ANNALES HISTORICO-NATURALES MUSEI NATIONALIS HUNGARICI
Tomus 76. Budapest, 1984 p. 323–334.

Some anthropological problems of the Mesolithic Europoids, I.

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Abstract — Ecological and palaeodemographical aspects of Mesolithic populations are outlined on the basis of subcontinental comparison of some craniomorphological characters, with special reference to those of the Central Danubian Basin. With 4 tables.

Material and method

Recently a number of authors have given increased attention to the interdisciplinary analysis of the Epipaleolithic (Mesolithic) findings of *Homo sapiens*. Within this framework the correlations existing between certain craniological traits and the alteration of environment as well as the role of food consumption have been evaluated (Ferembach 1978a–b, 1979; Roghinsky 1974; Bunak 1980). Some of the authors have pointed out the form modifying effect of increased insolation which manifested itself in the altered craniomorphological traits of the Mesolithic populations (Ferembach, Roghinsky, see above). Experiments of great importance have been carried out on the adaptive nature of the hypsistenocephaly with an indication to its primary area (tropical zone) (Volkov-Dubrovin & Roghinsky 1960). The manifold connections between climate, food consumption and population density have been analysed by some authors (Doluhanov & Hotinskiy 1974; Doluhanov 1979; Andrianov 1974; Budueko 1977). Studied were the paleodemographical problems of the Mesolithic populations by some other authors, too (Acsádi & Nemeskéri 1970; Alexeyev 1972, 1978; Bunak 1980; Deevey 1960; Henneberg 1975). Finally the disharmonic morphological configuration of the facial skeleton (heteroplatiprosopy) which could be observed in the Europoid populations from the Upper Paleolithicum and Mesolithicum have repeatedly been pointed out (Yakimov 1957, 1960, 1961; Alexeyev 1978, 1979, 1983).

The abovementioned interdisciplinary analyses indicated the choice of the subject of the present paper. Because of the supposable genealogy of some morphological characteristics the more recent data from the Late Neolithic Kisköre-Gát have been included into the comparative analysis by author (Tóth 1972, 1973, 1982). The craniometrical and index data originating from 49 series have been evaluated according to the categories given by Alexeyev & Debets (1964).

Interpretation of results

Of the morphological modifications the disharmonic feature of the facial skeleton (heteroplatiprosopy) in the summarized group of Europoids from the Upper Paleolithicum deserves attention, which manifested itself in the values of the nasomalar and zygomaxillar angles of both sexes. As it is known Europoids are characterized by a value of 138 degrees at the orbital level (Debets 1961), but for the abovementioned Upper-Paleolithic groups the appropiate values are significantly higher (Tables 1 and 2). It means that for these groups, who lived in the Final Pleistocene a slightly expressed flatness was characteristic for the nasomalar region. Similar values are characteristic for the Mesolithic male and female series from Vassilyevka III and Vlasac as well as fora single male skull from El Wad with a similar chronology. The relative flatness of the nasomalar region is well expressed in the male and female Neolithic findings from Vassilyevka II and Kisköre-Gát, further in the female groups from Lepenski Vir, Ukraine and Zveinieki (Tables 1 and 2). All this deserves our special attention as the abovementioned values are observed among the various subcontinental groups inhabiting the area of Europoids (North-east and Central Europe, Balkan peninsula, East-Mediterranean). From ecological point of view all the localities of these groups are

