ANTHROPOLOGIA HUNGARICA

PALEOANTHROPOLOGICAL STUDIES

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Rédacteur

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en collaboration avec la Section Anthropologique
du Musée d'Histoire Naturelle

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Section Anthropologique du Musée d'Histoire Naturelle

DATA TO THE ANTHROPOLOGY OF THE BRONZE AGE POPULATION IN THE AZOV-AREA

By

T. TÓTH

In the course of the intense archeological investigations conducted in the area of the Azov Sea in the last two decades, there worked the Skytha-steppe expedition of the Archeological Institute of the Soviet Academy of Sciences in the basin of the river Molotshnaya in 1952. The expedition excavated, in the upper reaches of the Molotshnaya flowing through the Bolsoy-tokmak district of the county Zaporozhye, 66 graves of 8 Kurgans, of which, according to K.F.SMIRNOV's (1960) identifications, 7 graves originate from the Yamnaya culture, 34 graves from the Katakombnaya culture, and 13 graves from the Srubnaya culture. In other words, the findings of all three phases of the Bronze Age are represented in the excavated material.

In the last two decades, DEBETS (1948), KONDUKTOROVA (1956, 1964), and ZINYEVITSH (1967) studied the anthropological findings of the Bronze Age discovered in the Azov-area.

The present author studied the Bronze Age cranial material, excavated along the upper reaches of the Molotshnaya, in the Anthropological Department of the Moscow State University in 1961.[*] Subsequently, also KONDUKTOROVA (1964) has examined the material, using the data of merely the mean values in her paper on the historical populations of Ukraine.[**]

The present paper discusses the results of studies made on the Bronze Age anthropological findings excavated along the upper reaches of the Molotshnaya, - more precisely from the localities near Hutor Shevtshenko and Zamozhnoye in the Bolsoy-tokmak district.

Anatomo-morphological description
Yamnaya culture (Early Bronze Age)

Zamozhnoye. Kurgan 2, Grave 11 (Inventory No. 420). A comparatively well preserved skull with incomplete mandible. Senile male. Skull medium long, orthocra-

[*] I wish to express my sincere thanks to Professors M.A. GREMYATSKI and G.F. DEBETS for their permission to conduct my investigations.

[**] For the cession of the data relating to the long-bones, I am indebted to Dr. T.S. KONDUKTOROVA.

nial. Forehead wide. Skull very low. Linea temporalis and linea nuhae superior, as well as tuberculum articulare expressed. Glabella, protuberantia occipitalis externa and processus mastoideus medium developed. Abrasion of teeth strong (abrasio III). Skull ovoid, fossa canina medium deep. Face profiled as a whole though the value of the nasomalar angle slightly differs from the mean characteristic of Europoids. Alveolar prognathism. Upper face very low, nose low, medium wide, mesorrhinian. Orbitals chamaeconch. Charactercomplex Proto-Europoide.

Katakombnaya culture (Middle Bronze Age)
a. Hutor Shevtshenko

Kurgan 1, Grave 1 (Inv. No. 429). Calvaria with incomplete mandible. Mature male. Skull very long, narrow, hyperdolichocranial. Forehead wide, eurymetopic. Glabella warped. Teeth of mandible strongly abraded (abrasio III). Linea nuhae superior, linea temporalis and tuberculum articulare expressed. Pentagonoid, curvooccipital. Characterized by massive features. Upper face wide. Protomediterranean?

Kurgan 1, Grave 9 (Inv. No. 412). A well preserved skull with mandible. Adult male. Abrasio II. Linea nuhae superior and tuberculum articulare expressed. Mesocranial, metriometopic. Bizygomatic arch medium wide, upper face high, lepten. Entire face leptoprosopic. Upper face wide. Nose leptorrhinian, orbita mesoconch. Skull ovoid, the massive features observable also on the mandible; this latter also with a strong trigonum mentale. Entire face strongly profiled, hyperorthognathous. Proto-Europoide; stature high (170,3 cm, Table IV).

Kurgan 2, Grave 2 (Inv. No. 424). A comparatively well preserved skull with mandible. Adult male. Skull very long, medium wide, dolichocranial. Forehead very wide, eurymetopic. Bizygomatic breadth large. Upper face medium high, mesen. Nose leptorrhinian, orbita chamaeconch. Massive features. Curvooccipital. Pentagonoid. Trigonum mentale expressed. Glabella strongly developed, fossa canina very deep. Face in its entirety profiled, nasal ridge projecting. Proto-Europoide (Cro-Magnonian?).

Kurgan 2, Grave 8 (Inv. No. 423). Calvarium with mandible. Mature male. Skull extremely long, narrow, ultradolichocranial. Forehead very wide, eurymetopic. Upper face also very wide. Abrasion of teeth on mandible strong (III). Processus mastoideus very developed. Porion-bregma height very large (137 mm). Tuberculum articulare expressed. Skull ellipsoid, curvooccipital. Protomediterranean?

Kurgan 2, Grave 13 (Inv. No. 428). A comparatively well preserved skull with fragmentary mandible. Adult male. Skull medium long, narrow, mesocranial. Forehead medium wide, eurymetopic. Upper face low, euryen. Nose mesorrhinian, orbita mesoconch. Glabella and processus mastoideus well expressed. Face strongly profiled, orthognathous. Skull ovoid. Maxillo-alveolar and nasal sections reconstructed. Proto-Europoide.

Kurgan 2, Grave 1 (Inv. No. 427). A well preserved skull with mandible. Adult female. Skull long, wide, brachycranial, metrio-hypsicranial. Forehead medium wide, metriometopic. Face euryen, euryprosopic. Nose chamaerrhinian, orbita chamaeconch. Tubera frontalia and linea temporalis expressed. Glabella weakly developed. Face with gracile features. Teeth weakly abraded (abrasio I). Mandible rather massive; ramus high but very wide. Skull sphenoid. Proto-Europoide (Andronovean?).

b. Zamozhnoye

Kurgan 2, Grave 5 (Inv. No. 417). A damaged skull with incomplete mandible. Mature male. Abrasio III. Occiput weakly arched, slightly flat; sphenoid and very short skull with relatively gracile features. Porion-bregma height large. Forehead medium wide. Upper face low and rather wide. Nose leptorrhinien, orbita chamaeconch. Glabella medium, processus mastoideus strongly, developed. Facial skeleton in its entirety rather profiled, though the nasomalar and simotic values slightly differ from the Europoide means. Proto-Europoide.

Kurgan 2, Grave 7 (Inv. No. 421). A relatively well preserved skull with incomplete mandible. Adult male. Traces of a strong blow on left coronale area. Abrasion II. Tuberculum articulare expressed. Curvooccipital, ovoid. Facial skeleton strongly profiled, but as a whole with gracile features. Dolichocranial, metriometopic, chamaerrhinian, chamaeconch. Protomediterranean.

Kurgan 3, Grave 4 (Inv. No. 418). A well preserved skull with mandible. Mature male. Abrasio I. Linea nuhae superior and tuberculum articulare, as well as trigonum mentale strongly developed. Glabella strongly expressed. Cranium harmoniously curving, with lambdoid and occipital flatness. Nasal ridge strongly projecting, facial part strongly profiled. Cranium ovoid, dolicho-, acro-, orthocranial, stenometopic, mesorrhinian, chamaeconch. Upper face high and medium wide. Proto-Europoide, Protomediterranean.

Kurgan 4, Grave 5 (Inv. No. 416). A well preserved skull with mandible. Mature male. Glabella and processus mastoideus strongly developed. Abrasio III. Linea temporalis, linea nuhae superior, tuberculum articulare and trigonum mentale expressed. Crista supramastoidea bilaterale. Occiput flat. Face strongly profiled. Cranium spheroid, brachycranial, stenometopic, euryen, euryprosopic, mesorrhynian, chamaeconch. Characterized by comparatively massive features and very high values: breadth of skull 161 mm, smallest width of forehead 105 mm, porion-bregma height 138 mm, bizygomatic breadth 154 mm, width of upper face 116 mm, maxillo-alveolar length 61 mm, width 72 mm. The above data, together with the measurements of the mandible, reflect the features of a relatively rare macromorphous individual. Character-complex mainly eastern Proto-Europoide (Andronovean?).

Kurgan 1, Grave 3 (Inv. No. 413). A comparatively well preserved skull with damaged mandible. Mature female. Linea nuhae superior and tuberculum articulare expressed. Curvooccipital. Obelion-lambdoid flatness. Abrasio II-III. Glabella and processus mastoideus medium developed. Facial skeleton relatively strongly profiled, though the data of the nasomalar region strongly differ from the Europoide means. Cranium ovoid, mesocranial, eurymetopic, mesen, mesoprosopic, chamaerrhinien, mesoconch. Bizygomatic breadth medium (126 mm). Stature small (147,5 cm; Table IV). Proto-Europoide (Andronovean?).

Kurgan 2, Grave 8 (Inv. No. 414). A well preserved skull without mandible. Mature female. Linea temporalis and tuberculum articulare very developed. Glabella and processus mastoideus medium expressed. Obelion flatness, curvooccipital. Abrasion III. Facial skeleton strongly profiled. Cranium sphenoid, meso-, acro-, hypsicranial, eurymetopic, mesen, chamaerrhinian, mesoconch. Middle-tall stature (157,1 cm; Table IV). Proto-Europoide (Andronovean?).

Kurgan 3, Grave 4 (Inv. No. 415). A well preserved skull with mandible. Adult female. The feminine skeleton of the paired burial (cf. No. 418). Abrasion I. Tu-

bera frontalia expressed. Glabella and processus mastoideus medium developed. Characterized by gracile features. Slightly curvooccipital. Facial skeleton well profiled. Cranium ovoid, dolicho-, acro-, hypsicranial, eurymteopic, mesen, leptoprosopic, chamaerrhinian, chamaeconch. Middle-tall stature (155,2 cm: Table IV). Proto-Europoide.

Kurgan 4, Grave 1 (Inv. No. 419). Inf. II skull, hydrecephalic, hence no data were taken or measurements read.

Srubnaya culture (Late Bronze Age)

Hutor Shevtshenko. Kurgan 2, Grave 16 (Inv. No. 425). A well preserved male skull with damaged mandible. Mature male. Right maxillo-nasalo-prostion part asymmetrically larger, hence right side of face slightly bent. Abrasion I-II. Linea temporalis and linea nuhae superior expressed. Glabella and processus mastoideus well developed. Facial skeleton well profiled, fossa canina deep. Skull ovoid, curvooccipital. Mandibular data also reflecting massivity. Skull dolicho-,metrio-, chamaecranial, stenometopic, lepten, leptoprosopic, mesorrhinian, mesoconch. Proto-Europoide, with Mediterranean elements (?).

Zamozhnoye. Kurgan 1, Grave 1 (Inv. No. 411). A comparatively well preserved skull, with damaged mandible. Adult female. Abrasio II. Tuberculum articulare and linea nuhae superior expressed. Obelion flatness. Skull pentagonoid, curvooccipital, dolichocranial, metriometopic, lepten, leptoprosopic, chamaerrhinian, mesoconch (dextra). Value of nasomalar angle strongly differing from the Europoide mean, but face in its entirety well profiled. Gracility also observable. Protomediterranean.

As is to be seen, only 16 of the 47 skeletons of adult individuals, excavated from all three periods of the Bronze Age, are suitable for a detailed anthropological analysis. Since the material of findings represents merely one-third of the adult group known from the archeological description (K. F. SMIRNOV, 1960) studied here, this fact must accordingly be taken into consideration in the evaluation of the population.

Analysis of the findings

As seen from the above descriptions, the material studied comprises merely one skeleton from the early phase (Yamnaya culture) of the Bronze Age, and two from its later stage (Srubnaya culture), (Table III). For their assessment, the foregoing description of the individuals is deemed sufficient owing to the scarcity of the material, and thus a detailed analysis will be given of merely the findings originating from the middle phase (Katakombnaya culture) of the Bronze Age.

It should not be forgotten that even this series is rather meagre in numbers (9 males and 4 females) but, owing to its origin from the Bronze Age, it might represent a highly significant complementary material.In the morphometric analysis of the series,I have applied the methods of ALEXEYEV - DEBETS (1964), E.HUG (1940), R.MARTIN (1928), Th. MOLLISON (1938), M.G. LEVIN (1960), and WOO (1937). For the calculation of stature, N. WOLANKSI's nomogram was used (1953).

The male group of the skeletal findings of the Katakombnaya culture can be

characterized by a long, medium wide, and high cranium. It should be noted, however, that the height of the skull could be measured in one case only (Table I). The ear height of the skull is very great. The value of the smallest width of the forehead is on the border of the medium and large categories. The ear breadth and occipital width of the skull is large.The male group is characterized by the ovoid form. The width of the facial skeleton (MARTIN 45) is great, the height of the upper face medium, as also that of the entire face. It should be noted that the metric value of the breadth of the upper face is large. The nose is medium high and medium wide (Table I). The orbita are wide and low. For the apertura piriformis, the anthropine character predominates. In the male group, the facial skeleton is strongly profiled according to the primary taxonomical characters (Table I), and the same conditions are reflected by the metric and index values of the malar bone and the incisura maxillo-malare. Finally, the mandibular data of the male series also refer to massivity. All in all, the male series of the middle phase of the Bronze Age is characterized by dolicho-, acro-, orthocranial, eurymetopic, mesen, mesorrhinian, and chamaeconch features. The stature is tall, but this was actually observable in one case only, thus no generalization can be given with respect to the entire series.

