lower cultural layer was revealed in the contact area of the Bryansk brown soil and the above-lying yellow-brown loam in the depth of 1,5 m (fig. 2 : 2) and was confirmed by the radiocarbon dating of 24.840 ± 410 B.P. (LU 2351) (Borziac, Golbert and other 1992). The presence of numerous mammoth bones is symptomatic. The Aurignacian aspect of the tool collection (66 pieces), the high portion of side-scraperlike forms (11%) also suggests that this layer should stem from the initial stage of the Late Palaeolithic.

The age of the Climautsi II upper cultural layer, which is located in compact unbroken loesslike loams in the depth of 1 - 1,3 m, is 20.350 ± 230 B.C. (LU 2481) according to the latest dating. Its Early Ostashkovo age is indirectly indicated by an enormous number of mammoth bones (not less than 19 animals), used by the construction of the above-ground dwelling, and by an extremely low number of reindeer remains. The complex of Aurignacien features, particular to the tools, of the upper layer (232 pieces among more than 2 thousand artefacts) is already expressed less clearly, though an Aurignacian retouch is noted with a number of the pieces and the fifth part of the end-scrapers is represented by carinated ones. Notable are end-scrapers with a nose and fan-shaped ones with retouched edges, dihedral multifaceted and double burins, the lower end of some of them is thinned by dressing in the form of scales. The portion of side-scrapers is decreased. The backed bladelets are rare as before.

The combinative grouping of the sites according to the sixty parameters, which have beforehand been selected by the correlative comparison of the stratiphied Dniester sites permits revealing the connection between the Climautsi II upper layer and the sites, precceding the coldest stage of the Ostashkovo glaciation. Some of them (layer 7 of Molodova V, the central layer of Babino I, the upper layer of Voronovitsa I) contain shouldered points, which are specific for the Early Ostashkovo interval (Chernysh 1956, p. 44; 1959, p. 30). The narrow-centered types - double points of the Molodova type, end-scrapers on long blades and having the maximal with below their retouched end, end-scrapers on Aurignacian blades and narrowed in the direction of their lower end as well as the most common forms - numerically predominating dihedral burins, they are often multifaceted and double, blades with a Aurignacian retouch, big blades with retouched edges, convergent in the base are particular to various combinations of the sites. The abovemarked coincides with the typological characteristic of the Molodova archaeological culture in many respects. At the same time the stress is clearly shifted from cultural features to chronological ones. At the same time this phenomenon can be explained by the propinquity of the above-mentioned sites with the group of sites, which also chronologically preceeded the coldest stage of the Ostashkovo glaciation : layers 7 and 8 of Vladimirovka (Chernysh 1953), lower layer of Sagaydak I (Stanco,

Grigoryeva 1977) - on the Yuzhny Bug banks, lower layers of the grotto of Stinca Ripiceni (Moroshan 1938) and Zamostye I (Ambrojevici, Popovici 1938) - on the Pruth banks, Ciutuleshi (Ketraru 1965) on the Reut bank (right tributary of the Dniester), Reci (Ketraru 1989) - on the Ikel bank (right tributary of the Dniester).

The sites of Rashkov VII and VIII, Iorjnitsa, Cureshnitsa and the Cosoutsi layers 5 -17 are approximately attributed to the next interval which we are interested in and which is determined to be within the frames of the Ostashkovo climatic minimum and the short termed Lascaux rise in temperature.

The first two sites - Rashkov VII and VIII - were uncovered to the north of the village of Rashkov on the terracelike plots in the canyonlike valley of one of the left-bank Dniester tributories (fig. 1 : 6). The flint collection, that is a record one for Moldavia, which includes more than 50 thousand items (2.626 tools are among them) as well as that of bone remains (about 16.500 fragments) was gathered in Rashkov VII. The number of flint finds from Rashkov VIII exeded 9 thousand pieces including 763 tools.

The primary dating of the sites of Rashkov VII and VIII in the Late Glacial period (David, Ketraru 1966, p. 164-165; 1967, p. 106), made on a limited source base, was backed up by G. Grigoriev (1970, p. 55) and G. Grigoryeva (1975, p. 95). Passing from one paper to another one (Borziac 1983; Rogachev, Anikovich 1984), this dating of the Rashkov sites in the Late Glacial period became stable and started to be cited as a vivid example wherein the Aurignacian tool collection was preserved almost up to end of the Palaeolithic. Let us doubt the rightness of this opinion by giving the data which assumes that its age should be earlier.

Turning our attention to the stratigraphy of the site of Rashkov VII (Ketraru, Ivanova and others 1986c) we shall observe immediately that the overwhelming majority of the archaoelogical materials in dispaced conditions are in fact localized in the Holocene soil (fig. 2 : 3). Nevertheless one should not neglect the finds from the upper part of clay aleurites. N. Ketraru surmises that they are these finds that the remains of the partiably preserved cultural layer, retraced only during the stationary survey of 1962, are connected with. Very precious is I. Ivanova's statement on disjoining the clay aleurites layer from the Holocene depositions through the accumulation of large-sized broken stone that testifies, inter opinion, to the interruption of the sedimentery accumulation. The latter partially clears up the dislocation of cultural remains and the absence of the upper Late Glacial accumulations. The mineralogical analysis of the aleurites layer, done by N. Rengarten permitted establishing the presence of needleshaped lublinite cristals, formed by feezing out humidity, the remains of yellow-green algae, which fact testifies to a cold dry climate. According to V. Grichuk (1960) and Yu. Vasilyev (1980), the crioxerothic conditions are fixed for the second half of the stage fall in temperature, closer to its end. Taking into consideration the above it is more reliable to synchronize the aleurites depositions with the final phase of the Ostashkovo glaciation coldest stage and its transition to the Lascaux rise in temperature. It is confirmed by the malacofaunistic analysis, done by V. Motuz, whose results fix the prevalence of the molluscs *Columella columella* Mart. against the background of neutral forms. Their concentration in the coldest plots of the other sites sections is due to the stage excesses to counterbalance the Late Glacial pulsations, causing the mixing of the *Columella* fauna with the mesophyllic forms.