Table 1. Some comparative data of the neuro- and splanchnocranium (males)*

Age	Characteristics / Ethnic groups	1	8	17	8:1	17:8	45	77	Zm′	75_1	DS	SS
Upper Paleolithic	Magdalenian, France (FEREMBACH 1978)	190.0 (5)	139.3 (7)	141.5 (2)	73.2 (5)	98.3 (2)	141.0 (2)	–	–	–	–	–
	European, summarized (ALEXEYEV 1978)	195.2 (39)	141.2 (40)	138.2 (21)	72.5 (39)	101.5 (21)	139.9 (20)	143.8 (13)	127.5 (11)	30.7 (11)	12.3 (6)	4.6 (10)
Mesolithic	Group from France (FEREMBACH 1978)	189.7 (18)	137.7 (19)	140.4 (13)	72.8 (18)	101.6 (13)	138.8 (16)	–	–	–	–	–
	North-West Europe (C.-WESTERMANN 1974)	189.9 (8)	139.9 (8)	138.8 (8)	73.8 (8)	99.5 (8)	140.0 (8)	–	–	–	–	–
	Teviec+Hoëdic (ASMUS 1973)	188.2 (11)	137.2 (11)	139.5 (8)	73.0 (11)	101.2 (8)	139.3 (10)	–	–	–	–	–
	El Wad (Natufian) (ALEXEYEV 1983)	188.0 (1)	148.0 (1)	–	78.7 (1)	–	141.0 (1)	143.0 (1)	127.0 (1)	27.0 (1)	12.1 (1)	2.7 (1)
	Afalou-Bou-Rhummel (FEREMBACH 1973)	194.9 (23)	145.7 (23)	143.7 (13)	74.8 (23)	97.7 (13)	141.6 (21)	–	–	–	–	–
	Taforalt, Morocco (FEREMBACH 1973)	194.6 (14)	146.1 (14)	144.0 (7)	74.5 (13)	98.0 (6)	147.4 (8)	–	–	–	–	–
	Vlasac, Lower Danube (NEMESKÉRI; ALEXEYEV 1979)	194.1 (18)	140.1 (19)	145.9 (7)	72.3 (16)	104.2 **	138.0 (9)	142.2 (11)	135.0 (3)	25.0 (2)	–	4.9 (3)
	Vassilyevka I. (KONDUKTOROVA 1973)	195.8 (10)	135.0 (9)	144.7 (3)	70.1 (9)	110.0 (3)	140.7 (11)	136.5 (9)	129.0 (2)	32.3 (3)	–	3.9 (7)
	Vassilyevka III. (GOHMAN 1966)	192.7 (16)	137.0 (16)	147.0 (4)	71.2 (16)	104.2 (3)	139.3 (16)	140.1 (16)	124.2 (13)	35.0 (11)	12.1 (6)	5.5 (11)
	Voloshskoye (DEBETS 1955)	199.5 (6)	132.0 (6)	139.5 (6)	66.2 (6)	105.8 (6)	129.2 (5)	132.2 (6)	116.8 (4)	35.5 (2)	–	4.1 (2)
	Ukraine summarized)) (KONDUKTOROVA 1973)	194.9 (32)	135.5 (31)	143.0 (13)	69.9 (31)	106.5 (12)	138.2 (32)	137.5 (31)	123.1 (19)	34.6 (16)	12.1 (6)	4.8 (20)
	Zveinieki, (Late) (DENISOVA 1975)	187.6 (12)	136.5 (13)	140.2 (12)	72.8 (11)	103.0 (12)	136.9 (11)	139.8 (8)	125.5 (9)	31.7 (9)	11.5 (7)	4.6 (10)
	Natufians (summarized) (FEREMBACH 1973)	194.8 (6)	134.8 (6)	–	69.2 (6)	–	137.2 (4)	–	–	–	–	–

Neolithic	Zawi Chemi Shanidar (FEREMBACH 1970)	187.0 (1)	134.0 (1)	125.0 (1)	71.7 (1)	93.3 (1)	133.0 (1)	–	–	–	–	–
	Chatal Hüyük (FEREMBACH 1972)	190.4 (23)	139.3 (23)	–	73.1 **	–	–	–	–	–	–	–
	Nea Nikomedeia (ANGEL 1973)	183.5 (4)	144.8 (4)	135.3 (3)	79.6 (4)	93.6 (3)	128.0 (4)	–	–	–	–	–
	Vassilyevka II. (GOHMAN 1966)	189.5 (10)	145.6 (10)	144.3 (3)	76.7 (10)	97.2 (3)	153.5 (9)	144.0 (8)	129.5 (9)	31.7 (3)	–	4.9 (3)
	Vovnighy (KONDUKTOROVA 1973)	193.0 (41)	144.4 (43)	145.5 (22)	74.8 (40)	101.7 (22)	146.2 (40)	138.9 (41)	126.7 (27)	29.6 (20)	13.8 (15)	5.2 (29)
	Dereivka (ZINYEVITSH 1967)	194.7 (42)	144.6 (50)	145.3 (18)	74.4 (42)	100.6 (18)	144.5 (12)	138.6 (11)	123.6 (7)	28.0 (9)	13.8 (11)	5.1 (12)
	Ukraine (summarized) (KONDUKTOROVA 1973)	193.7 (132)	144.4 (143)	146.1 (61)	74.6 (131)	101.4 (61)	146.8 (86)	139.5 (83)	126.9 (67)	30.3 (51)	13.7 (31)	5.1 (65)
	Zveinieki, (Early) (DENISOVA 1975)	190.4 (14)	138.1 (14)	144.7 (14)	72.6 (14)	105.0 (14)	139.1 (12)	138.2 (11)	122.0 (8)	32.3 (7)	11.9 (9)	4.5 (8)
	Lepenski Vir (ALEXEYEV 1979)	–	–	–	–	–	–	138.4 (5)	129.0 (1)	40.0 (1)	13.0 (2)	4.9 (3)
	Kisköre-Gát (TÓTH 1974)	188.0 (3)	135.3 (3)	150.5 (2)	71.9 (3)	110.9 (2)	134.0 (1)	143.3 (1)	116.3 (1)	–	–	–
	Lengyel-culture (ZOFFMANN 1974)	186.5 (14)	139.6 (15)	145.5 (6)	74.8 (13)	103.3 (6)	140.3 (3)	–	–	–	–	–

* Calculated after means by the author of the present paper

placed in subtropical, temperate and boreal climate zones. On the other hand, as it is seen from the numerical data the craniological polymorphism characterizing the Upper-Paleolithic populations occurred through the Mesolithicum in a number of subcontinental groups of Europoids.