The female series of the Katakombnaya culture can be characterized by a medium long, narrow, and high brain case, and a medium curving medium wide forehead. The facial skeleton is medium wide (MARTIN 45),(Table I). The upper face is low, but the entire face medium high. The width of the upper face is large. The nose is small, medium wide. The orbita are medium wide and low. The female series is also characterized by ovoid and anthropine features. According to the primary taxonomical characters, the facial skeleton is rather profiled. The value of the nasomalar angle significantly deviates from the mean characterizing recent Europoids, and the same holds for the value of the simotic subtense (Table I). On the other hand, the values of the malar bone and the incisura maxillo-malare completely agree with the means characteristic of the Europoids. The mean values of the mandible reflect massive features also in this series.The female series of the Katakombnaya culture is generally characterized by meso-, acro-, hypsicranial, eurymetopic, mesen, chamaerhhinian and mesoconch features. The stature in this series is, in the average, medium (Table I), but the meagre number of cases should again be taken into consideration.

Interpretation of results

The comparatively small series, studied here, originating from the western part of the range of the Katakombnaya culture in the middle phase of the Bronze Age, belonged as a whole to the Europoide great race. The comparison of the metric means of the male and female groups shows a dimorphism which indirectly corroborates the probable correctness of the identification of sexes. Among the morphometric data, significant differences appear between the male and female series with respect to the values of the skull, the nose and the orbita. Massivity can be ovserved in both series, especially in the data of the bizygomatic breadth and the mandible. On the other hand, the process of gracilization is well expressed in the values of the glabella (Table I). Incidentally, the mean values of the glabella deviate from those found by DEBETS (1961a) and KONDUKTOROVA (1964), which might be

connected with differences in quantity of the examined findings or with the dissimilar identification methods of the several authors. It may also be possible that the differences as to the evaluation of the glabella by the these authors refer to the Mediterranean elements of the series examined here. It is known, for instance, that the process of gracilization during the Bronze Age was relatively intensified in the southern part of East Europe than in its northern zone (DEBETS, 1961a).

It was noted above that the nasomalar angle of the female series significantly differs from the mean characterizing recent Europoids (145,3°). It is possible, however, that in the present case we have to do with the survival of the features of the aberrant archaic form which existed during the Neolithic Age in East Europe (?), (DEBETS, 1961b). This statement may find some corroboration in the fact that the nasomalar values of the female series (GOCHMAN, 1966; ZINYEVITSH, 1967; 143,4° and 145,0°, respectively) deriving from the Neolithic in Ukraine (Wassilyevka II, Dereivka), are similar to the respective values of the female series studied here.

The male series of the findings originating from the Katakombnaya culture was compared with several different prehistorical series and it was found that the male group is very near to another Katakombnaya series from the Azov-area, and it also displays a great similarity to the male group of the Yamnaya culture and especially to that of the Andronovo culture in the Western Kazahstan (Table II, Figs. 1-8). It is also noteworthy that, according to the coordinated arithmetic values, the male group examined here stands in almost every case nearer to the Mesolithic series than to the Neolithic findings (Table II and Figs. 1-8).

With regard to the type mosaic, the middle Bronze Age findings analysed here (9 males, 4 females) reflect divers type elements of the Europoide great race. Both the Protomediterranean and the „Andronovean" features are observable.Although merely one-third of the material excavated by K.F.SMIRNOV is suitable for analysis, Proto-Europoide features predominate, as a whole, in the investigated group of the population of the Katakombnaya culture. Within this general character-complex, however, there appears to be a certain heterogeneity, since Cro-Magnonian and Mediterranean elements as well as those of the Andronovo type are all observable in both the male and female groups. In spite of the fact that the approach, with respect to the mean values of the males, is nearer to the Mesolithic series of the Azov-area, some analogies are observable, in the female group, with certain Neolithic series in the Ukraine (Vassilyevka II, Dereivka). It is justly inferable therefore that, in the examined population fragment, the descendants of the autochthonous local Mesolithic Age had formed a substrate to which Neolithic groups have assimilated. The repeated infiltration of southern groups of the Aeneolithic and Copper Ages is also possible. As far as the Andronovo element is in this respect concerned, it is possible that we have to do with the effects of a group arriving from Western Kazahstan, but one may also contend that these features had evolved by the action of the Ukrainian Cro-Magnonian and Proto-mediterranean factors,convergently with the formation of „Andronovo" complex of Kazahstan which, according to GHINSBOURG (1964), is the eastern or steppe variant of the Protoeuropoide type. As propounded by K.F. SMIRNOV (1960), the Azov-area or the valley of the Molotshnaya, respectively, had been rather densely populated during the Bronze Age. The partial heterogeneity within the main (Europoide) taxonomic unit may, in the opinion of the present author, be connected with the dense population (i.e. repeated infiltration) mentioned above.

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Table I.

Means of Middle Bronze Age Series (Azov-Area)

	Characteristics	Male		Female	
1	Glabello-occipital length	189,4	(9)	172,2	(4)
8	Maximum breadth of cranium	140,2	(8)	132,7	(4)
17	Basion-bregma height	140,0	(1)	132,6	(3)
5	Basion-nasion length	104,0	(1)	101,0	(3)
20	Porion-bregma height	121,9	(9)	112,5	(4)
9	Minimum frontal diameter	98,5	(9)	93,7	(4)
10	Maximum frontal diameter	119,8	(9)	111,7	(4)
11	Bi-auricular diameter	129,4	(7)	118,0	(4)
12	Bi-asterial diameter	114,8	(6)	103,5	(4)
45	Bizygomatic breadth	140,5	(4)	123,5	(4)
40	Basion-prosthion length	102,0	(1)	97,3	(3)
48	Upper facial height	69,5	(7)	62,7	(4)
47	Total facial height	117,3	(6)	110,3	(3)
43	Upper facial breadth	109,4	(9)	103,0	(4)
46	Maxillar breadth	94,1	(7)	91,2	(4)
60	Maxillo-alveolar length	55,5	(6)	52,6	(3)
61	Maxillo-alveolar breadth	61,8	(7)	61,0	(3)
62	Palatal length	47,4	(5)	45,0	(3)
63	Palatal breadth	37,6	(6)	35,3	(3)
55	Nasal height	52,7	(7)	46,0	(4)
54	Nasal breadth	25,0	(7)	24,7	(4)
51	Orbital breadth (from mf.)	44,4	(7)	41,0	(4)
51a	Orbital width (from d.)	41,7	(7)	38,2	(4)
52	Orbital height	32,2	(8)	31,5	(4)
50	Maxillo-frontal chord	19,8	(7)	18,7	(4)
65	Bicondylar diameter	130,0	(3)	110,5	(2)
66	Bigonial diameter	104,0	(5)	94,0	(2)
68	Mandibular length (from go.)	98,0	(4)	88,5	(2)
68(1)	Mandibular length (from kdl.)	123,2	(4)	117,0	(2)
70	Ramus height	70,3	(7)	58,0	(3)
71a	Minimum ramus breadth	36,9	(9)	34,3	(3)
79	Mandibular angle	119,8	(5)	133,0	(2)
32	Frontal angle (nas.-met.)	84,8	(5)	85,2	(4)
-	Frontal angle (gl.-met.)	74,8	(5)	79,2	(4)
8:1	Cranial index	73,3	(8)	77,9	(4)
17:8	Breadth-height index	103,7	(1)	100,2	(3)
17:1	Length-height index	74,5	(1)	77,0	(3)
9:8	Transverse frontopar. index	70,4	(8)	70,7	(4)
48:45	Upper facial index	50,5	(4)	50,9	(4)
52:51	Orbital index (mf.-ek.)	72,4	(7)	76,9	(4)
52:51a	Orbital index (d.-ek.)	77,1	(7)	82,4	(4)

Table I. (continued 1)

	Characteristics	Male		Female	
54:55	Nasal index	47,6	(7)	53;8	(4)
43_1	Bi-malar chord (fmo-fmo)	100,8	(7)	95,0	(4)
-	Bimalar subtense	19,8	(7)	14,8	(4)
77	Nasomalar angle (fmo-n-fmo)	136,8	(7)	145,3	(4)
-	Zygomaxillar chord (zm'-zm')	94,7	(7)	90,7	(4)
-	Zygomaxillar subtense	25,0	(7)	24,2	(4)
-	Zygomaxillar angle (zm'-ss-zm')	123,7	(7)	123,3	(4)
DC	Dacryal chord	21,3	(3)	20,5	(2)
DS	Dacryal subtense	13,3	(3)	12,1	(2)
SC	Simotical chord	9,2	(5)	7,5	(4)
SS	Simotical subtense	5,3	(5)	3,2	(4)
DS:DC	Dacryal index	62,9	(3)	59,1	(2)
SS:SC	Simotical index	58,8	(5)	44,4	(4)
C	Malar chord (after Woo)	57,2	(8)	50,2	(4)
S	Malar subtense (after Woo)	9,0	(8)	8,7	(4)
S:C	Malar arc index (after Woo)	15,7	(8)	17,4	(4)
-	Incisure maxillomalar chord (after Levin)	24,7	(7)	23,2	(4)
-	Incisure maxillomalar subtense (after Levin)	7,6	(7)	7,1	(4)
-	Incisure maxillomalar index (after Levin)	31,4	(7)	30,4	(4)
72	Total facial angle	89,7	(4)	82,5	(4)
73	Medium facial angle	90,5	(5)	85,0	(3)
74	Alveolar angle	85,0	(4)	78,0	(3)
75	Nasal profil angle	51,8	(5)	50,2	(4)
75_1	Nasalspine angle	38,0	(4)	32,2	(4)
-	Fossa canina (mm)	6,5	(7)	5,3	(4)
-	Fossa canina (0-4)	2,6	(7)	2,5	(4)
-	Glabella (1-6)	2,7	(8)	1,7	(4)
-	Spina nasalis anterior (1-5)	3,8	(5)	2,5	(2)
Norma verticalis %	Ellipsoid	11,1	(1)	-	
	Ovoid	44,4	(4)	50,0	(2)
	Pentagonoid	22,2	(2)	-	
	Spheroid	11,1	(1)	-	
	Sphenoid	11,1	(1)	50,0	(2)
Appertura piriformis %	Anthropinae	66,6	(4)	100,0	(4)
	Fossa praenasalis	16,6	(1)	-	
	Infantilis	16,6	(1)	-	
	Sulcus praenasalis	-		-	
	Stature (cm)	170,3	(1)	153,3	(3)

Table II.

Some comparative means of different male series

Charac-teristics		Periods	Mezolith	Neolith	Middle Bronze
		Series	Vassilyevka III.	Vassilyevka II.	Katakombnaya
		Author	Gohman 1966	Gohman 1966	Tóth 1967
1	Glabello-occipital length		192,7 (16)	189,3 (10)	189,4 (9)
8	Maximum breadth of cranium		137,0 (16)	145,6 (10)	140,2 (8)
17	Basion-bregma height		147,0 (4)	144,3 (3)	140,0 (1)
9	Minimum frontal diameter		98,2 (16)	106,8 (11)	98,5 (9)
45	Bizygomatic breadth		139,3 (16)	153,5 (9)	140,5 (4)
48	Upper facial height		70,5 (14)	75,3 (7)	69,5 (7)
55	Nasal height		52,9 (14)	55,8 (7)	52,7 (7)
54	Nasal breadth		24,9 (13)	26,8 (8)	25,0 (7)
52	Orbital height		32,5 (15)	32,0 (8)	32,2 (8)
51	Orbital breadth (from mf.)		43,3 (15)	47,6 (8)	44,4 (7)
8:1	Cranial index		71,2 (16)	76,9 (10)	73,3 (8)
17:8	Breadth-height index		104,2 (3)	97,2 (3)	103,7 (1)
17:1	Length-height index		76,2 (3)	75,6 (3)	74,5 (1)
9:8	Transverse frontopar. index		71,7 (16)	73,0 (10)	70,4 (8)
48:45	Upper facial index		50,5 (14)	49,1 (7)	50,5 (4)
54:55	Nasal index		47,5 (13)	48,2 (7)	47,6 (7)
52:51	Orbital index (mf.-ek.)		75,3 (15)	67,3 (8)	72,4 (7)
72	Total facial angle		84,9 (12)	85,3 (7)	89,7 (4)
74	Alveolar angle		75,3 (12)	73,6 (7)	85,0 (4)
75_1	Nasalspine angle		35,0 (11)	31,7 (3)	38,0 (4)
77	Nasomalar angle (fmo-n-fmo)		140,1 (16)	144,0 (8)	136,8 (7)
-	Zygomaxillar angle (zm'-ss-zm')		124,2 (13)	129,5 (6)	123,7 (7)
DS	Dacryal subtense		11,9 (6)	-	13,3 (3)
DS:DC	Dacryal index		51,5 (6)	-	62,9 (3)
SS	Simotical subtense		5,5 (11)	4,8 (3)	5,3 (5)
SS:SC	Simotical index		56,4 (11)	49,0 (3)	58,8 (5)
FC	Fossa canina (mm)		-	-	6,5 (7)

Table II. (continued 1)