A. David's definition of mammal fauna, especially that of a considerable number of reindeer remains (6.109 bones from 53 animals), mammoth (85 from 3) and rhinoceros (97 from 4) permits associating Rashkov VII with layers 5 - 7 of Moldova V and layers 4 - 5 of Cormani IV more closely. Thus the maximal number of mammoth bone finds and the number of reconstructed individuals fall on layer 7 of Molodova V (105 bone from 7 individuals), layer 6 of the same site (250 from 6) and the indicated date is 17.500 ± 180 B.P. where as its portion decreaces considerably in the upper layers and it disappears completely at the level of 11 - 12 thousand years (Alexeyeva 1987). The similar situation is retraced in layers 4 - 5 of

Cormani IV (Tatarinov 1977), the last of them indicates the date in 18.000 ± 400 B.P. and 18.560 ± 2000 B.P. The rhinoceros fate is no less dramatic. According to L. Alexeyeva's statement it survives in the Dniester area up to the 15 - 16 th millenium, but isolated finds of the later period is the result of bringing back the old bones to the site. The simultaneity of Rashkov VII and the Molodova layers belonging to the middle stage of the Late Palaeolithic is confirmed by the combination of mammoth and the representatives of forest biotopes within the same complex. Besides layer 6 of Molodova V contains many elk bones, layer 5a of Cormani IV- those of red deer. European roe is also notable in Rashkov VII (David, Ketraru 1970).

The necessity of giving a chronological status to the fact of the priority of reindeer over horse (thrice - predominant in the number of bones and twice in the number of individuals) has been stressed repeatedly. But it does not conform to the data on the multiple predominance of reindeer over the other animal species into the evidently non-Late Glacial layers 5 - 6 of Molodova V and into the lower layers of Cosoutsi, which have a series of radiocarbon dates in the range of 17 - 19 thousand years. Many more examples, testifing to the possibility of increasing the Rashkov VII age, can be adduced.

The other criteria, which supposedly indicate the date of Rashkov VII in a later period, have also been revised. While clarifing their date one can totally agree to its association with Bolshaya Akkarzha, Ambrosiyevk, Muralovka (Grigoryeva 1968; Borziac 1983, p. 59) on the basis of wide-spread microtools, but the new Muralovka datings of 18.780 ± 300 and 19.630 ± 200 have become to be known, the second more ancient Amvrosiyevka date of 20.620 ± 150 has been accepted by the present time. The last essays by. V. Petrun are of interest among those dealing with Bolshaya Akkarzha. He considers it quite appropriate to indicate its geological date in the initial stage of the Late Valday period provided the evidences for the drift and dislocation of the cultural remains and the loess substrate are absent (Petrun 1991). As to the radiocarbon date of Rashkov VII - 12.220 ± 500 (LE 1061), its unfoundedness is apparently recognized even by the author of the essay N. Ketraru whereat the disconnectedness between the cultural layer and the place where the sample was taken, was stressed.

Very similar data were obtained from the site of Rashkov VIII (Ketraru, Grigoyeva and others 1986d). Unlike Rashkov VII the location of its cultural remains (including those of hearth) in the basal part of the layer of lime clay with aleurites inclusions is separated from the Holocene depositions by half accumulations (fig. 2 : 4). Clusters of lublinite cristals as well as small clums, containing humus, can be found above and beneath the cultural layer. N. Rengarten associates them with an ephemeral soil formation, which is rather curious in the context of the versatile interpretation for the time correlation between Rashkov VII and VIII. The malacofaunistic composition includes neutral species and that of the mammal fauna includes reindeer (133 bone from 4 individuals), mammoth (6 from 1), rhinoceros (2 from 1). The forest species are represented by the bones of red deer.

The thesis of the earlier age of Rashkov VIII in comparison with Rashkov VII was worked out on the basis of the results of classifying 60 sites in the area according to their versatile attributes. The priority connection of Rashkov VIII with more ancient upper and lower layer of Climautsi II is notable while there are less similarities between them and Rashkov VII. The correlation index between Rashkov VIII and the sites of the Molodova culture and the lower layer of Cosoutsi is higher. It can be seen from the evident quantitative predominance of straight dihedral burins, by a lesser presence of Rashkov VIII microtools, by a less considerable contrast of common end-scrapers with carinated ones, of burins on retouched truncation with the other ones. The completeness of the Rashkov VII Aurignacian collection evidently symbolizes the culmination, marked on some the other sites in the south of the Russian plain. The industries of Rashkov VII, Anetovka I and II, Muralovka and Zolotvka are more closely correlated owing to the presence of Sagaidak-Muralovka micropoints, the variety of core-shaped and carinated end-scrapers, burins on

retouched truncation, blades with intensive retouch on edges (Anikovich 1991; Stanco, Grigoryeva, Shvayco 1989; p. 93). One should not regard it as a manifestation of the phasic development for the time being, though the formation of the similar features within a comparatively limited period of time is due to the effect of deep-lying factors and does not permit this process to be explained by the south-eastern migration of the carriers belonging to the traditions, steming from the Central-European Circle of sites (Gvozdover 1969).