The breadth of the facial skeleton as an element of the abovementioned polymorphism reveals significant differences among the Mesolithic groups. It may be surprising that the maximum values of the bizygomathic breadth characterize both the Maghreb and Ukrainian groups who inhabited localities which are very far from each other (Table 1). It can be seen from the data relating to this subject that the hypomorphy of the facial skeleton first appeared in the Mediterranean, i.e. in the subtropical zone (Balkan peninsula). This is well expressed in the significantly differing data of facial breadth from male and female groups from the Early-Neolithic Mediterranean Nea Nikomedeia and from the northern Mesolithic Zveinieki (8.5–9.0 mm!) (Tables 1 and 2). However, it deserves attention that the breadth of the facial skeleton has a significantly higher value in the male as well as in the female group from the Late-Mesolithic Vlasac than in the group from Nea Nikomedeia (plus 10–12 mm!) (Tables as above).

In some of her papers FEREMBACH (1978a–b, 1979) documented the modifications of some craniomorphological characteristics which took place between the Final Pleistocene and the Mesolithic, caused by changes in the climate. She supposes a connection on the one hand between the rising temperature, on the other one the increase in basion-bregma height, minimum frontal diameter, the cranial height-length index and the nasal breadth. VOLKOV-DUBROVIN & ROGINSKY (1960) turned their attention to the fact that the craniological finds from the European Upper-Paleolithic are characterized by a relatively great height-breadth index value. They controlled experimentally in recent craniological material (Pamirians, Kirghisians) the effect of a permanent high temperature. They refer to the fact that the maximum value of the height-breadth index—often above 100—can be found in the aborigin populations inhabiting the tropical zone. Authors find worth mentioning that the value of this index was in the Mesolithic populations of western and easterns Europe similarly high and therefore they suppose a southern origin of this feature in the ancient populations of both subcontinents. These high index values are clearly expressed in further finds from the recent past (Tables 1 and 2). Values above 100 characterize the overwhelming majority of the male series presented by us. The close values of this index found in the Mesolithic group Vlasac and in those from Ukrainia as well as from the boreal Zveinieki deserve particular attention; the index of cranial height-breadth is in a number of female series of similarly high values (the Mesolithic Ukrainian and French groups as well as those from Zveinieki) (Table 2).

The supposable connections between the modifications of the craniomorphological traits and the climatic changes, i.e. the effects of the rising temperature in the Mesolithic are clearly reflected by the identity of the values of the mentioned cranial index in all the female series (Mesolithic French and Early Neolithic series from Nea Nikomedeia) (Table 2). It is a craniomorphological trait of tropical origin which also existed—according to its high index-value—in the Neolithic East-European-Baltic populations (Tables 1 and 2). The overall rise in temperature during the Mesolithic was not considerably influenced by accidental brief climatic oscillations. Thus the permanent rise in temperature which lasted about three millenia (in the Mesolithic) seems to be a sufficient natural ecological condition for the thermo-adaptive development of hypsistenocephaly in the Mediterranean region and for the persistence of this characteristics in the more northern zones of Europoids area during the Epimesolithicum. It may be supposed that this morphological thermo-adaptation did not occur generally in populations from all the subcontinent, because the ecosensitivity of the individuals composing the groups was not the same. The values of the height-breadth

index are high in the Late-Neolithic male series from the Central Danubian Basin (Kisköre-Gát, Zengővárkony-Lengyel culture) (Table 1). Altough the number of cases is fairly small in both groups, we are able to point to the territorially close parallelism revealed by the mentioned adaptative morphological trait (Vlasac and the Ukrainian Meso-Neolithic series) (Table 1). Besides this the significant chronological distance cannot be left out of consideration. Thus e.g. the Kisköre-Gát (Late-Neolithic) findings are two thousand years younger than the Mesolithic Vlasac or the Early-Neolithic Nea Nikomedeia (Table 3). Similarly great is the temporal distance between the Tisza and Lengyel cultures—considering them as an entity—and the abovementioned two series from the Lower Danube and the Balkan-peninsula. During these two millenia the subtribal groups were moving in both directions, but it is without doubt that the northward migrations started in the chronologically older Mediterranean. Certainly the Late-Mesolithic group from Zveinieki in the periglacial zone was about five hundred years younger than the also Late Mesolithic population from Vlasac in the Lower Danube region. Particular attention deserves the fact that the Late Mesolithic Zweinieki is after all of the same age as the Middle-Neolithic Dikili-Tas from Greece (Table 3). It seems irrealistic to suppose a systematic connection between the southern and northern zones of the Europoids' area in a secular time period. The connections as well as the swarmings had been determined by the population density of the given subcontinents which in turn depended on ecological factors.