Characteristics	Neolith	Neolith	Middle Bronze	Early Bronze	Bronze
	Vovnighy	Dereivka	Katakombnaya	Yamnaya	Ras-Shamra
	Konduktorova 1960	Zinyevitsh 1967	Konduktorova 1956	Konduktorova 1956	Vallois-Ferembach 1962
1	193,2 (35)	194,7 (42)	189,0 (18)	190.9 (7)	180,4 (11)
8	144,8 (37)	144,6 (50)	141,2 (18)	141,3 (6)	138,1 (10)
17	145,8 (19)	145,3 (18)	137,9 (8)	136,0 (2)	126,8 (9)
9	101,2 (37)	101,5 (37)	98,5 (19)	96,9 (7)	94,2 (10)
45	146,3 (36)	144,5 (12)	137,7 (13)	133,7 (6)	127,8 (8)
48	72,2 (31)	73,8 (16)	71,2 (18)	69,3 (6)	68,3 (8)
55	-	53,5 (17)	52,3 (18)	50,6 (6)	51,5 (7)
54	26,5 (30)	26,9 (16)	25,5 (18)	25,2 (6)	24,3 (6)
52	32,5 (35)	32,4 (20)	32,4 (20)	30,8 (6)	33,8 (8)
51	-	44,1 (18)	-	-	41,9 (8)
8:1	74,9 (34)	74,4 (42)	74,8 (18)	75,2 (6)	76,5 (10)
17:8	-	100,6 (18)	97,2 (7)	94,2 (2)	91,3 (8)
17:1	-	75,9 (17)	74,2 (7)	71,1 (2)	70,1 (8)
9:8	71,5 (34)	70,0 (37)	69,4 (16)	68,5 (6)	68,5 (7)
48:45	49,4 (31)	51,7 (10)	51,6 (13)	51,9 (6)	53,4 (8)
54:55	49,4 (29)	50,4 (14)	49,0 (18)	49,8 (6)	47,1 (6)
52:51	72,8 (34)	73,3 (18)	-	-	80,9 (8)
72	85,3 (26)	85,4 (13)	85,5 (13)	85,5 (6)	88,5 (6)
74	78,8 (24)	73,8 (24)	-	-	-
75_1	29,6 (19)	28,0 (10)	33,8 (13)	37,6 (5)	-
77	138,7 (32)	138,6 (11)	137,5 (17)	135,0 (6)	-
-	126,9 (26)	123,6 (17)	123,5 (11)	125,1 (4)	-
DS	-	13,8 (11)	-	-	-
DS:DC	-	64,3 (11)	60,9 (7)	62,9 (2)	-
SS	5,1 (27)	5,1 (12)	-	-	-
SS:SC	52,4 (27)	53,9 (12)	57,6 (15)	61,9 (5)	-
FC	-	3,9 (16)	-	-	-

Table II. (continued 2)

Charac-teristics	Bronze	Late Bronze	Copper	Aeneolith	Bronze
	Tastu-Butak	Srubnaya	Harappa	Turkmenia	Ouest-Kazah.
	Ginsburg 1962	Konduktorova 1964	Cappieri 1965	Trofimova-Ginsburg 1960	Alexeyev 1967
1	189,2 (4)	189,6 (39)	186,1 (30)	195,6 (16)	188,0 (13)
8	133,5 (4)	138,7 (37)	136,8 (28)	135,8 (16)	138,3 (13)
17	136,5 (2)	137,2 (32)	134,1 (28)	143,3 (8)	139,8 (5)
9	91,7 (4)	97,6 (33)	-	95,7 (17)	96,7 (13)
45	129,0 (2)	133,1 (21)	131,8 (15)	129,8 (18)	134,4 (9)
48	66,5 (4)	71,9 (21)	69,1 (27)	72,1 (18)	68,2 (10)
55	49,5 (4)	51,3 (22)	51,8 (29)	51,3 (17)	50,8 (11)
54	24,2 (4)	23,9 (20)	26,2 (28)	26,6 (17)	25,0 (8)
52	30,7 (3)	32,4 (22)	-	32,2 (16)	32,3 (10)
51	39,7 (3)	41,8 (17)	-	42,8 (16)	41,6 (6)
8:1	70,6 (4)	-	73,7 (28)	69,6 (16)	73,7 (14)
17:8	104,6 (2)	-	-	104,8 (8)	-
17:1	74,6 (2)	-	-	74,6 (8)	-
9:8	70,3 (3)	-	-	70,3 (16)	-
48:45	53,1 (2)	-	51,4 (15)	55,6 (18)	51,7 (8)
54:55	49,3 (4)	-	50,5 (27)	51,9 (17)	-
52:51	77,3 (3)	-	-	75,2 (16)	-
72	84,5 (2)	85,7 (13)	-	83,9 (13)	85,0 (6)
74	70,5 (2)	-	-	72,2 (13)	-
75	34,0 (3)	30,4 (9)	-	31,3 (9)	32,8 (6)
77	131,7 (3)	137,5 (24)	-	134,1 (17)	134,4 (8)
-	124,2 (4)	125,8 (11)	-	125,9 (17)	120,2 (6)
DS	15,0 (2)	13,7 (11)	-	13,6 (8)	15,2 (4)
DS:DC	61,8 (2)	-	-	61,7 (8)	62,8 (4)
SS	5,7 (3)	5,0 (14)	-	5,7 (7)	4,9 (4)
SS:SC	56,2 (3)	-	-	54,8 (7)	53,2 (4)
FC	5,0 (3)	4,9 (19)	-	4,0 (15)	-

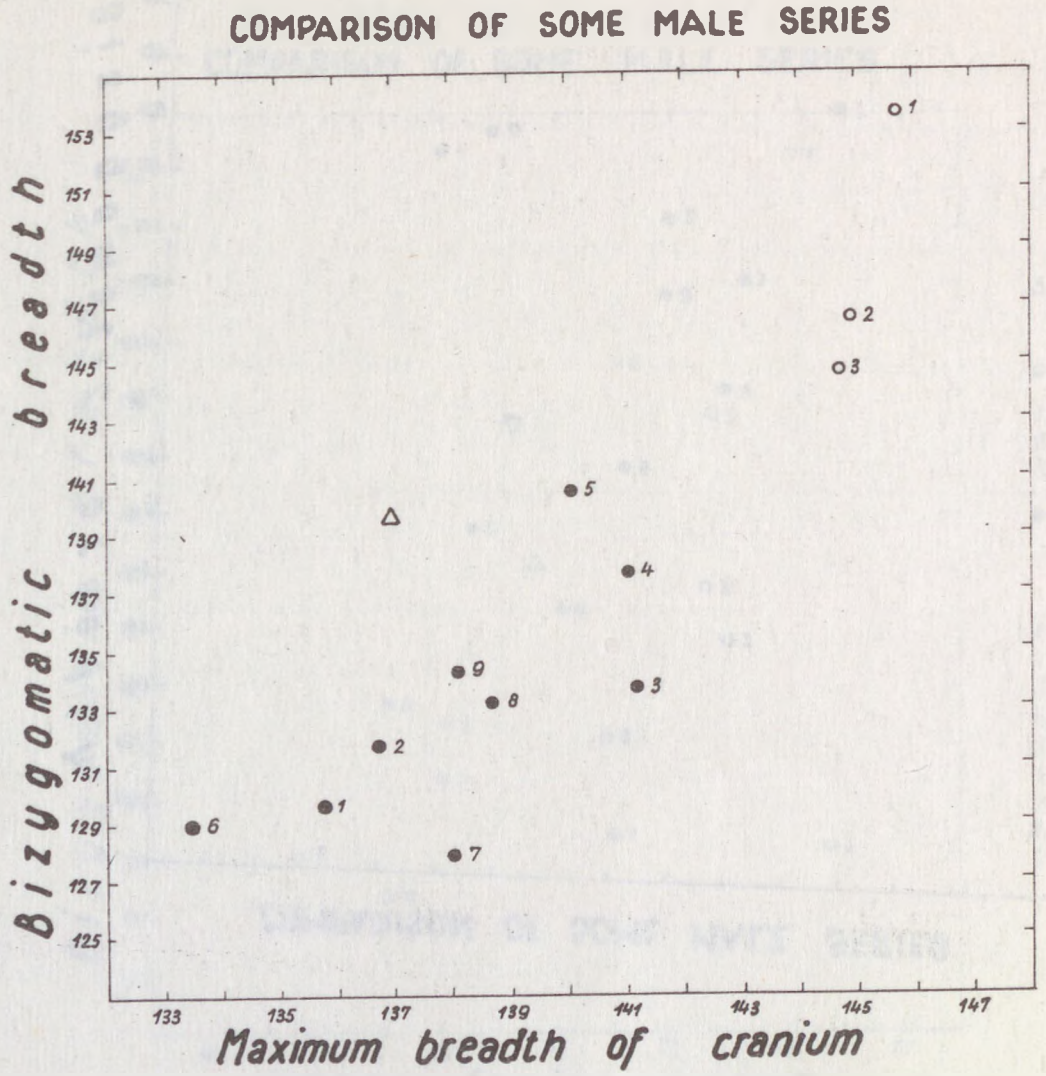


Fig. 1.

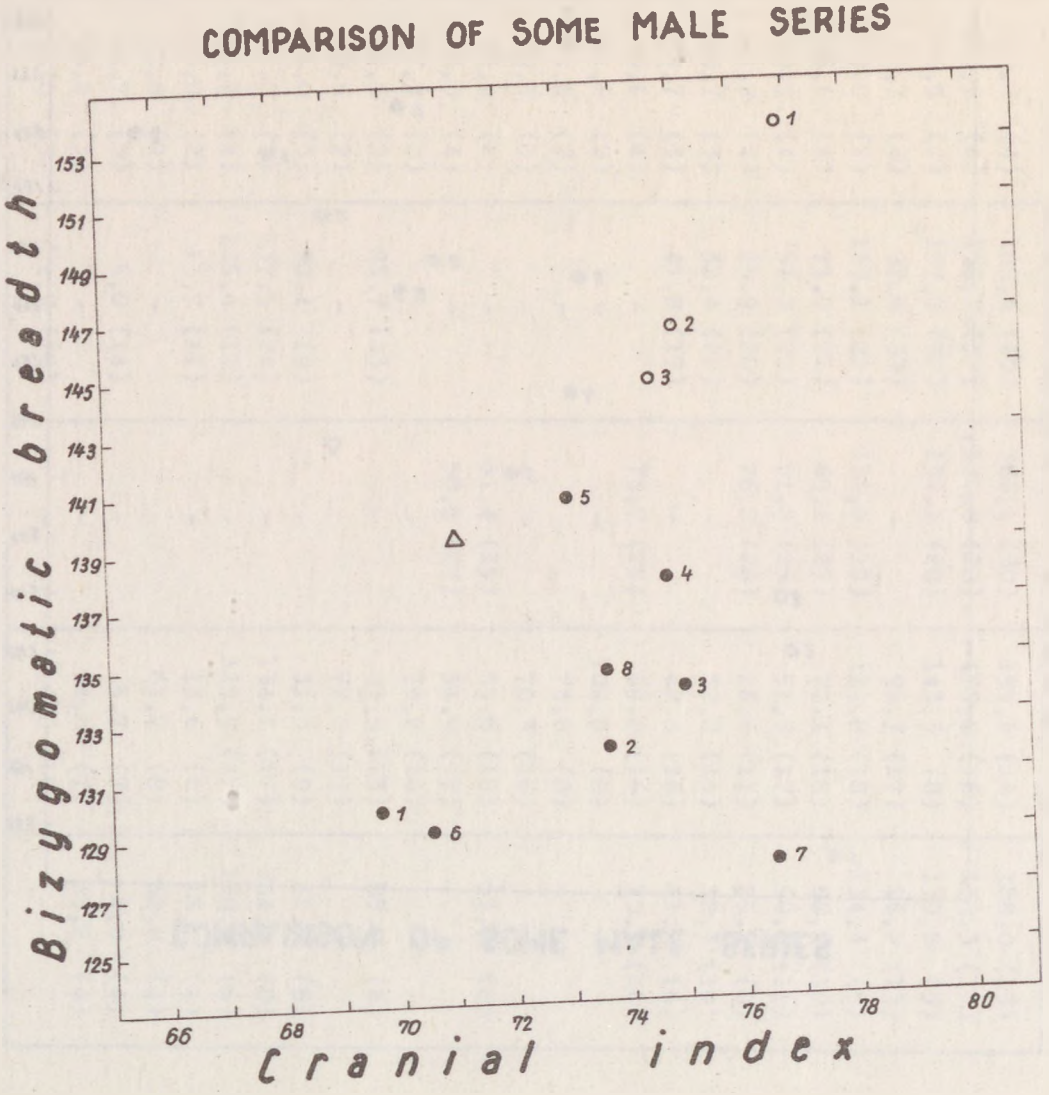
△ **MEZOLITH**
Vassilyevka III.