It is problematic to assertain the age of the sites of Iorjnitsa and Cureshnitsa (fig. 1 : 3). The most informative collection was gathered during the excavations in the site of Iorjnitsa (Grigoryeva 1975). Its location is connected with the depositions of the 100 - 120 meters long terrace, formed by the right slope of the Dniester valley and the parallely orientated valley of one of its tributaries. The cultural layer of the site is retraced in the depth of 0,6 - 0,9 m in brown loams with beloglazka disseminations. The presence of pelletized pieces among 4.078 artefacts, including 181 tools supposes their certain dislocation.

The stability of the correlation ties of Iorjnitsa and closely Cureshnitsa with the sites dated with the help of the natural science methods, the similarities in the structural order of their collections and the data on the combinative grouping of the chronological attributes permit it to proceed from the Middle of the Late Palaeolithic. For example, the attribution of Iorjnitsa to the same cluster as the lower Cosoutsi layers (radiocarbon dating gives 19.000 B.P.) is confirmed by the high correlation index for the categories. The calculation of the correlation extent on the basis of types and their similarities somewhat reduces the Iorjnitsa age up to the dating mark of Cosoutsi layer 9 (18.000 B.P.). The typological age of Iorjnitsa can be partially corrected : on the one hand by the absence of a representative collection of archaic tools and a specific cultural character of the earlier sites, on the other hand by an insufficient completeness of the Gravettian collection.

The complex survey in the multilayered site of Cosoutsi permits determining the age of its depositions more precisely. Taking into consideration the multilayered character of the site, containing 21 cultural layers and marking the interval between the Early Ostashkovo and Late Glacial period we shall review the collected information at greater length.

The location of the Cosoutsi site is connected with the mouth area of a small right Dniestr tributory, which is correlated with level 1 of the river terrace to the west of the eponymous village (fig. 1 : 4). The determination of the ordinal number for the Cosoutsi terrace, that is extemely important for the dating of its lower depositions, is not simple (Borziac 1986; Khubka 1986; Adamenco and others 1987; Borziac and others 1990). Nevertheless the detailed scheme picturing the distribution of the Dniestr terraces in the area of the village of Cosoutsi and neighbouring town of Soroki, made up by O. Adamenco, and the cross-description of these terraces in A. Khubka's report permit pointing to good reasons for distinguishing the first river terrace, which stands out in the general chain of the terracelike passages of the Cosoutsi-Soroki bend. The height of the Cosoutsi terrace surface determined as 12 - 15 m and the position of its socke at the level of the shore line testify to the parameters which are totally whithin the oscillation range of level 1 of the river terrace, which range is determined by I. Ivanova for the Middle Dniestr area (Ivanova 1977, p. 139). We can add to it the groundlessness of the ideas of block dislocations and landslide displacements suggested by our opponents, as well as the absence of the typical loess depositions, which are indispensable for the second Dniestr terrace and which are often disjoined by fossil soils. It can be presumed from this that the depositions in the lower part of the Cosoutsi archaeological section were formed not earlier than the Bryanski interstadial.

Let us examine the stratigraphy of the Cosoutsi site (fig. 3). The socke bed of the terrace, made up of blocks of sandstone plates, is overlaid with river-bed facies of alluvial depositions. Their specific character is formed by the overlaying of clays and loams which

vary in density and colour, often cropout, delaminate and do not always alternate successively. The sharp growth of the sandstone content in some of the layers in the upper part of this almost three-meter formation (14,15 - 17,00) is evidently connected with the sedimentation of Dniester beach at the level of the terrace surface being formed. The sediment accumulations of the conditionally marked out "low flood-lands" with sandstone inclusions are notable higher along the archaeological section (11,20 - 14,15 m). The accumulation of its depositions was to large extent determined by alluvial layers, but this time with indispensable inclusions of clayey horizons, enriched in addition to it with rare products of bed-rock break-up. Several layers of the sixth formation (fig. 3 : 6) are very curious in this respect. In I. Borziac's opinion two of these layers, which are lying below and dark-coloured, can be correlated with fossil soils. It is not out of the question that the palaeopedological analysis will permit its identification in the future, and the complex study will permit its age comparison with the period of moderate rise of temperature at the level of 24 - 30 thousand years. In this case the dating of the earliest cultural layers (20,21), discovered under the "fossil soils" (11,20 - 12,00), can be attributed to the Early Ostashkovo interval. The traces of the fall of temperature in the form of slantwise directed fissures are marked further higher along the section (10,59 - 11,20 m). It is not out of the question that they are connected with frost structures though there is no ground to disregard their possible formation as a result of drying in. The similar irregularities are also met whithin the archaeological section of the Cormani IV site, where the deep fissures with dislocations are of a frost origin (Ivanova 1982, p. 233). Taking into consideration that the similar processes are quite probable during the period of the minimum of temperature, we are prone to consider the remains of 6 cultural layers (14 - 19), found in the "fissure depositions", to be conditionally correlated with the interval of 18 -20 thousand years. The upper part of the formation (fig. 3 : 5) of these depositions, which is the most dense and clayey, was dated in the radiocarbon laboratory of the Arizona University. The carbon mass from the 14 - 16 cultural layers produced the dates - 18.140 ± 165 B.P. (6913) and 18.935 ± 160 B.P. (7412). The composition of the faunistic complex, inclunding mammoth and wooly rhinoceros, which are rare enough or completely absent in the overlaying layers, can serve as an evidence of a relatively cold climate. The definitions of small rodents, carried out unfortunately down to the depth of 10 meters ony, testify to the presence of *Dicrostonyx* in the transitional zone from the coldest part of the section to the depositions with traces of the rise of temperature.