As it is known in the last hundred years archeological excavations were carried out with extreme intensivity in the Europoids' area including the Central Danubian Basin too. In spite of this intensive activity the human skeletal remains from the Meso- and Neolithicum are very rare in relation to the findings from the archeological sites. Taking into consideration the abovementioned intensive searching activity it can be supposed that in different region of the Europoids during the Meso-Neolithicum which lasted several millenia the inhumations was not systematic and overall. In this connection paleodemographical calculations may have a directive value.

As it is known DEEVEY (1960) estimated the total Mesolithic population of the whole world at 5.32 million. However, in the Village Farming and Early Urban periods (Final-Mesolithic and Neolithic—T.T.) the total population increased in number to 86.5 millions. That is, in four thousand years the number of humans increased about 17 times. In accordance with this the population density also increased in the mentioned period, that means the number of humans arose from 1 per km^2 to above 20 per km^2 (BUNAK 1980; smaller scaling-down of data by the author). The results of these calculations make one contemplate and we have to take into consideration the ecological crises which occurred in the Final Pleistocene (BUDUEKO 1977): the enviromental conditions became altered, a significant part of the big herbivorous mammals supplying men with food became extinct and the search for new food resources caused temporary difficulties to the Mesolithic hunter tribes. Some of the groups were able to overcome the difficulties including starvation to such an extent which was in accordance with their ecosensitivity. The disadvantageous factors affecting human life in the Mesolithicum resulted in a decrease in population density (DOLUHANOV 1979). There are many signs for a decreased average life span. The paleodemographical data from the Ukrainian Mesolithic and Neolithic illustrate quite well the abovementioned fact (ALEXEYEV 1972). In this region the population during the whole Mesolithic period had a shorter average life span than the peoples from the following Neolithic period. In a given local group women seem to have had a shorter life span than men (Table 4). It might have depended on the more disadvantageous social-hygienic circumstances of women, particularly as regard to the lethal infections arising in the perinatal period. Some of the results from recent studies about the potential reproductive possibilities of prehistoric human populations are also fairly suggestive. Taking into consideration the former analyses done by ACSÁDI & NEMESKÉRI (1970),

Table 2. Some comparative data of the neuro- and splanchnocranium (females)*

Age	Characteristics / Ethnic groups	1	8	17	8:1	17:8	45	77	Zm′	75_1	DS	SS
Upper Paleolithic	Magdalenian, France (FEREMBACH 1978)	180.8 (9)	136.6 (9)	129.3 (6)	75.6 (9)	94.6 (6)	131.3 (5)	–	–	–	–	–
	European, summarized (ALEXEYEV 1978)	184.2 (21)	1372. (21)	131.7 (12)	74.6 (21)	96.1 (11)	131.0 (11)	143.2 (5)	125.3 (3)	29.1 (7)	–	4.7 (2)
Mesolithic	Group from France (FEREMBACH 1978)	184.6 (15)	136.7 (15)	136.2 (11)	74.1 (15)	99.8 (11)	131.7 (12)	–	–	–	–	–
	Teviec+Hoëdic (ASMUS 1973)	184.3 (13)	136.8 (13)	134.8 (9)	74.3 (13)	98.7 (9)	130.8 (10)	–	–	–	–	–
	North–West Europe (C–WESTERMANN 1974)	186.5 (2)	138.5 (2)	134.5 (2)	74.2 (2)	97.1 (2)	135.0 (2)	–	–	–	–	–
	Afalou-Bou-Rhummel (FEREMBACH 1973)	184.5 (14)	140.8 (14)	135.6 (10)	76.4 (14)	94.9 (10)	134.3 (12)	–	–	–	–	–
	Taforalt, Marocco (FEREMBACH 1973)	182.7 (8)	139.7 (7)	132.7 (3)	77.0 (6)	96.8 (3)	131.5 (4)	–	–	–	–	–
	Vlasac, Lower Danube (NEMESKÉRI; ALEXEYEV 1979)	186.1 (18)	141.8 (16)	139.6 (11)	76.3 (16)	98.4	133.4 (10)	146.3 (9)	126.3 (3)	–	9.9 (1)	–
	Vassilyevka I. (KONDUKTOROVA 1973)	184.5 (2)	129.0 (2)	–	69.9 (2)	–	134.0 (2)	133.7 (2)	–	–	–	4.1 (1)
	Vassilyevka III. (GOHMAN 1966)	180.7 (7)	129.0 (7)	–	72.4 (7)	–	125.6 (7)	140.0 (7)	121.6 (5)	34.7 (3)	11.8 (1)	4.9 (5)
	Voloshskoye (DEBETS 1955)	186.3 (3)	133.3 (3)	135.3 (3)	71.3 (3)	101.5 (3)	131.0 (2)	141.3 (3)	130.5 (2)	25.5 (2)	–	3.7 (2)
	Ukraine (summarized) (KONDUKTOROVA 1973)	182.7 (12)	130.1 (12)	135.3 (3)	71.8 (12)	101.5 (3)	128.1 (11)	140.1 (12)	124.1 (7)	31.0 (5)	11.8 (1)	4.5 (8)
	Zveinieki, (Late) (DENISOVA 1975)	181.3 (6)	133.8 (6)	136.8 (5)	73.8 (6)	104.0 (3)	129.2 (6)	141.5 (5)	126.9 (5)	25.4 (5)	11.1 (4)	7.9 (6)
	Natufians (summarized) (FEREMBACH 1973)	189.5 (4)	136.2 (4)	130.5 (1)	72.0 (4)	97.3 (1)	138.0 (1)	–	–	–	–	–