○ **NEOLITH**
1. *Vassilyevka II.*
2. *Vovnighy*
3. *Dereivka*

● **AENEOLITH**
COPPER
BRONZE AGE
1. *Turkmenia*
2. *Harappa*
3. *Yamnaya*
4. *Katakombnaya (I.)*
5. *Katakombnaya (II.)*
6. *Tastu - Butak*
7. *Ras - Shamra*
8. *Srubnaya*
9. *Ouest-Kazahstan (Andronovo)*

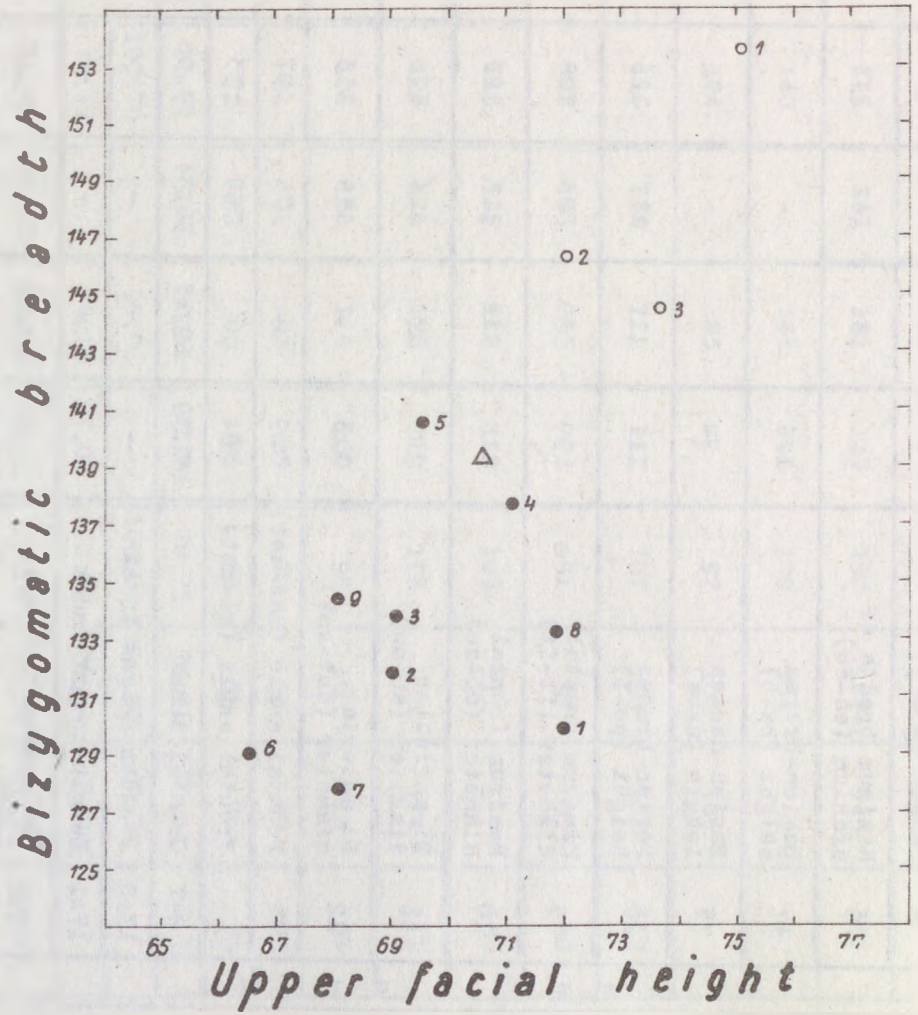
(I.) - Konduktorova, 1956.
(II.) - Tóth, 1967.

Fig. 2.


COMPARISON OF SOME MALE SERIES
Bizygomatic breadth
153
151
149
147
145
143
141
139
137
135
133
131
129
127
125
66
68
70
72
74
76
78
80
Cranial index
1
2
3
4
5
6
7
8
MEZOLITH
Vassilyevka III.
NEOLITH
1. Vassilyevka II.
2. Vovnighy
3. Dereivka
AENEOLITH
COPPER
BRONZE AGE
1. Turkmenia
2. Harappa
3. Yamnaya
4. Katakombnaya (I.)
5. Katakombnaya (II.)
6. Tastu-Butak
7. Ras-Shamra
8. Ouest-Kazahstan

COMPARISON OF SOME MALE SERIES

Fig. 3.



△ **MEZOLITH**
Vassilyevka III.

○ **NEOLITH**
1. *Vassilyevka II.*
2. *Vovnighy*
3. *Dereivka*

● **AENEOLITH COPPER BRONZE AGE**
1. *Turkmenia*
2. *Harappa*
3. *Yamnaya*
4. *Katakombnaya (I.)*
5. *Katakombnaya (II.)*
6. *Tastu - Butak*
7. *Ras - Shamra*
8. *Srubnaya*
9. *Ouest - Kazahstan*

Table III.

Individual data of the Bronze Age series (Azov-Area)

Cranial parts	Characteristics							
		Periods	Early Bronze	Middle Bronze				
		Culture	Yamnaya	Katakombnaya				
		Cemetery	Zamozh.	Hut. Shevtshenko				
		Kourgans No	2.	1.	1.	2.	2.	2.
		Graves No	11.	1.	9.	2.	8.	13.
		Inventory No	420.	429.	412.	424.	423.	428.
		Years	60-65	40-45	30-35	25-35	50-55	25-30
		Sex	Male	Males				
1	2		3	4	5	6	7	8
Brain case	1	Glabello-occipital length (gl-op)	178	193	186	200	211	182
	8	Maximum bredth of cranium (eu-eu)	-	134	142	142	136	137
	17	Basion-bregma height (ba-b)	126	-	-	-	-	-
	5	Basion-nasion length (n-ba)	98	-	-	-	-	-
	20	Porion-bregma height (po-b)	111	117	117	126	137	113
	9	Minimum frontal diameter (ft-ft)	99	99	96	108	103	98
	10	Maximum frontal diameter (co-co)	115	112	117	123	121	118
	11	Bi-auricular diameter (au-au)	122	131	124	128	128	126
	12	Bi-asterial diameter (ast-ast)	113	-	115	113	116	109
	32	Frontal angle (nas-met)	89	-	75	87	-	87
	-	Frontal angle (gl-met)	84	-	69	73	-	78
	8:1	Cranial index	70,79	69,43	76,34	71,00	64,45	75,27
	17:8	Breadth-height index	-	-	-	-	-	-
	17:1	Length-height index	70,78	-	-	-	-	-
	9:8	Transverse frontopar. index	-	73,88	67,61	76,06	75,74	71,53
		Norma verticalis	Ov.	Pent.	Ov.	Pent.	Ellips.	Ov.
		Glabella (1-6)	2	-	2	4	2	3

Middle Bronze								Late Bronze	
Katakombnaya								Srubnaya	
Zamozhnoye				H.Shevt.	Zamozhnoye			H.Shevt.	Zamozh.
2.	2.	3.	4.	2.	1.	2.	3.	2.	1.
5.	7.	4.	5.	1.	3.	8.	4.	16.	1.
417.	421.	418.	416.	427.	413.	414.	415.	425.	411.
45-50	30-35	40-45	45-50	25-35	40-45	45-50	25-30	40-45	35-40
Males				Females				Male	Female
9	10	11	12	13	14	15	16	17	18
171	182	188	192	176	172	165	176	203	181
-	135	135	161	141	133	130	127	143	132
-	-	140	-	134	-	130	134	132	-
-	-	104	-	103	-	97	103	106	-
118	115	116	138	123	111	107	109	120	112
98	93	87	105	95	92	91	97	89	88
126	111	113	137	117	110	109	111	117	104
-	-	123	146	126	119	112	115	124	111
-	-	106	130	115	100	98	101	118	103
-	-	84	91	93	85	78	85	80	88
-	-	72	82	90	78	68	81	70	79
-	74,18	71,81	83,85	80,11	77,33	78,79	72,16	70,44	72,93
-	-	103,70	-	95,04	-	100,00	105,51	92,31	-
-	-	74,47	-	76,14	-	78,79	76,14	65,02	-
-	68,89	64,44	65,22	67,38	69,17	70,00	76,38	62,24	66,67
Sphen.	Ov.	Ov.	Spher.	Sphen.	Ov.	Sphen.	Ov.	Ov.	Pent.
2	2	4	3	1	2	2	2	3	2

Table III. (continued 1)

1	2		3	4	5	6	7	8
Brain case		Protuberantia occipitalis externa (0-5)	2	1	3	1	1	0
		Proces.mastoideus (1-3)	2	3	3	3	3	3
Facial skeleton	40	Basion-prosthion length (ba-pr)	101	-	-	-	-	-
	45	Bizygomatic breadth (zy-zy)	-	-	133	139	-	136
	48	Upper facial height (n-pr)	63	-	76	70	-	67
	47	Total facial height (n-gn)	115	-	126	120	-	-
	43	Upper facial breadth (fmt-fmt)	105	110	109	112	114	105
	46	Maxillar breadth (zm-zm)	88	-	91	96	-	88
	60	Maxillo-alveolar length	55	-	54	-	-	52
	61	Maxillo-alveolar breadth	60	-	59	66	-	55
	62	Palatal length (ol-st)	47	-	45	-	-	-
	63	Palatal breadth	33	-	35	40	-	-
	55	Nasal height	50	-	56	54	-	48
	54	Nasal breadth	25	-	23	25	-	24
	51	Orbital breadth (mf-ek)	43	-	43	44	-	44
	51a	Orbital width (d-ek)	40	-	41	41	-	41
	52	Orbital height	30	-	34	30	33d	34
	48:45	Upper facial index	-	-	57,14	50,36	-	49,26
	47:45	Total facial index	-	-	94,74	86,33	-	-
	54:55	Nasal index	50,00	-	41,07	46,30	-	50,00
	52:51	Orbital index	69,77	-	79,07	68,18	-	77,27
		Apertura piriformis	Antr.	-	Inf.	Antr.	-	-
		Spina nasalis ant.(1-5)	3	-	5	-	-	-
Facial flatness	43_1	Bimalar chord (fmo-fmo)	98	-	100	101	-	96
	-	Bimalar subtense	17,0	-	23,0	19,0	-	19,0
	77	Nasomalar angle (fmo-n-fmo)	141,6	-	130,4	138,4	-	136,6
	-	Zigomaxillar chord (zm'-zm' after Abinder)	89	-	93	98	-	87
	-	Zigomaxillar subtense	26,5	-	21,0	22,6	-	29,0

9	10	11	12	13	14	15	16	17	18
2	0	3	1	0	1	1	0	2	1
3	2	3	3	2	2	2	2	3	2
-	-	102	-	103	-	94	95	119	-
-	-	-	154!	131	126	119	118	134	113
68	62	74	70	63	64	62	62	84	69
110	106	125	117	111	112	-	108	141	113
110	103	106	116	106	102	102	102	111	102
95	92	94	103	98	92	90	85	107	91
51	57	58	61	-	56	50	52	-	50
62	58	61	72	59	64	-	60	67	54
44	49	49	50	-	45	45	45	-	42
38	36	35	42	33	37	-	36	37	30
55	48	52	56	47	45	47	45	59	49
25	26	25	27	25	23	26	25	29	27
45	42	43	50	44	39	37	38d	41	40d
43	40	40	46	41	37	37	38d	41	40d
32	31	30	34	33	30	32	31d	34	34d
-	-	-	45,45	48,09	50,79	52,10	52,54	62,69	61,06
-	-	-	75,97	84,73	88,89	-	91,53	105,22	100,00
45,45	54,17	48,08	48,21	53,19	51,11	55,32	55,56	49,15	55,10
71,11	73,81	69,77	68,00	75,00	76,92	80,00	75,61	77,27	79,07
Antr.	Antr.	F.pr.	Antr.	Antr.	Antr.	Antr.	Antr.	Antr.	Antr.
3	3	5	3	-	3	-	2	3	3
104	98	99	108	100	92	95	93	100	96
18,0	20,5	17,4	22,0	17,0	10,3	16,0	16,0	21,0	14,5
141,7	134,3	141,0	135,4	142,3	154,5	142,6	141,8	134,3	146,2
93	93	94	105	96	91	92	84	108,5	91
22,0	27,0	26,0	28,0	24,0	23,0	26,0	24,0	35?	26,0