The next formation of depositions (4 in the depth of 7,70 - 10,05 m), containing nine cultural layers (5 - 13) is reliably connected with the transition from the coldest stage of the Ostashkovo glaciation to the Lascaux interval in the form of cyclical iterative oscillations, caused by feebly marked rises of temperature with the formation of embyonic soils by the intervals still cold enough with the depositions of disintegrated rock materials. The end of this process can be considered to be a short climatic stabilization at the final stage of the Lascaux interval, dated as far as 17 thousand years, what is determined on the basis of the most pronounced from the embryonic soils which is up to 15 cm thick in the uppermost part of the formation. The first five cycles of the sediment accumulation were singled out by O. Adamenco on one of the intermediate sections of the site. Earch of the cycles, consisting of 3, less often 4 components indispensably starts with loam, containing humus, whith are sometimes replaced by a whitish carbonate horizon, in certain cases with "byeloglazka" inclusions or those of small pelletized flints, less often with small soft clumps of back-earth-like soil. Probably the similar traces of soil sedimentation were noted by I. Ivanova (1982, p. 233) for the period of 16 - 17 thousand years on the site of Molodova V, what was reflected for some unknown reason only in the general characteristic of the Dniester sites. The final element of each cycle is represented by the horizons, containing brocken rock and loam, their thickness vary from 5 to 70 cm, their disintegrated rock material, consisting of pieces of different sizes (chalky clay, flint, limestone), pelletized to a various extent is grouted with compact loam. The dismemberment of the whole deposition of formation by such horizons enriched with brocken rock, as well as the decrease of sand

material content reflect the predominance of deluvial-proluvial processes in the sedimentation of "high flood-lands" depositions. Various ground molluscs supplemented with freshwater species, inhabiting channels, only at the level of the 8 th cultural layer serve as an index of it.

The major part of the radiocarbon dates, determined on the basis of the charcoal remains from cultural layers 5 - 13 are witin the limits of 17 - 18 thousand years. So L. Sulerzhitski received the date of 17.030 ± 180 B.P. (GIN 4152) for lower layer 13 and 17.100 ± 250 B.P. (GIN 4150) for layer 11. Yu. Svezhentsev dated layer 11 as well and received 17.642 ± 830 B.P. (LE 3308). The next series of datings is related to cultural layers 8 and 9 : L. Sulerzhitski gives 16.160 ± 250 B.P. (GIN 4149), Yu. Svezhentsvev - 15.520 ± 860 B.P. (LE 3307), 17.390 ± 580 B.P. (LE 3305) and 17.400 ± 340 B.P. (LE 3306) and V. Panychev - 17.840 ± 550 B.P. (SOAN 2462). The span between 17 and 18 thousand years can serve as the dating mark for layers 8 - 9. A group of datings was also carried out for cultural layers 5 - 6, L. Sulerzhitski gives 18.200 ± 300 B.P. (GIN 4148), Yu. Svezhentsev - 16.850 ± 480 B.P. (LE 3304), V. Panychev - 16.940 ± 1.215 B.P. and 19.020 ± 925 B.P. (SOAN 2462). When we examine the datings made for layers 5 - 6 , we cannot help but mark the contradiction between the GIN date and one of the SOAN date within the whole dating chain. It seems that the latest SOAN date and the date given by the IIMC laboratory correspond to the facts to a greater extent. The thermoluminescence dating, carried out by L. Voskova, for the lower border of the sand stratum, covering the depositions, which include embryonal soils and horizons of broken rock. This date of 16.000 ± 1000 B.P. can evidently serve in the Cosoutsi section as the delimitative border between the Lascaux rise of temperature and the successive ancient Dryas fall of temperature. At the same time the radiocarbon datings of cultural layer 4, whose remains are revealed in the lower part of the Dryas sands, send us back to the 17 th millenium. So L. Sulerzhitski insists on the date of 17.200 ± 300 B.P. (GIN 4146) whereas Yu. Svezhentsev proposes the date of 17.400 ± 250 B.P. (LE 3312), that is close to it. Thus, if the contradiction in determining the age for layers 8 - 9 and 5 - 6 can be explained by the excessive age overstating in one or two datings, so the dating carried out by the two different laboratories, for layer 4 suggest an idea of a certain regularity. If we remember at the same time that in the corresponding part in the archaeological section of the Molodova V site, the similar combination of the dates is observed in the respect of cultural layers 6, 5 and 4 (16.750 ± 250 and 17.500 ± 180 for layer 6, 17.100 ± 180 B.P. for layer 5 and 17.100 ± 1.400 B.P. for layer 4), but this such an mysterious phenomenon can only be explained by the action of a natural process. S. Butomo's conjecture (Butomo 1965, p. 30) of the dating distortion by 800 -1000 years in the transition from the climatic minimum to the rise of temperature.