Neolithic	Nea Nikomedeia	178.9	135.4	134.8	75.6	99.8	120.7	–	–	–	–	–
	(ANGEL 1973)	(8)	(7)	(6)	(7)	(6)	(7)					
	Vassilyevka II.	187.6	141.6	135.5	75.5	100.5	141.0	143.4	132.2	32.5	–	3.5
	(GOHMAN 1966)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(2)		(2)
	Vovnighy	184.4	137.5	139.2	74.7	100.2	134.0	138.8	124.4	29.8	–	4.5
	(KONDUKTOROVA 1973)	(21)	(19)	(6)	(19)	(6)	(13)	(16)	(9)	(4)		(4)
	Dereivka	182.6	139.9	137.2	76.3	98.5	132.5	145.0	130.5	28.5	11.1	4.3
	(ZINYEVITSH 1967)	(23)	(25)	(15)	(23)	(15)	(4)	(4)	(2)	(2)	(5)	(5)
	Ukraine (summarized)	183.8	138.8	138.5	75.2	99.7	135.4	141.1	125.7	31.5	11.0	4.2
	(KONDUKTOROVA 1973)	(69)	(73)	(37)	(69)	(40)	(36)	(37)	(27)	(14)	(7)	(19)
	Zveinieki, (Early)	178.9	139.8	134.2	78.6	96.0	133.1	145.8	131.5	26.0	11.1	4.0
	(DENISOVA 1975)	(11)	(11)	(6)	(10)	(5)	(7)	(8)	(6)	(3)	(8)	(8)
	Lepenski Vir	–	–	–	–	–	–	143.4	124.8	33.5	12.5	4.5
	(ALEXEYEV 1979)							(9)	(4)	(4)	(5)	(5)
	Kisköre-Gát	175.0	133.2	134.6	75.9	97.8	128.5	140.2	119.4	29.0	12.0	4.5
	(TÓTH 1974)	(8)	(8)	(3)	(8)	(3)	(2)	(1)	(1)	(1)	(1)	(2)
	Lengyel-culture	180.0	131.5	132.0	72.9	96.6	124.0	–	–	–	–	–
	(ZOFFMANN 1974)	(18)	(17)	(4)	(16)	(4)	(1)					

* Calculated after means by the author of present paper

Notes to the Tables 1–2. MARTIN's numbers: 1 = Maximum cranium length, 8 = Maximum cranium breadth, 17 = Basion-bregma height; 8:1 = Cranial index, 17:8 = Height-breadth index, 45 = Bizygomathic breadth, 77 = Nasomalar angle, Zm' = Zygomaxillar angle, 75_1 = Nasalspine angle, DS = Dacryal subtense, SS = Simotical subtense