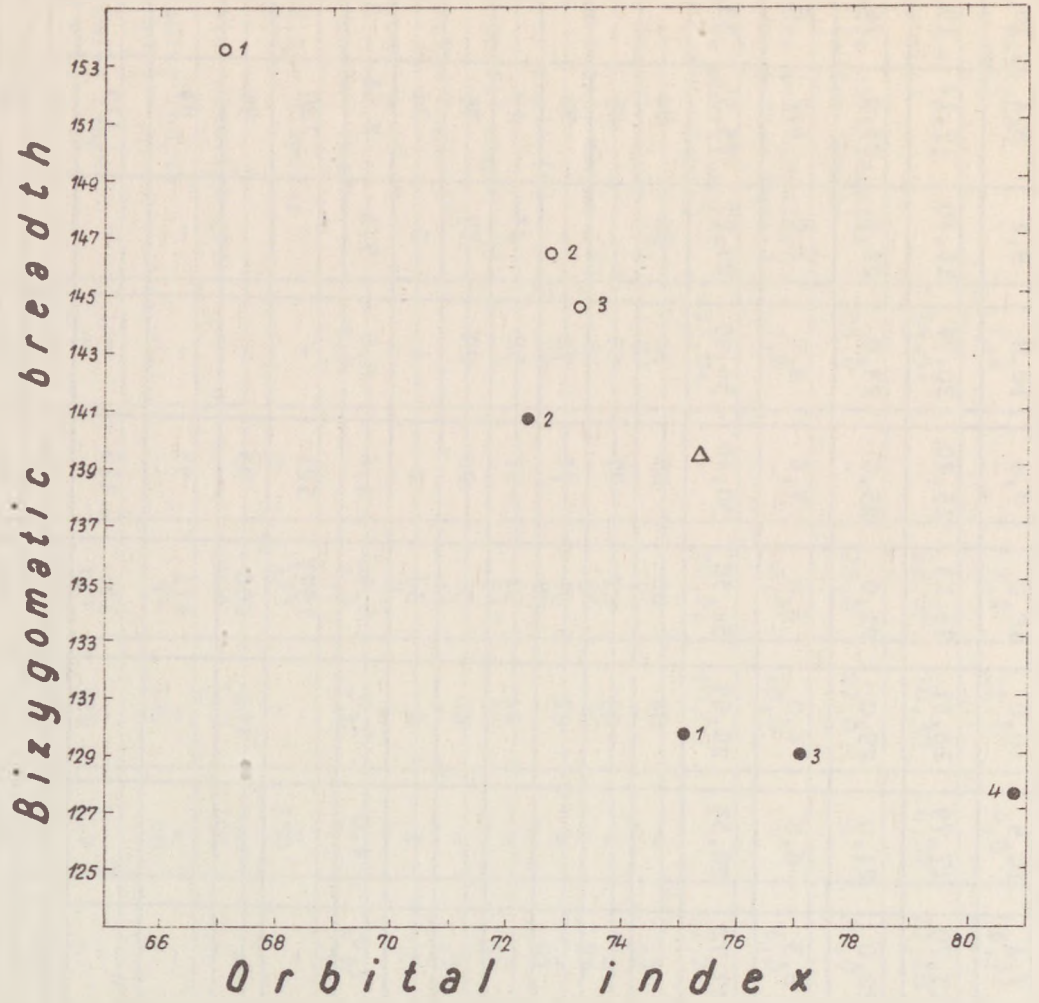
Table III. (continued 2)

1	2		3	4	5	6	7	8
Facial flatness	-	Zigomaxillar angle (zm'-ss-zm')	118,0	-	131,2	130,0	-	112,1
	DC	Dacryal chord	19	-	-	-	-	-
	DS	Dacryal subtense	13,5	-	-	-	-	-
	SC	Simotical chord	9,0	-	-	9,4	-	-
	SS	Simotical subtense	4,0	-	-	6,2	-	-
	DS:DC	Dacryal index	71,05	-	-	-	-	-
	SS:SC	Simotical index	44,44	-	-	65,96	-	-
	C	Malar chord (after Woo)	51,0	-	56,0	62,0	56,0	55,0
	S	Malar subtense (after Woo)	7,4	-	7,2	11,4	9,0	6,7
	S:C	Malar arc index (after Woo)	14,51	-	12,85	18,38	16,07	12,18
	-	Incisure maxillomalar chord (after Levin)	23,0	-	23,0	27,0	-	27,0
	-	Incisure maxillomalar subtense (after Levin)	7,6	-	8,8	10,8	-	6,0
	-	Incisure maxillomalar index (after Levin)	33,04	-	38,26	40,00	-	22,22
	72	Total facial angle (°)	82	-	95	-	-	94
	73	Medium facial angle (°)	84	-	96	87	-	96
	74	Alveolar angle (°)	78	-	89	-	-	87
	75	Nasal profil angle (°)	-	-	54?	52	-	58
	75_1	Nasalspine angle (°)	-	-	41	-	-	36
	-	Fossa canina (0-4)	2	-	2	4	-	2
	-	Fossa canina (mm)	4,0	-	4,4	13,6	-	5,0
Mandibula	65	Bicondilar diameter (Kdl-Kdl)	-	-	123	-	130	-
	66	Bi-gonial diam.(go-go)	-	-	106	101	101	-
	68	Mandibular length (from kdl)	-	-	93	100	88	-
	68_1	Mandibular length (from kdl)	-	-	119	126	117	-
	70	Ramus height	63	71d	71	-	68	-
	71a	Minimum ramus breadth	36	33d	40	40	35	42
	79	Mandibular angle (°)	-	-	120	120	125	-
	79_1	Mental angle (°)	53	-	68	65	58	-

9	10	11	12	13	14	15	16	17	18
128,2	119,5	121,6	123,4	126,6	126,0	120,6	120,2	114,0	119,8
21	23	20	-	-	20	21	-	-	19
14,0	12,0	14,0	-	-	11,0	13,3	-	-	10,0
11,0	10,0	7,2	8,5	10,0	5,0	9,0	6,0	-	11,0
4,5	5,2	5,5	5,0	3,0	2,5	4,3	3,0	-	5,5
66,67	52,17	70,00	-	-	55,00	63,33	-	-	52,63
40,91	52,00	76,39	58,82	30,00	50,00	47,78	50,00	-	50,00
54,0	59,0	54,0	62,0	50,0	52,0	50,0	49,0	53,0	52,0
7,4	10,5	10,0	10,0	7,6	10,8	8,2	8,4	10,2	10,2
13,70	17,79	18,51	16,13	15,20	20,77	16,40	17,14	19,24	19,61
22,0	24,0	29,0	21,0	25,0	23,0	22,0	23,0	26,0	27,4
8,3	6,8	6,0	6,8	7,6	8,5	6,0	6,2	8,8	6,0
37,72	28,33	20,69	32,38	30,40	36,95	27,27	26,95	33,84	21,89
-	-	84	86	85	81	80	84	-	84
-	-	85	87	87	83	-	85	-	86
-	-	82	82	76	76	-	82	-	77
-	-	44	51	57	52	43	49	50?	53
-	-	40	35	28	29	37	35	-	31
3	2	2	3d	2	4	2	2d	3	2
7,0	4,0	5,0	6,5d	4,6	8,0	5,1	3,5d	7,2	5,4
-	-	-	137?	121	-	-	100	-	105
-	-	106	106	93	-	-	95	96	87
-	-	-	111	93	-	-	84	-	-
-	-	-	131	119	-	-	115	-	-
63	64d	77	78	60	58	-	56	77	61
32	34d	37	39	37	34	-	32	37	34
-	-	126	108	128	-	-	138	-	-
64	60	57	58	73	-	-	58	-	-

COMPARISON OF SOME MALE SERIES

Fig. 4.



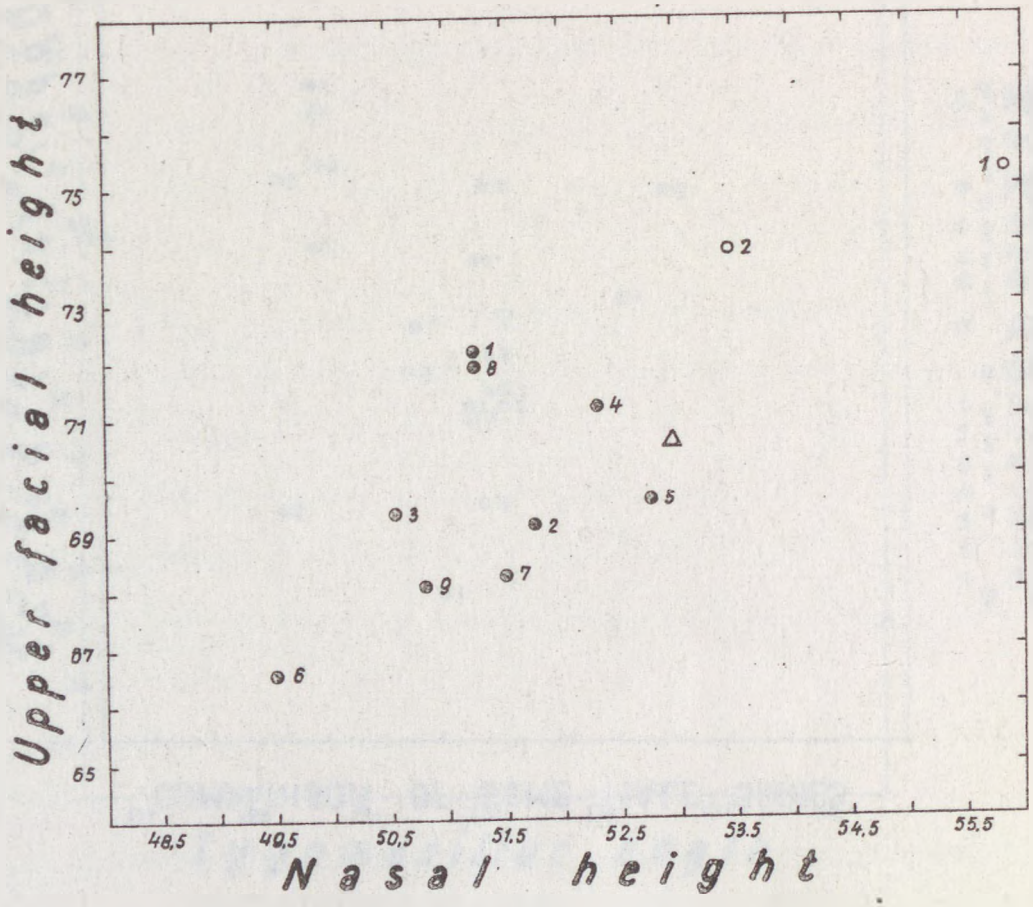
△ **MEZOLITH**
Vassilyevka III.

○ **NEOLITH**
1. *Vassilyevka II.*
2. *Vovnighy*
3. *Dereivka*

● **AENEOLITH BRONZE AGE**
1. *Turkmenia*
2. *Katakombnaya (II.)*
3. *Tastu-Butak*
4. *Ras-Shamra*

COMPARISON OF SOME MALE SERIES

Fig. 5.



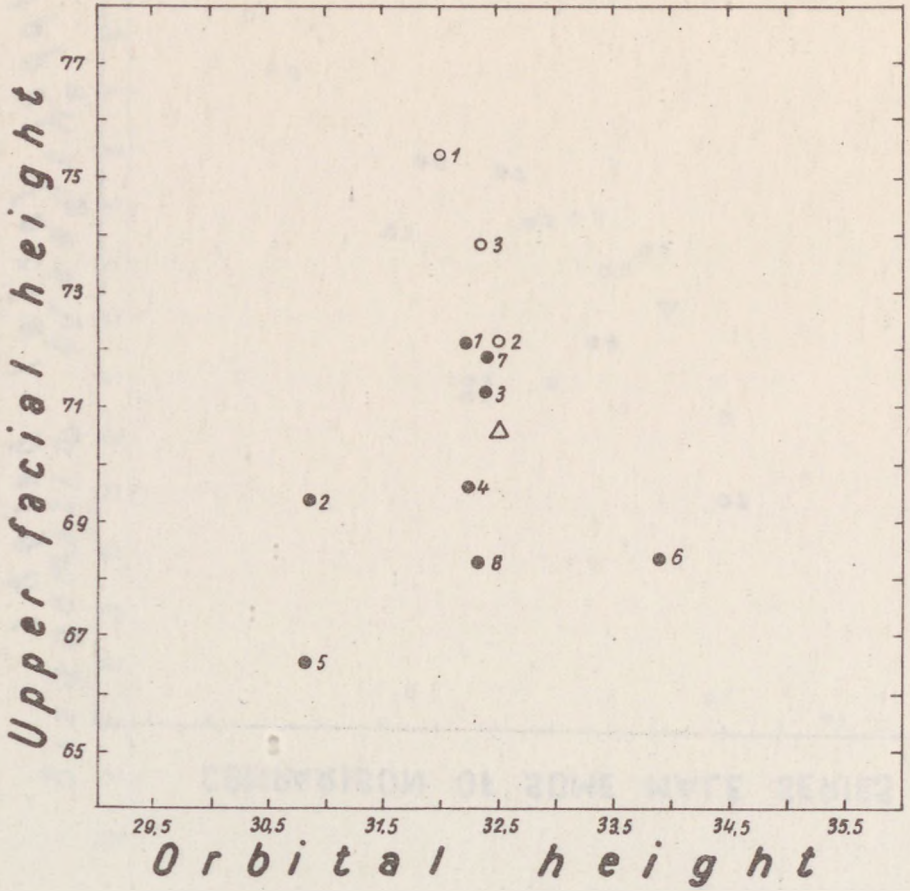
△ **MEZOLITH**
Vassilyevka III.

○ **NEOLITH**
1. *Vassilyevka II.*
2. *Dereivka*

◉ **AENEOLITH**
COPPER
BRONZE AGE
1. *Turkmenia*
2. *Harappa*
3. *Yamnaya*
4. *Katakombnaya (I.)*
5. *Katakombnaya (II.)*
6. *Tastu-Butak*
7. *Ras-Shamra*
8. *Srubnaya*
9. *Ouest-Kazahstan*

COMPARISON OF SOME MALE SERIES

Fig. 6.