The data of the pollen analysis, made by S. Medyanik and K. Kremenetski confirm the gradual softening of the climate from the coldest part of the section (layers 14 -17) to be depositions containing embryonal soil (5 - 13). The analysis of individual samples, taken from the upper part of the latter revealed the presence of pollen grains of hazel, lime and hornbeam which fact is bound up by K. Kremenetski with their possible re-deposition (Borziac, Kremenetski, Prepelitsa 1990, p. 59). Though the well-known palinological characteristics of the Molodova and Cormani sites definitely point out to the indispensible presence of broad- leaved species within the well-pronounced rise of temperature (Lascaux), their proportion is not high - only 2 - 3% (Pashkevich 1987, p. 150-151; 1977, p. 105-107), but they perform the indicator's role clearly enough. The samples taken from the upper and lower parts along the section, testify to rather cold and dry climatic conditions. The pollen percentage of *Betula nana, Betula humilis, Alnaster* and the spores of microthermophilous species (for example, *Selaginella selaginoides*) is rising. The representatives of the steppe flora are observed to prevail more and more.

The results of the malacofaunistic analysis, carried out by M. Voloshina (1986) and A. Prepelitsa (Borziac and others 1990) are somewhat contradictory. The mammal fauna, studied by A. David, testifies to a multiple predominance of reindeer (more than 80 %) over the other animal species. Horse and aurochs are less common (12% and 7%).

The remains of mammoth, wolf, polar fox, fox, hare and birds are insignificant. While washing out the soil several vertebrae of large fishes were found.

Finishing the description of the Cosoutsi section we would like to point out to the specific character of the depositions of loesslike sand loam and fine sands (formation 3 in the depth of 3,80 - 6,10 m), containing 4 upper cultural layers. In contrast to the already characterized sandcontaining strata, whose sedimentation was actively favoured by aluvial processes, the sand depositions of the third formation are of aeolodelluvial provenance. The even distribution of numerous small sand-containing layers along the whole area of the gently sloping and undulating ancient surface and the absence of the freshwater fauna of the molluscs within the stratum can be interpreted as an indirect evidence of this fact. The archaeological section of the Cormani IV site shows a very similar structure of its upper part in many respects. A low position of the socke or basal part of the Cormani terrace, the analagous conditions of sediment accumulation caused an almost identical deposition of the sand stratum, covered with a formation of loesslike sand loam (Ivanova, 1977, p. 169-170), whose bedding conditions are correlated wich those of Cosoutsi. As I. Ivanova points out, the sands were being deposited under the conditions of the temperate-cold humid climate, existing at the beginning of the Dryas and varouring the spreading of mixed forests with the predominance of the conifers, whereas the loess-like sand loams testify to the landscape turning more and more into the steppe one under the conditions of the areid cold climate. The relation between the remains of three cultural layers (2 - 4), contained within the formation of the Dryas sands, and the clayey layers is of interest. The similar context has been retraced in the post-glacial depositions of one of the Molodova sites (Ivanova 1987, p. 104, fig. 8). The thermoluminescence dating of the upper sand stratum part of 13.000 ± 1.000 B.P., made by L. Voskov permits drawing the upper boundary-line of the ancient Dryas and matching the period of sediment accumulation within the upper most palaeolithic layer with the date obtained.

Besides the upper layers of the Cosoutsi site, the sites of Ataki I and II, Vadu-Rashkov, Galfa and Ciobruci are correlated with the post-glacial period.

The Ataki I site was discovered in the north-western outskirts of the town of Ataki (fig. 1 : 2) on the high 70 - 85 meters long terrace of the right slope of the Dniester valley. The repeated study of the site stratigraphy (Ketaru, Ivanova, Adamenco 1986a) up to the alluvial accumulations of the terrace permits singling out three fossil soils, disjoining the loess depositions (fig. 2 : 5). In contrast to two lower hydromorphous soils the upper formation is represented in the form of dark-grey humus-containing and very compact loam, where palaeolithic pieces and animal bones are found in the lower parts of the terrain in the depth of 1,9- 2,1 m. One more horizon of artefacts is bound up with the above-lying loesslike depositions (in the depth of 0,8 - 1,0 m).

The Ataki II site was discovered by N. Ketraru in the western outskirt of the town of Ataki on the promontory-like plot, formed by the bent of a deep ravine at the high of 80 - 90 m above the shore line. The location of the cultural layer is connected with the upper part of the loess depositions (fig. 2 : 6) extending down along the slope and forming a stratum, which is not less than 20 m thick (Ivanova 1975, p. 94). The sand-containing loess depositions, where flint pieces are found in the depth of 1,0 - 1,4 m, are underlaid with brown fossil soil at the depth of 1,9 - 2,3 m.

The presence of the fossil soil under the cultural layer of Ataki II and the relation of one of the Ataki I cultural horizons to its upper part call for the necessity to identify them. Before the palaeopedological characteristics are defined the sites can not be attributed to the Final Palaeolithic without any doubt. The doubts can become stronger while examining the faunistic collection of the Ataki sites (David, Ketraru 1970)- whose collection testifies to the predominance of horse overs reindeer. On the contrary the other faunistic collection - that of molluscs - totally corresponds to the mixed composition of the late glacial complexes. According to V. Motuz's definition (Ketraru, Adamenco 1986a) the combination of cold-loving *Columella*

columella Mart. and *Vallonia tenuilabris* A.B. and heat-loving *Chondrula tridens, Helicella striata, Pupilla sterri* is observed in Ataki I. The malacofaunistic composition of Ataki II is more cold-loving (Ketraru, Ivanova, Adamenco 1986 b).