Table 3. Chronological dates of some Lithic Localities

Localities	Years	Periods	Authors
Natufians, Near East	10.000– 8.000 B.C.	(Early Mesolithic)	(FEREMBACH 1973)
Zawi Chemi Shanidar	8.870 B.C.	(Proto-Neolithic)	(FEREMBACH 1970)
Szekszárd– Palánk	8.400 B.C.	(Early Mesolithic)	(DOBOSI 1972)
North-West Europe	6.800– 3.500 B.C.	(Late Mesolithic)	(C-WESTERMANN 1974; JÖRGENSEN 1973)
Zveinieki, Latvia	5.000– 3.500 B.C.	(Late Mesolithic)	(DENISOVA 1975)
Chatal Hüyük	6.500– 5.800 B.C.	(Neolithic)	(FEREMBACH 1972)
Vlasac, Yugoslavia	6.500– 5.600 B.C.	(Late Mesolithic)	(ALEXEYEV 1979)
Nea Nikomedeia	6.100 B.C.	(Early Neolithic)	(ANGEL 1973)
Lepenski Vir	5.400– 4.600 B.C.	(Early Neolithic)	(ALEXEYEV 1979)
Körös-Alföld cult.	6.000– 4.600 B.C.	(Early Neolithic)	(TITOV & ERDÉLYI 1980)
Dikili Tas, Greece	4.850– 3.900 B.C.	(Middle Neolithic)	(TITOV & ERDÉLYI 1980)
Vinca– Lebő– Bicske	4.500– 4.000 B.C.	(Middle Neolithic)	(TITOV & ERDÉLYI 1980)
Tisza-culture	4.000– 3.600 B.C.	(Late Neolithic)	(TITOV & ERDÉLYI 1980)
Zveinieki, Latvia	3.300– 2.500 B.C.	(Early Neolithic)	(DENISOVA 1975)

Table 4. Numerical comparison of some paleodemographic data

Author	Mean life span			Author	Average fertility				
	Series (male and female)	year	(N)		Series	R_{pot}	$U_c = 8$	$U_c = 10$	N adults
ALEXEYEV 1972	Vassilyevka I. (males)	42.3	(11)	HENNEBERG 1975	Neandertal	.56	4.5	5.6	24
	Vassilyevka I. (females)	40.0	(2)		Epipaleolithic (Maghreb)	.75	6.0	7.5	100
	Vassilyevka III. (males)	36.3	(15)		Upper Paleolithic	.49	3.9	4.9	47
	Vassilyevka III. (females)	44.3	(7)		Mesolithic	.42	3.4	4.2	50
	Voloshskoye (males)	44.2	(6)		Volni (Neolithic)	.69	5.5	6.9	27
	Voloshskoye (females)	41.7	(3)		Nea Nikomedeia (Early Neolithic)	.58	4.6	5.8	44
	Mesolithic (Ukraine) (summarized males)	39.8	(32)		Chatal Hüyük (Early Neolithic)	.58	4.6	5.8	216
	Mesolithic (Ukraine) (summarized females)	42.9	(12)		Germany, Neolithic	.66	5.3	6.6	69
	Dereivka (Neolithic males)	47.5	(53)		Nordhausen, Neolithic	.57	4.6	5.7	33
	Dereivka (Neol. females)	40.1	(27)		Niederbösa, Neolithic	.57	4.6	5.7	42
	Vovnighy (Neolithic) (m+f together)	40.8	(76)						
	Neolithic males (Ukraine)	42.9	(142)		Karatas (Early Bronze)	.58	4.6	5.8	231
	Neolithic females (Ukraine)	39.7	(78)						
	Neolithic, Ukraine (m+f together)	41.8	(220)		Grossbrembach (Early Bronze)	.53	4.2	5.3	55
	Mesolithic, Ukraine (m+f together)	40.7	(44)		Lerna (Middle Bronze)	.66	5.3	6.6	102

HENNEBERG (1975) analysed the fertility and natural numerical increase dynamics of prehistoric populations and for that purpose he applied numerical methods to establish their potential gross reproduction rate (R_{pot}), optimal ultimate number of children (U_c) and the number of births per adult couple. In accordance with the decreasing mean life span in the Mesolithicum the average fertility became also reduced (Table 4). Taking into consideration the significant increase in total population from the Final Pleistocene to the Mesolithic (DEEVEY 1960), and the exceedingly increased reproduction rate in the Mediterranean Neolithic (see above), it seems to be proved that in the Mesolithic certain groups succeeded in surviving the disadvantageous ecological effects. The recognition of the new ecological circumastances of the Early Holocene, the necessity to look for new food resources resulted in the domestication of smaller ungulate mammals and in the cultivation of some cereals of the vegetation by the Meso-Protoneolithic populations inhabiting the eastern Mediterranean area. Relying upon the chronological sequence of the Near East and Balkan finds we can also follow the paleobotanical relations. The cereal *Triticum dicoccum* (SCHRANK) SCHÜBL., had been introduced from the southern parts of Anatolia through the Aegean Archipelago at the end of the seventh millenia B.C. to the Balkan peninsula which was uncovered in Nea Nikomedeia together with einkorn (*Triticum monococcum* L.), barley (*Hordeum vulgare* L. [var. *nudum*]), pea (*Pisum sativum* L.) and lentil (*Lens culinaris* MEDIK. v. *microspora* [BAUMG.]), all of last-enumerated plant were cultivated in the early farming of the mentioned site (LISITSYNA & FILIPOVITSH 1980). In this period the consumption of vegetable food gradually increased and contributed in ecologically advantageous periods to the increasing population density as well as the swarming of the subtribal groups, which resulted in the metisation of the populations of the microregions, that is in the modification of their craniomorphological complex.