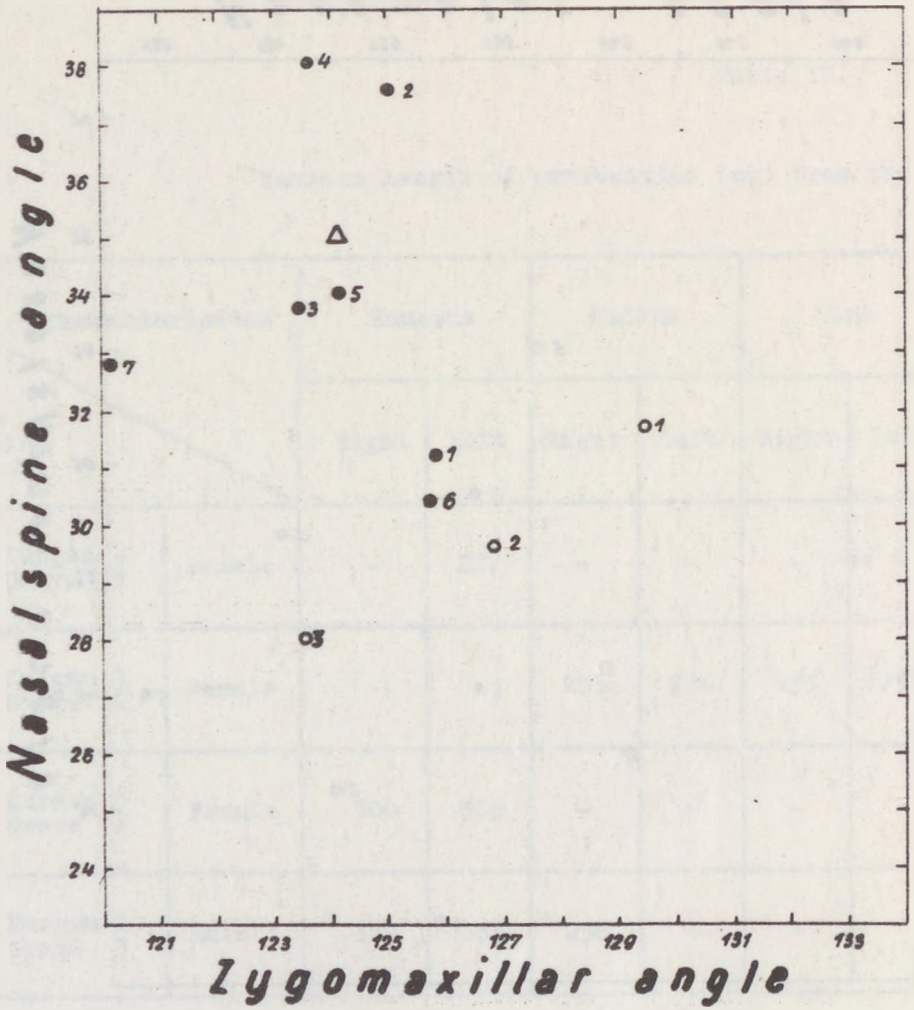
△ **MEZOLITH**
Vassilyevka III.

○ **NEOLITH**
1. *Vassilyevka II.*
2. *Vovnighy*
3. *Dereivka*

● **AENEOLITH BRONZE AGE**
1. *Turkmenia*
2. *Yamnaya*
3. *Katakombnaya (I.)*
4. *Katakombnaya (II.)*
5. *Tastu-Butak*
6. *Ras-Shamra*
7. *Srubnaya*
8. *Ouest-Kazahstan*

COMPARISON OF SOME MALE SERIES

Fig. 7.



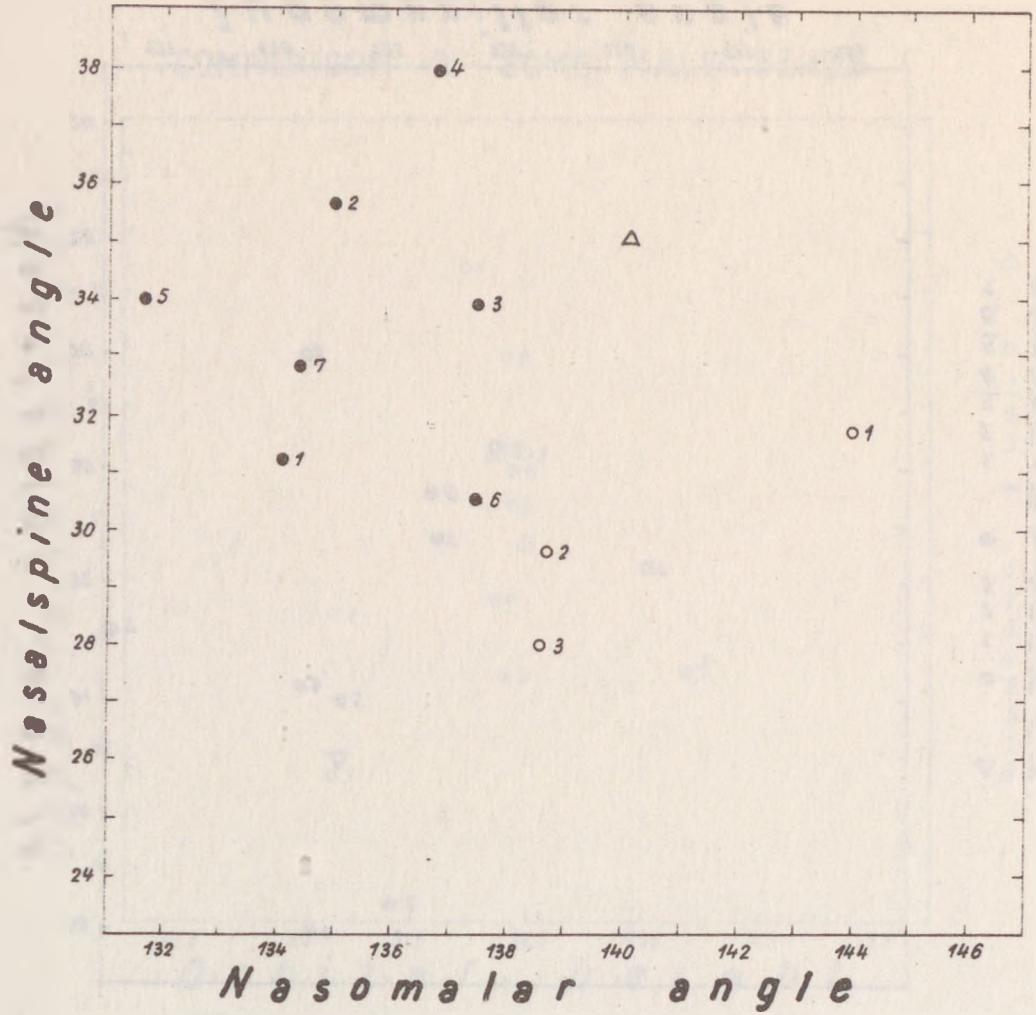
△ **MEZOLITH**
Vassilyevka III.

○ **NEOLITH**
1. *Vassilyevka II.*
2. *Vovnighy*
3. *Dereivka*

● **AENEOLITH BRONZE AGE**
1. *Turkmenia*
2. *Yamnaya*
3. *Katakombnaya (I.)*
4. *Katakombnaya (II.)*
5. *Tastu-Butak*
6. *Srubnaya*
7. *Ouest-Kazahstan*

COMPARISON OF SOME MALE SERIES

Fig. 8.



△ **MEZOLITH**
Vassilyevka III.

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1. *Vassilyevka II.*
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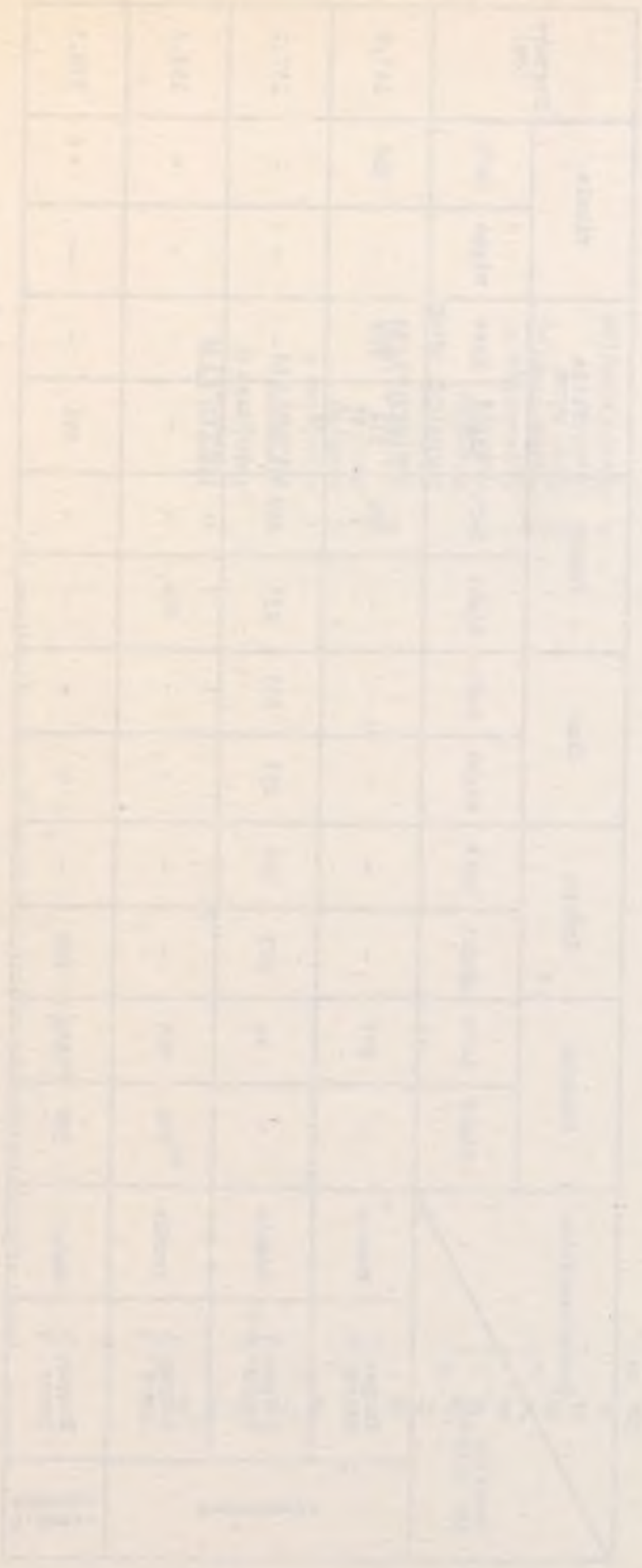
5. *Tastu-Butak*
6. *Srubnaya*
7. *Ouest-Kazahstan*

Table IV.

Maximum length of extremities (mm) from the Middle Bronze Age series

Locality and finding / Characteristics			Humerus		Radius		Ulna		Femur		Tibia		Fibula		Stature (cm)
			Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	
Zamozhnoye	Kurgan 1 Grave 3	Female	-	277	-	-	-	-	-	380	312	309	-	302	147,5
	Kurgan 2 Grave 8	Female	-	-	233	236	255	255	433	437	338	-	-	-	157,1
	Kurgan 3 Grave 4	Female	300	305	-	-	-	-	426	-	-	-	-	-	155,2
H.Shevtshenko	Kurgan 1 Grave 9	Male	337	336	258	-	-	-	-	-	391	-	—	-	170,3



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Section Anthropologique du Musée d'Histoire Naturelle

ANTHROPOLOGICAL STUDIES ON A LATE ROMAN POPULATION AT MAJS, HUNGARY

By

KINGA K. ÉRY

The cemetery of the examined population, in the outskirts („Merse-dülő") of the village Majs, Comitat Baranya, was discovered by Dr. L.PAPP in 1963; he also excavated the first graves (PAPP 1964). The subsequent graves were excavated by a team led by Dr. A.BURGER in 1964-1965, during which I have for a time also been present (BURGER 1965, 1966). It transpired during the excavation that about 50 - 60 per cent of the cemetery had in earlier times been destroyed.On the basis of coins from the Roman Empire and other object material in use in the territory of the Empire; A. BURGER inferred that the burials in the cemetery found place from the second half of the third till the end of the fourth centuries A.D. For her kind informations on the archeological and historical problems and the results of her investigations, I express my sincere thanks to dr.ALICE BURGER also in this place.

There were found in the cemetery the skeletal remains of 52 individuals, 46 of them buried whole and 8 cremated. The state of preservation of the bones is rather bad. According to the calculations expounded by ÉRY - KRALOVÁNSZKY - NEMESKÉRI (1963), only about one half of the skeletal material of the exposed graves remained (quantitative representative value 0,55), of which again hardly more than one half was suitable for measurements (qualitative representative value Q,32).

The measurements were taken according to MARTIN (1928). In classifying the measurements and indices, I followed MARTIN's (1928) and HUG's (1940) works. Stature was calculated according to PEARSON (1899), by the use of WOLANSKI's (1953) nomogram. The calculated parameters of the examined skeletal material is contained in Table 11. Those of juvenile age were not included in the calculations. The individual metric data are to be found in Table 13.

Age was determined for the adult findings (23 - x years) according to NEMESKÉRI - HARSÁNYI - ACSÁDI (1960) and, using ACSÁDI - NEMESKÉRI's (in press) corrections, on the basis of four age indicators: the ossification of the endocranial sutures (O) the spongiosa and upper shaft of humeral (H) and femoral (F) proximal epiphysis,as well as the symphyseal face of the pubis (S). In juvenile individuals (15-22 years), age was estimated, according to JOHNSTON (1961), by the ossification of the epiphyses; in infants (0-14 years) by the state of eruption of the teeth, using SCHRANZ's scheme (1959).