The collections of artefacts from Ataki I and II sites, consisting of 1.109 and 2.749 pieces, 124 and 185 tools accordingly, have a number of features in common. At the same time it is quite surprising that the majority of the used pieces - middle-sized blades, varous dihedral burins, comparatively small collection of microtools, especially in Ataki I contrasts with the parameters, which are typical of the final stage of the Late Palaeolithic. Nevertheless it is very important that Ataki sites are attributed to the group of such sites as those of layers 1, 1 a and 2 from Molodova V, layer 2 from Cormani IV, of Vrublyovtsy, of the upper layers from Molodova I and Oselivka I (Chernysh 1975, 1977, 1982, 1987; Kuchugura 1985). The inclusion of these sites in the same cluster, that became apparent by the combinative groupping on the basis of a number of attributes, known from A. Chernysh's work (1973) does not signify at all that his interpretation and the attribution of the typically late palaeolithic sites to the Early Mesolithic are not justified. The prevalence of Gravettian elements, narrow rectangles and elongated triangles, arched back points, pieces on truncated blades, flat burins with the predominance of burins on retouched truncation, microlithic and circular scrapers, scrapers on truncated or straightened blades, flattened cores, testify only to the prolongation in the development of the late palaeolithic traditions under the conditions of the global ecological reconstruction when the crisis phenomena in hunting did not bring about the transformation of its structure.

The remained late glacial sites are correlated with the above period mainly according to the typological criteria. Let us dwell on two of them. The Calfa site (fig. 1 : 8), situated in the mouth area of the Byk (Dniestr right tributary) valley contains 2.032 flint objects, including 115 tools. The Giobruci site fig (1 : 9), discovered within the marginal part of the plateau, lying on the right slope of the Dniestr valley, present 11.360 flint pieces, including 475 tools. The relation of the both monuments to the Final Palaeolithic is assumed on the basis of the predominance of scrapers and burns on lamellar flakes, series of truncated scrapers, the presence of subcircular scrapers and flat burins, blades and microblades with retouched truncation, supplemented in Ciobruci with wide rectangles and an impressive number of Gravettian elements. At the same time Calfa is evidently some-what older than Ciobruci due to a greater variety of core sidescrapers, where as Ciobruci contains a more differentiated collection of the other scraper types - side and microlithic scrapers, scrapers on tuncated blade, circular one, but burins on retouched truncation play the leading part (Sapojnicov 1987).

The proposed argumentation aimed at defining the chronological status of the late palaeolithic site of the Moldavian Dniestr zone admit the consideration of the trinominal scheme of division into periods. Its first stage, that can be correlated with the end of the Bryansk interstadial and the Early Ostashkovo period, include the Climautsi I and II sites. The second stage, embracing the period from the coldest stage of the Ostashkovo glaciation to the Lascaux interval, is singled out on the basis of the data, obtained from layers 5 - 17 of the Cosoutsi site and the presumably correlated Rashkov VII and VIII, Iorjnitsa and Cureshnitsa sites. And at last the third stage, correlated with Late Glacial period, is represented by the Ataki I and II, Calfa, Cioburci, Vadu-Rashkov and Cosoutsi layers 1 - 4.

ABREVIATIONS :

AIM : Arheologicheskie issledovaniya v Moldavii. Kishinev.

APMP : Antropogen i paleolit Moldvaskogo Podnestroviaya. Kishinev.

BKICP : Bulleten komissii po izucheniu chetvertichnogo perioda. Moskva.

MI : Molodova I. Unikalnoe musterskoe poselenie na Srednem Dnestr. Moskva.

MIA : Materialy i issledovaniya po arheologii SSSR. Moskva.

MPSM : Mnogosloinaya paleoliticheskaya stoynaka Molodova V. Liudi kamennogo veka i okrujaiushaya sreda. Moskva.

ODAE : Otchet Dnestrovskoi arheologicheskoi expeditsii. Kishinev.