Although osteological remains from Mesolithic populations are absent in the Central Danubian Basin, on the basis of the above given subcontinental comparisons as well as on the ecological and paleodemographical aspects their immigration and inhabitance in this region is doubtless.

References*

ACSÁDI, GY. & NEMESKÉRI, J. (1970): History of Human Life Span and Mortality. — Budapest, 346 pp.

ALEXEYEV, V. P. (1972): Paleodemografia SSSR. — *Sov. Archeol.*, **1:** 3–21. (in Russian, with French summary).

ALEXEYEV, V. P. (1978): Paleoantropologia Zemnovo sara i formirovanie tshelovetsheskih rasz, Paleolit. — Moskva, 284 pp. (in Russian, with English summary).

ALEXEYEV, V. P. (1979): Gorizontalniy profil i razvitie nosovoi oblasti u mezolititsheskogo i ranneneolititsheskogo naselenia basseina Dunaia (mogilniki Vlasac i Lepenski Vir.). — *Sov. Etnogr.*, **2:** 40–51. (in Russian, with English summary).

ALEXEYEV, V. P. (1981): Horizontal profile and the development of nasal region by Mesolithic and Early Neolithic Population of Danube Valley (Burial Grounds in Vlasac and Lepenski Vir). — *Glasnik antropol. drustva Jugosl.* sv. 18, Beograd: 19–31.

ALEXEYEV, V. P. (1983): Mezolititsheskiy tsherep iz peshthsherue El Wad. — *Quest. Anthrop.*, **71:** 64–71. (in Russian, with English summary).

ALEXEYEV, V. P. & DEBETS, G. F. (1964): Kraniometria. — *Inst. Etn. AN SSSR*, Moskva: 128 pp. (in Russian).

ANDRIANOV, B. V. (1974): Geografitsheskaia sreda i problema zarozhdenia zemledelia. Pervobuetnuey tshelovek, ego materialnaia kultura i prirodnaia sreda v Pleistotsene i Golotsene. — Moskva: 217–225. (in Russian).

ANGEL, J. L. (1973): Early Neolithic People of Nea Nikomedeia. — *Die Anfänge des Neolithikums vom Orient bis Nordeuropa, Fundamenta*, Köln—Wien, **8**/a: 103–112. (with German summary).

ASMUS, G. (1973): Mesolithische Menschenfunde aus Mittel-, Nord- und Osteuropa. — *DieAnfänge*

des Neolithikums vom Orient bis Nordeuropa, Fundamenta, Köln—Wien, **8**/a: 28–86. (with English and French summary).

BUDUEKO, M. I. (1977): Globalnaia Ökologia. — Moskva: 327 pp. (in Russian).

BUNAK, V. V. (1980): Rod Homo, ego vozniknovenie i posleduyushtshaia evoliutsia. — Moskva: 328 pp. (in Russian, with English summary).

CONSTANDSE-WESTERMANN (1974): L'Homme Mésolithique du Nord-Ouest de L'Europe, Distances Biologiques, Considérations Génétiques. — *Bull. Mém. Soc. d'Anthrop. Paris*, 1, **13:** 173–199. (with English summary).

DEBETS, G. F. (1955): Tsherepa iz epipaleolititsheskogo mogilnika u s. Voloshskogo. — *Sov. Etnogr.*, **3:** 62–73. (in Russian).

DEBETS, G. F. (1961): O putiah zaselenia severnoi polosi Russkoi ravninue i Vostotshnoi Pribaltiki. — *Sov. Etnogr.*, **6:** 51–69. (in Russian).

DEEVEY, E. S. (1960): The Human Population. — *Scientific American*, **9:** 3–9.

DENISOVA, R. YA. (1975): Antropologia drevnih baltov. — *Inst. Istorii AN Latv. SSR* (Riga), p. 3–403. (in Russian).

DOBOSI, V. T. (1972): Mesolithische Fundorte in Ungarn. — *Alba Regia* (Székesfehérvár), **12:** 39–60.

DOLUHANOV, P. M. (1979): Geografia kamennogo veka. — Moskva: 152 pp. (in Russian).

DOLUHANOV, P. M. & HOTINSKIY, N. A. (1974): Paleogeografitsheskie rubezhi Golotsena i Mezo-neolititsheskaia istoria Evropue. Pervobuetnuey tshelovek, ego materialnaia kultura i prirodnaia sreda v Pleistotsene i Golotsene. — Moskva: 211–216. (in Russian).

FEREMBACH, D. (1970): Etude Anthropologique des Ossements Humains Proto-Neolithiques de Zawi Chemi Shanidar (Irak). — *Journal of Archaeology and Hystory* (Baghdad), **26** (1–2): 21–64.