Sex was determined - by the method of ÉRY - KRALOVÁNSZKY - NEMESKÉRI (1963) and in the case of measuring the ischio-pubis index following GAILLARD (1961) - by the analysis of 22 characters of the skeleton. In the morphological characteristics,

graded into five classes, the values +2 and +1 represent masculinity, the values -2 and -1 femininity, while the value 0 means femininity in the case of males and masculinity in the case of females. The mean of these numerical figures relating to the investigated characters also presents a picture for the degree of the morphological sexual dimorphism of the individual.

Table 10 submits the state of preservation of the skeletal remains of the excavated individuals,as well as the individual data of the sex and age determinations.

The chemico-analytical, serological, and histological examinations of the skeletal material was made by Dr. IMRE LENGYEL (LENGYEL - NEMESKÉRI 1963; LENGYEL 1964) and for the cession of his respective data I wish to express my gratitude also in this place. The results of his determination as to sex agreed in all details with mine, with the plus that I.LENGYEL was able, by his investigations, to determine the sex of also those in the infant age. With his kind permission, I propose to submit some of his results in the present paper.

* * *

The distribution according to age of the findings is given in Table 1.

The first conspicuous aspect of the population is the small number of the dead infants. This is due either to the fact that the graves of the children were in the destroyed section of the cemetery or that the majority of the infants and young children have not been buried in the cemetery.For this latter case,parallels are known from the cemeteries of the Great Migrations in the Central Danubian Basin (ÉRY 1967).

Owing to the small amount of dead infants, the value of the average life expectancy at birth was rather high: 36,4 years, as is to be seen in the abridged life-table (Table 2). Given the known number of dead children, however, this value may have been lower, presumably about 30 years.

Twenty years old males may have expected to live 28,2 years more, the females 26,3 years. Between the ages 30-35 years, the life expectancy of males and females was nearly identical, but over 35 years that of the males became more disadvantageous.

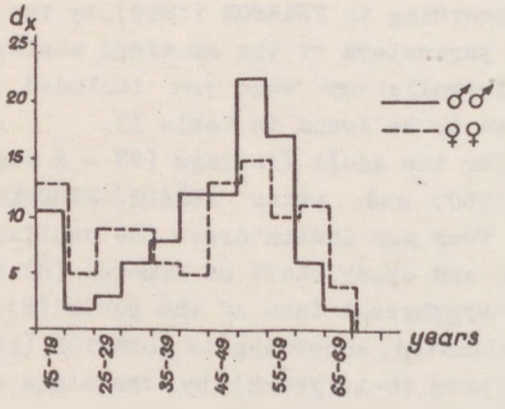

Figure 1. Per cent Distribution of the Dead by Age Groups

The other demographic characteristic of the population was the disproportionately great number of Maturus dead. As demonstrated by Figure 1, the mortality frequency of adults gradually rises from the minimum of those 20-24 years old to the maximum of those 50-54 years old, then it steeply declines. There was found no one older than 70 years among the dead.

In an attempt to find the causes of this peculiar age distribution, I have examined the age group frequencies of some populations in the Central Danubian Basin (Table 3). The series originated from the period extending from the Roman Period till the Hungarian Middle Ages. For the cession of the unpublished data referring to the Roman Period cemetery at Keszthely-Dobogó (III-IV c. A.D.), I am indebted to Dr. GY.ACSÁDI and to Dr. J.NEMESKÉRI.

According to their origin, I have relegated the selected populations into two kinds of settlement groups.Into the first belong those which are „natural" populations, that is, stationary ones of normal composition. The other group comprises the so-called „settled" populations, their origin due to some strategical cause. As observable from Table 3, the age group composition of the two kinds of populations is characteristically different. In natural populations,the number of infant and juvenile dead is generally the highest one, whereas this holds for the adult individuals in the settled populations, as was already shown by ACSÁDI-HARSÁNYI-NEMESKÉRI (1962) in the analysis of the cemeteries at Zalavár.

According to the data submitted, the age group distribution of the population at Majs is similar to that of the „settled" communities,hence it is not impossible that its origin had also been similar to those. Since, however, the major part of the cemetery had been destroyed and the number of excavated graves is meagre, this assumption is not unconditional. On the other hand, it seems to be substantiated also by the archeological data, since the sparsely inhabited community, in the third century, was reinforced by the settling of a further group at the beginning of the fourth century (oral communication of A.BURGER).

* * *

The analysis of metrical characters revealed significant differences between the males and females concerning the standard deviations of the cranial measurements. In Table 4, the variability of the male skulls have been analysed,following HOWELLS's method (1941), as related to van BORK-FELTKAMP's (1950) and HOWELLS's (1941) mean sigmas.

As shown on Table 4, the male standard deviations of Majs are very high with respect to the mean sigma,and especially so in the measurements of the brain case. According to the χ^2 test,of the 11 measurements of the brain case a significantly high sigma ratio is found in 7 cases (63,6 %).Of the 13 measurements of the facial skeleton, the sigma ratio of 8 measurements is larger than the mean sigma, but only one of them is significant. There are some measurements among these latter, however, whose variability is considerably, or almost significantly, below the mean sigma. Such are the bimaxillar breadth, the height of the upper face and of the orbita. All this goes to show that the males of Majs have been of a highly heterogeneous composition but showing, as a majority, type elements some details of whose construction of the facial skeleton were similar to each other.

The female standard deviations cannot be analysed by a similar method, since

the mean sigma is worked out only for males. In order, however, to assess the relative degree of their S. D. by some means, I have compared them with the female standard deviations of the Swedish Westerhus population from the Middle Ages (Table 5). I have selected this series because, according to GEJVALL (1960), it is comparatively homogeneous and because the standard deviations of the male skulls of this series fall around the mean sigma. It could be established from the comparison that the standard deviation of 14 measurements of the 21 cranial ones of the females is smaller at Majs, totalling 66,6 per cent of the cases. In some cases, as for instance in the basi-nasal length, the horizontal circumference and, first of all, the height of the upper face, the values of Majs seem to show especially small standard deviations. Hence the female series of Majs exhibits a considerably more homogeneous and less mixed composition than the male one.

* * *

The distribution of the examined morphological features is given in Table 6, and that of the measurements and indices, according to classes, in Table 12. A detailed analysis of the morphological features is not possible,owing to the small individual number of the series. In general, however, the examined characters of the males exhibit a comparatively slighter variability against the higher standard deviations of their metric values. On the other hand, the morphological characteristics of the females show, as against the homogeneity of their metric values, a certain rate of heterogeneity, and also some differences against the males which could not derive from sexual dimorphism. Such are the morphological peculiarities of the alveolar arc, the orbita, the lower margin of the apertura piriformis, and the profile of the bony nose. These differences originate from taxonomical differences.

Of their further morphological features, sutura metopica occurred only in the males in two cases (16,7 %); ossa wormiana in 9 cases in the males (69,2 %) and in 8 in the females (80,0 %); a slight degree of the torus palatinus was found in the males in one case (8,3 %), in the females in 3 cases (30,0 %). The occiput is generally curvooccipital, with a slight degree of planoccipitaly, in 2 cases only, in the males (16,6 %).

* * *

As pointed out above, the degree of the sexual dimorphism in the males and females could be inferred from the 22 examined morphological characters; the individual sexual expression values are given in Table 10. The mean values per character call attention, however, to further morphological features of the examined population which will also yield taxonomic information (Table 7).

The relatively slight expression of the masculine character is highly characteristic of the male skulls. The mean value of the characters is +0,36. A comparatively more expressed masculinity is observable merely on the facies malaris, in the gonion area, on the processus mastoideus and on the protuberantia occipitalis externa. On the other hand, the hardly protruding glabellar area, the presence of the parietal protuberances, the thin corpus mandibulae, the sharp margo supraorbitalis, the smooth occipital surface, the weakly marked mentum and the

small condylus mandibulae are assessable as feminine characteristics.

Naturally, the masculine character is more expressed on the post-cranial bones of the males, the mean values of the characters being + 0,79. The masculine character is most expressed in the value of the cotylo-ischiadic index and in the narrow and high form of the pelvis. The masculine character of the post-cranial bones are further strengthened by the shape of the angulus pubis, the incisura ischiadica major and the foramen obturatum, as well as the value of the ischio-pubis index. The shape of the pelvic inlet, the wider sacrum, the weakly developed linea aspera, and the relatively small size of the caput femoris show, however, feminine features.

The feminine character is highly expressed on the female skulls; the mean value of the characters is - 0,53. The skulls are characterized by the gracile, rounded shapes; an expressed masculinity can be observed only in the thicker corpus mandibulae, and a moderate masculinity in the larger processus mastoideus and in the larger condylus mandibulae. The post-cranial bones of the females exhibit a high degree of gracility, the female character is thus most expressed. The mean value of the characters is - 1,08.

The combined mean values of the examined 22 characters of the cranial and post-cranial bones is + 0,53 in the males older than 23 years, and - 0,69 in the females. The individuality of these values is most conspicuous when compared with some other series (Table 8). It is only the series from Kérpuszta which is more moderate than the morphologically weak masculine character of the males from Majs; the feminine character of the females from Majs being, however, the most expressed one among the five series drawn into the comparison.

* * *

We have already made some indirect observations, from the analysis made on the osteological material, on the taxonomical characteristics of the population at Majs. As a result of the direct examination, however, it can be established, first of all, that the population belonged to the Europoid great race. With respect to the subraces, the males show the following picture.

The Mediterranean group is predominate, with 8 or perhaps 10 individuals. There occurs, however, several varieties within this Mediterranean element, from the gracile to the more massive ones, from those with a smaller to those with a taller stature. This predominating Mediterranean element is responsible for the rather moderate expression of the masculine characters analysed above. Some other individuals display Nordo-Mediterranean, Nordoid, Dinaroid, and Alpinoid characters Differences in shape are not too great in the series, but those of size are much more considerable. This latter is the cause of the great variation of the male skulls.

The females are taxonomically more homogeneous: this is expressed also in the low standard deviation values of their metric data. The Mediterranean element of gracile skeletal bones is almost exclusive among the females, but they, too, can be separated into two well delimitable groups. The major group comprises the Mediterranean element of a more gracile face (group A), the smaller one a more markedly profiled variety (group B). The deviation of group B from group A consists of the greater biasterionic breadth, the interorbital width, the wider dimensions of the

bimaxillar breadth, the nose and the palate, and the lower values of the nose and the orbita. All these refer to the presence of Cro-Magnoid features. The female skulls show, accordingly, differences not so much in size as in shape. The different rate of mortality is also characteristic of the two groups. The average age at death (as calculated only for adults) of the members comprising group A is 52 years, whereas that of group B merely 35. These two groups of the females from Majs may have different origins and the organism of those belonging to group B had been perhaps less able to adapt itself to the local conditions.

There is a smaller and a larger group of graves separated in the cemetery at Majs. Among the male and female dead of the smaller group of graves, the gracile element of the Mediterranean predominate, and the type elements differing from the Mediterranean or Nordo-Mediterranean are absent. Since the archeological findings originating from the third century occur in this group of graves, they may be considered to have been the earliest settlers at Majs. The non-Mediterranean type elements can be found in the larger group of graves of the cemetery, and their presence can thus be connected with the assumed settling at the beginning of the fourth century.

Another series of data should also be treated here. Dr. LENGYEL summarized the results of his chemico-analytical, serological and histological investigations (a total of 19 investigational data per individual) - on the basis of a numerical value, obtained by weighting with the empirical significance of every given test - in a so-called „P" (= personal) index. In Dr. LENGYEL's opinion, the P-index may refer, beyond a better survey of the results of laboratory bone examinations, to ethnic connections of populations, or to that between their given individuals, of similar P-index values. Within the population of Majs, Dr. LENGYEL separated three subgroups on the basis of the P-index values. The value-limits of groups 1 and 2 are comparatively nearer to one another, while those of group 3 are rather removed from them. These three subgroups could not be aligned unequivocally with the observed taxonomical groups, but their occurrence in the cemetery showed an indubitable system. The representatives of index group 3 occurred in 58,3 per cent in the smaller and chronologically the older group of graves, whereas the members of index group 1 were found in 91,6 per cent, and those of index group 2 in 72,7 per cent, in the larger and chronologically younger group of graves.

* * *

On the skeletal remains of the population at Majs, the following pathological deformations could be observed with the naked eye:

1. Fractures, injuries. Status post fracturam could be discerned in six males (42,8 %). These are to be found on the ribs in one case, on the clavicle in one case, and on the skull in four cases. In these latter ones, it is rather striking that the injuries originating from blows but not causing death occurred only on the right side of the skulls: in two cases on the right frontal bone, and in two other cases on the right parietal bone (in one of the latter ones, there was a healed fracture observable also on the right side of the basis of the cranium). As regards the females, fracture was observable in one case only (7,1 %; on the ulna).

2. Degenerative and regressive changes. In the males, traces of medium degree spondylosis on the spinal column could be demonstrated in seven cases (50,0 %) in

individuals over 50 years of age; this occurred equally in the cervical, dorsal and lumbar regions, mostly, however, in the two latter areas. In the females, it appeared only in a slight degree, and only in the cervical vertebrae, in four cases (28,5 %) in individuals over 50 years of age.

In one female, a marked deformation of the left caput femoris and the left acetabulum, causing also the retarded development of the shaft of the left femur, occurred; it was presumably due to a congenital defect (luxatio coxae).