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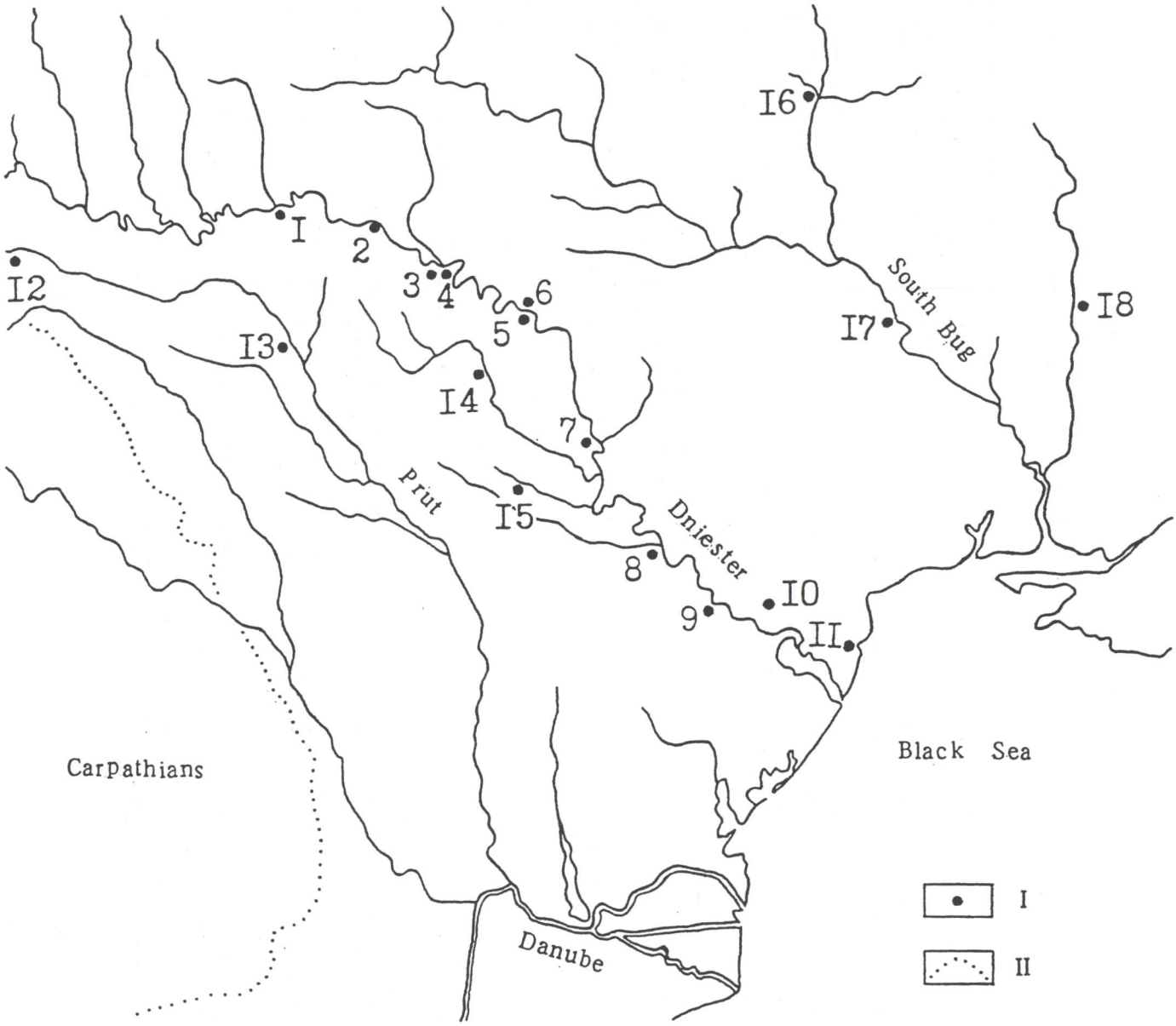
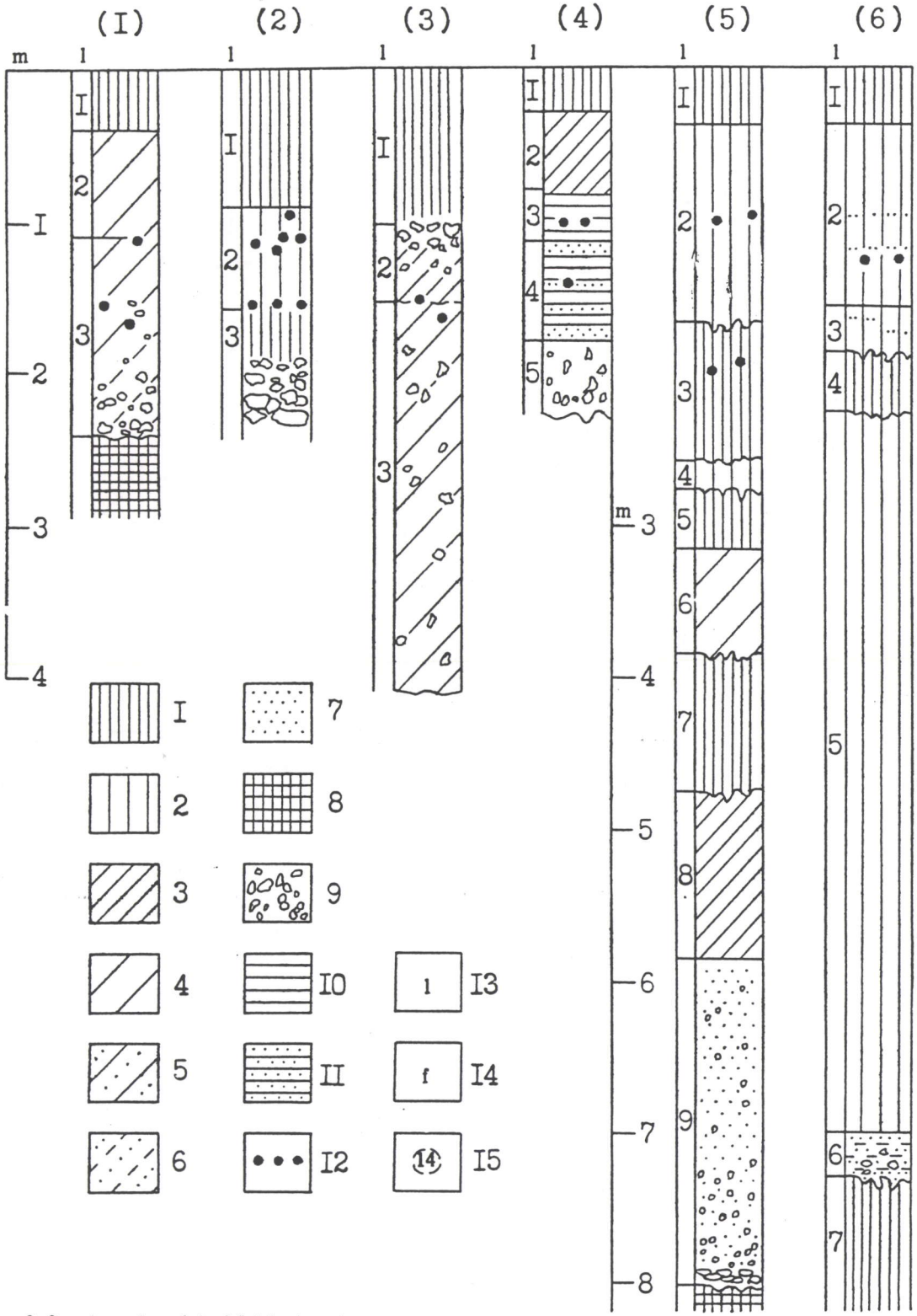


Figure 1. Map of the Late Palaeolithic sites of the Modavian area.