FEREMBACH, D. (1972): Les Hommes du gisement néolithique de Catal Hüyük. — *VII. Türk Tarih Kongresi* (Ankara, 1970): 13–21.

FEREMBACH, D. (1973): Les Hommes du Bassin Méditerranéen á L'Épipaléolithique. — *Die Anfänge des Neolithikums vom Orient bis Nordeuropa, Fundamenta*, Köln-Wien, **8**/a: 1–27. (with German and English summary).

FEREMBACH, D. (1978): L'Origine des Mésolithiques en France. — *Bull. Mém. Soc. d'Anthrop. Paris*, 5, **13:** 231–237.

FEREMBACH, D. (1978a): A Propos des Magdaléniens et des Mésolithiques Influence Possible de Modifications du Milieu sur L'Évolution Morphologique. — *Bull. Mém. Soc. d'Anthrop. Paris*, 5, **13:** 239–247.

FEREMBACH, D. (1978b): Les Facteuers de L'Évolution Humaine. — *I Simposio de Antropologia Biologica de Espana*, Madrid: 19–32.

FEREMBACH, D. (1979): Filiation paléolithique des Hommes du Mésolithique. Evolution morphologique et milieu. — *Colloque C. N. R. S. La fin des temps glaciaires en Europe* (Bordeaux, 1977): 179–190.

GOHMAN, I. I. (1966): Naselenie Ukrainue v epohu mezolita i neolita. — Moskva: 224 pp. (in Russian)

HENNEBERG, M. (1975): Notes on the reproduction possibilities of human prehistorical populations. — *Przeglad Antrop.*, **41:** 75–89.

JÖRGENSEN, J. B. (1973): Anthropologie des skandinavischen Neolithikums. — *Die Anfänge des Neolithikums vom Orient bis Nordeuropa, Fundamenta* (Köln–Wien), **8**a: 300–308.

KONDUKTOROVA, T. S. (1973): Antropologia naselenia Ukrainue mezolita, neolita i epohi bronzue. — Moskva: 127 pp. (in Russian).

LISITSINA, G. N. & FILIPOVITSH, L. A. (1980): Paleoetnobotanitsheskie nahodki na Balkanskom Poluostrove. — *Studia Praehistorica* (Sofia), **4:** 5–90. (in Russian, with English summary).

ROGHINSKY, YA. YA. (1974): Faktorue sredue i problema proishozhdenia Homo Sapiens. Pervobuetnuey tshelovek, ego materialnaia kultura i prirodnaia sreda v Pleistotsene i Golotsene. —Moskva 97–104. (in Russian).

TITOV, V. S. & ERDÉLYI, I. (1980): Arheologia Vengrii. Kamennuei vek. — Moskva: 418 pp. (in Russian).

TÓTH, T. (1972): On the morphological modification of anthropological series in the Lithic and Paleometallic Ages III. — *Annls hist.-nat. Mus. natn. hung.*, **64:** 387–400.

TÓTH, T. (1973): On the morphological modification of anthropological series in the Central Danubian Basin. — *Annls hist.-nat. Mus. natn. hung.* **65:** 323–350.

TÓTH, T. (1974): Somatologia i paleoantropologia naselenia Vengrii. — Doct. dissertation I–II. (Budapest): 1–649. (manuscript, in Russian).

TÓTH, T. (1982): Some anthropological problems of the Neolithic Tisza-Basin population. — *Annls hist.-nat. Mus. natn. hung.*, **74:** 359–364.

VOLKOV-DUBROVIN, V. P. & ROGHINSKY, YA. YA. (1960): Ghipsistenotsefalia kak prisposobitelnuey priznak v tropitsheskoi zone. — *Quest. Anthrop.*, **1:** 45–55. (in Russian).

ZINYEVITSH, G. P. (1967): Otsherki paleoantropologii Ukrainue. — Kiev: 223 pp. (in Russian).
ZOFFMANN, K. Zs. (1974): Anthropological Analysis of the Cemetery at Zengővárkony and Neolithical Lengyel Culture in SW-Hungary. — *Janus P. Muz. Évk.* (Pécs), **14–15** (1969–70): 53–72.
YAKIMOV, V. P. (1957): O drevnei "mongoloindosti" v Evrope. — *Kratk. Soob. In-ta Etnogr.*, AN SSR, Moskva: 86–91. (in Russian).
YAKIMOV, V. P. (1960): Gorizontalnaia profilirovannost litsevogo odela tsherepa u sovremennueh i drevnih liudey. — *Quest. Anthrop.* **4:** 62–70. (in Russian).
YAKIMOV, V. P. (1961): Naseleine Evropeiskoi tshasti SSSR v pozdnem Paleolite i Mezolite. — *Quest. Anthrop.*, **7:** 23–28. (in Russian).

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