I - Site; II - limit of Carpathian mountains.

1 - Mollodova I and V;
2 - Ataki I and II;
3 - Iorjnitsa, Cureshnitsa;
4 - Cosoutsi;
5 - Climautsi;
6 - Rashkov VII and VIII;
7 - Ocsentie;
8 - Calfa;
9 - Ciobruci;
10 - Zelyony Khutor I and II;
11- Bolshaya Akkarzha;
12 - Zamostye I;
13 - Stinca Ripiceni;
14 - Ciutuleshti;
15 - Reci;
16 - Vladimirovca;
17 - Anetovca II;
18 - Sagaydak I.



Figur 2. Stratigraphy of the Moldavian sites.

I - Climautsi I; II - Climautsi II; III - Rashkov VII; IV - Rashkov VIII; V - Ataki I; VI - Ataki II.

1 - soil;
2 - loess;
3 - aleurite;
4 - loam;
5 - sanded loam;
6 - sandy loam;
7 - sand;
9 - clastic material;
10 - clay;
11- overlaying of clay and sand;
12 - cultural remains;
13 - litological layers;
14 - formations;
15 - number of cultural layer.

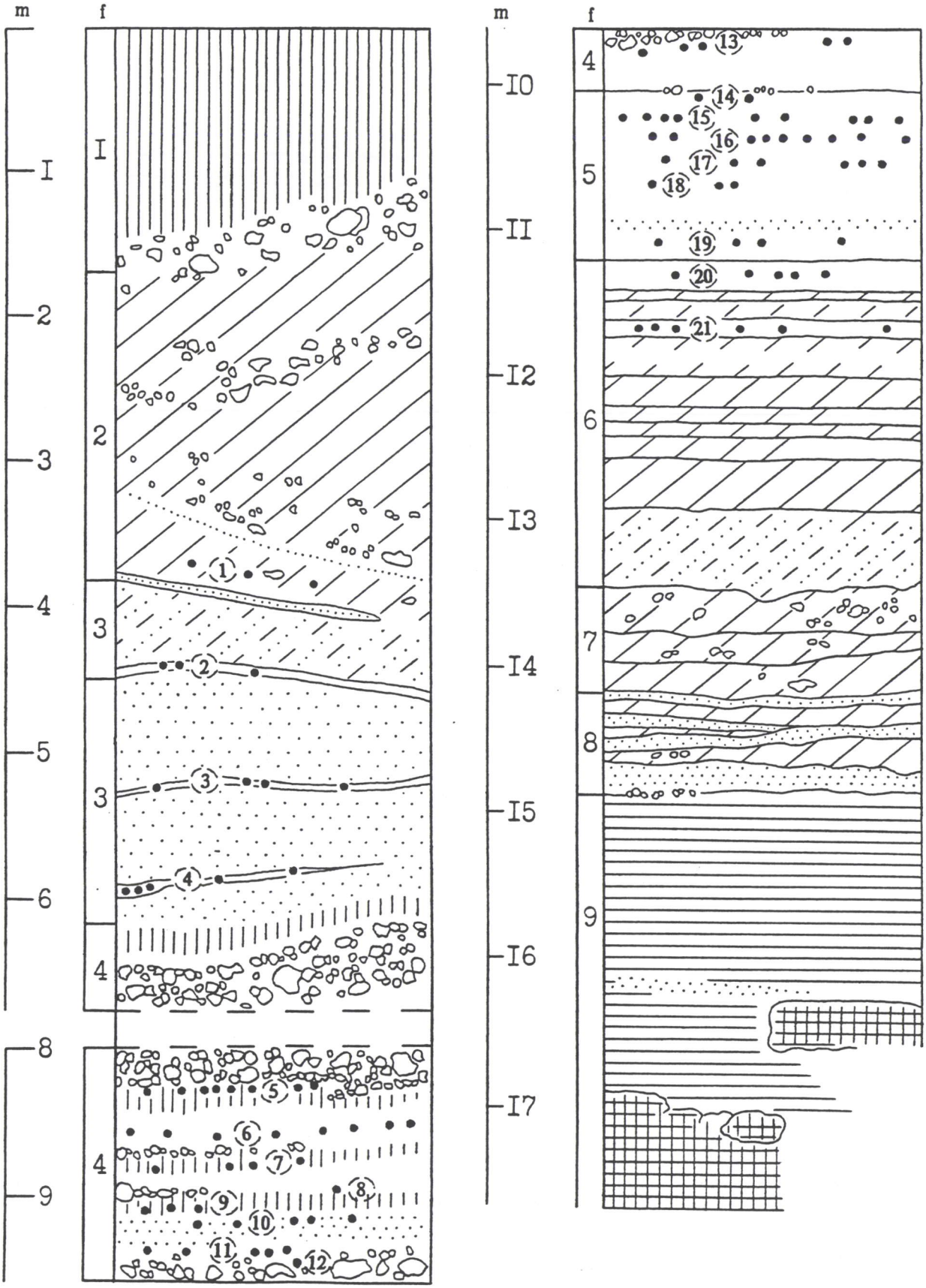


Figure 3. Stratigraphy of Cosoutsi site.