3. Inflammatory processes. In one male, the inner surface of the left orbita became perforated in an extensive area owing to the inflammation of the Highmore cavity.

4. Dental state. The state of the teeth of the population, and especially that of the males, is mainly characterized by a strong abrasion. According to MURPHY's (1959) scheme, the abrasion of mostly the frontal teeth is in a progressed state, the molars being much less worn. This highly abraded frontal dentition is not observable in the females; the frequency of lost teeth while still alive is, however, significantly greater in this latter sex. The frequency, examined only for the Maturus group, is 42,5 % in the females and merely 13,5 % in the males. Caries occurred in five cases (41,7 %) in adult females, and in one case (7,7 %) in the males. Cysta mandibularis et maxillaris occurred in three females only (25,0 %).

With respect to the above diagnoses, Dr. LENGYEL made the following statements. In general, the pathological phenomena, detectable by laboratory methods, of bones can be separated into groups involving processes causing histological or chemical changes. No pathological process generally effecting the micromorphological structure of the osseous findings occurred in the material. Among the pathological processes, however, causing changes in the chemical composition of the bones, there could be observed rachitis in the age group Infans I, and osteoporosis senilis in all male individuals over 40 years of age.

* * *

Finally, an attempt should be made to look for eventual parallels between the population at Majs and other contemporary groups. The possibilities of investigations in this regard are, however, rather restricted. On account of methodological considerations, the male series of Majs should be omitted from the comparisons, since the large variations of their mean values would render all further calculations, based on them, unsafe. Thus the search for parallels has to be delimited to merely the female series.

A certain difficulty was caused by the fact that there is hardly any considerable cranial material published from the territory the Roman Empire, and the majority of the available series also represent the combined materials of larger chronological and regional units. Even from among series to be found in literature, and which presented measurement data necessary for comparative examinations, I was compelled to omit, for the sake of ensuring the accuracy of calculations, series comprising less than seven skulls. Since, theoretically, there might be taken into account the presence of surviving autochthonous local populations (Celtic, Illyrian), and some eventual barbarians (Sarmathians), it would have been advisable to analyse, besides the series from the Roman Period, also materials of this character. However, with regard to the above points of wiew, I could draw but one

series of the La Tène, originating from Schwitzerland, into my investigations.

All in all, six series from the Roman Period and one from La Tène proved to be suitable for comparison. Under the collective name „Pannonia", I combined all those cranial findings from the III-IV centuries A.D. which have been published by LEBZELTER (1935), NEMESKÉRI (1954, 1956a, 1956b), and TÓTH (1962), as well as some items from two smaller series originating from Pécs („Geisler Eta utca") and Gödkeresztur, Hungary, now under my investigation.

The distance of the series from Majs was analysed by PENROSE's (1954) multivariate distance statistics, on the basis of the following cranial measurements: maximum cranial length, basi-nasal length, maximum cranial breadth, minimum frontal breadth, cranial height (ba-b), facial length, bizygomatic breadth, upper facial height, orbital width (mf-ek) and height, nasal breadth and height. Table 9 shows the values received from the calculations, namely size, shape, the combination of the two (C_R^2), and the generalized PENROSE - distance.

The interpretation of the results might be given as follows.

The combined cranial measurements of the female population from Majs show similarities, both as to size and shape, with materials deriving from the Swiss - South German area and Varna, Bulgaria. A smaller degree of similarity may be observed with the series from Rome. They stand removed, however, from the combined Pannonian, Intercisan, Pompeian, and La Tène materials. The numerical values alone do not justify, however, the assumption of a direct connection between Majs and the series similar to it; for this, one would need a number of additional metric, and chiefly morphological, data. On the basis of the observed parallels, however, we have safer grounds to draw inferences on the presumable directions of the origin or settling of the female population at Majs, and the more so as the Mediterranean taxonomical character of the material points in a similar direction.

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Table 1.

Distribution of the Population According to Age and Sex

Age groups	Number of individuals	
0-7	6	
8-14	4	
	Males	Females
15-22	2	2
23-39	2	4
40-59	12	7
60-x	-	2
15-x	2	-
23-x	1	-
	Cremated burials	
0-x	3	
15-x	4	
40-x	1	
Total: 52		

Table 2.

Abridged Life - Table

Age groups	Dead: Number (D_x)	Dead: Percentage (d_x)	Number of survivors (l_x)	Probability of death (q_x)	Life expectancy (e^o_x)
		Both sexes			
0-4	4,10	7,88	100,00	0,07	36,40
5-9	3,80	7,31	92,12	0,07	34,30
10-14	2,80	5,38	84,81	0,06	32,04
15-19	4,20	8,08	79,43	0,10	29,04
20-24	2,10	4,04	71,35	0,05	27,04
25-29	2,40	4,61	67,31	0,06	23,51
30-34	3,10	5,96	62,70	0,09	20,06
35-39	2,90	5,58	56,74	0,09	16,91
40-44	3,80	7,31	51,16	0,14	13,48
45-49	5,00	9,62	43,85	0,21	10,31
50-54	7,00	13,46	34,23	0,39	7,50
55-59	5,50	10,58	20,77	0,50	5,74
60-64	3,60	6,92	10,19	0,67	4,11
65-69	1,70	3,27	3,27	1,00	2,51
Total:	52,00				
		Males			
15-19	2,10	11,05	100,00	0,11	29,84
20-24	0,40	2,11	88,95	0,23	28,24
25-29	0,50	2,63	86,89	0,30	23,85
30-34	1,10	5,79	84,21	0,68	19,53
35-39	1,50	7,89	78,42	0,10	15,78
40-44	2,30	12,11	70,53	0,17	12,27
45-49	2,30	12,11	58,42	0,20	9,30
50-54	4,20	22,11	46,31	0,47	6,08
55-59	3,20	16,84	24,21	0,69	4,34
60-64	1,10	5,79	7,37	0,78	3,57
65-69	0,30	1,58	1,58	1,00	2,50
Total:	19,00				
		Females			
15-19	2,00	13,33	100,00	0,13	27,49
20-24	0,70	4,67	86,67	0,53	26,34
25-29	1,30	8,67	82,00	0,10	22,70
30-34	1,40	9,33	73,33	0,12	20,08
35-39	0,90	6,00	64,00	0,93	17,81
40-44	0,70	4,67	58,00	0,80	14,39
45-49	2,00	13,33	53,33	0,24	10,43
50-54	2,20	14,67	40,00	0,36	8,08
55-59	1,50	10,00	25,33	0,39	6,31
60-64	1,70	11,33	15,33	0,73	3,80
65-69	0,60	4,00	4,00	1,00	2,50
Total:	15,00				

Table 3.

Percentage of the Age Groups of Different Populations

Series	Percentage of the dead in age group			
	0-19	20-39	40-59	60-x
„Natural" populations:				
Keszthely - Dobogó, III-IV. c. (Acsádi-Nemeskéri, in press)	31,8	19,9	33,3	15,4
Ártánd. IX.c. (Éry, 1967)	32,8	21,4	32,5	13,4
Sárbogárd. X.c. (Éry, 1966-67)	39,0	20,2	27,7	13,1
Gáva - Market, X-XI.c. (Nemeskéri et al., 1961)	39,4	17,0	29,1	14,6
Halimba, X-XII.c. (Acsádi-Nemeskéri, 1957)	41,6	20,1	23,7	14,6
Kérpuszta, XI.c. (Acsádi-Nemeskéri-Harsányi, 1959)	46,4	19,1	24,7	9,9
Zalavár-Village, XI.c. (Acsádi-Harsányi-Nemeskéri, 1962)	48,8	18,2	21,2	11,8
Average:	40,0	19,4	27,5	13,3
„Settled" populations:				
Zalavár-Castle, IX-XI.c. (Acsádi-Harsányi-Nemeskéri, 1962)	25,9	21,8	32,5	19,8
Zalavár-Chapel, XI-XII. c. (Acsádi-Harsányi-Nemeskéri, 1962)	27,4	26,8	36,9	8,9
Fonyód-Fortlet, XIV-XVI.c. (Nemeskéri-Nozdroviczky, 1963)	35,4	25,5	32,9	6,6
Average:	29,4	24,7	34,1	11,8
Majs, III-IV.c.	28,7	20,2	41,0	10,2

Table 4.

Variability of the Cranial Measurements (♂♂)

Martin No.	Majs S.D.	Majs N	Mean sigma	Sigma Ratio	P (%)
1	10,11	8	6,08 (B-F)	166,28	1> P > 0,1
5	6,97	6	4,16 (B-F)	167,57	2,5> P > 1
8	8,23	10	5,07 (B-F)	162,33	1> P > 0,1
9	4,64	11	4,51 (B-F)	102,88	50 > P > 30
17	5,16	6	4,94 (B-F)	104,45	50 > P > 30
23	21,02	7	13,97 (B-F)	150,47	5 > P > 2,5
24	14,38	9	10,02 (H)	143,51	5 > P > 2,5
25	21,03	8	12,63 (B-F)	166,51	1> P > 0,1
26	6,92	10	6,12 (B-F)	113,07	30 > P > 10
27	9,62	9	7,19 (B-F)	133,80	10 > P > 5
28	10,53	8	7,08 (B-F)	148,72	5 > P > 2,5
43/1	4,40	11	3,87 (B-F)	113,70	30 > P > 10
46	3,09	8	4,79 (B-F)	64,50	90 > P > 70
47	7,66	5	6,33 (H)	121,01	30 > P > 10
48	2,88	6	4,30 (B-F)	66,98	90 > P > 70
51	2,81	7	1,72 (B-F)	163,37	2,5 > P > 1
52	1,39	7	2,00 (B-F)	69,50	90 > P > 70
54	1,58	9	1,76 (B-F)	89,77	70 > P > 50
55	3,69	7	3,15 (B-F)	117,14	30 > P > 10
61	4,63	6	3,19 (H)	145,14	10 > P > 5
65	6,91	7	5,58 (H)	123,84	30 > P > 10
66	8,45	10	6,62 (H)	127,64	P > 10
68/1	5,96	10	5,17 (H)	115,28	30 > P > 10
69	2,76	9	2,84 (H)	97,18	50 > P > 30

Table 5.

Standard Deviations of the Female Population at Majs and Westerhus

Martin No.	Majs S.D.	Westerhus S.D.
1	6,31	6,01
5	2,64	4,39
8	6,29	4,39
9	4,16	4,58
17	4,19	4,40
23	9,15	12,80
24	7,99	9,55
25	12,04	11,60
26	4,92	5,02
27	7,19	7,19
28	4,58	7,39
43/1	3,86	4,02
46	4,62	4,26
47	6,13	6,81
48	1,77	4,80
51	3,00	2,23
52	1,88	2,18
54	2,50	2,07
55	2,32	3,40
65	5,10	5,71
69	2,26	3,20

Table 6.

Distributions of Morphological Features

Characteristic	Distribution	♂♂	♀♀	Characteristic	Distribution	♂♂	♀♀
Norma vert., shape of	ellipsoidal	2	3	Spina nasalis ant., development of (Broca)	1.	-	4
	ovoid	4	4		2.	5	-
	spheroidal	-	1		3.	-	3
	spheno-birsoid.	2			4.	1	-
	rhombo-pentag.	2	1		5.	1	-
Orbita, shape of	rounded	1	2	Nasal aperture, margin of	infantile	-	1
	subrectangular	7	4		anthropine	9	7
	rectangular	1	4		fossa praenas.	-	2
Alveolar arc. shape of	paraboloid	9	5	Nasal ridge, shape of	straight	3	3
	U-shaped	2	4		convex	4	1
					concave-convex	-	2
Fossa canina, fullness of	shallow	1	2				
	medium	4	2	Sacrum, Radlauer scheme	homobasalic	4	2
	deep	4	6		hypobasalic	3	1

Table 7.

Mean Sexual Expression Values of 22 Characteristics of the Skeleton

Characteristics	♂♂ M	♂♂ N	♀♀ M	♀♀ N
Tuber front.e.par.	+ 0,17	12	- 0,60	10
Glabella, arc.zyg.	- 0,09	11	- 1,09	11
Proc. mastoideus	+ 0,62	13	- 0,25	12
Prot. occ. externa	+ 0,58	12	- 0,75	12
Squama occipitalis	+ 0,31	13	- 0,30	12
Margo supraorbit.	+ 0,25	12	- 0,50	10
Arcus zygomaticus	+ 0,38	8	- 1,22	9
Facies malaris	+ 0,67	12	- 0,55	11
Corpus mandibulae	+ 0,15	13	+ 0,25	8
Mentum	+ 0,36	14	- 0,54	13
Gonion	+ 0,64	14	- 0,64	11
Condylus mandib.	+ 0,33	12	- 0,17	12
Average:	+ 0,36		- 0,53	
Pelvis major	+ 1,17	6	- 1,20	5
Pelvis minor	+ 0,17	6	- 1,60	5
Angulus pubis	+ 0,89	9	- 1,17	15
Incisura isc. major	+ 0,83	12	- 1,40	10
Foramen obturatum	+ 0,71	7	- 0,75	4
Ischio-pubis index	+ 0,86	7	- 1,00	3
Cotylo-isch. index	+ 1,60	10	- 0,80	5
Sacrum	+ 0,20	5	- 1,25	4
Caput femoris	+ 1,21	14	- 1,09	11
Linea aspera	+ 0,21	14	- 0,58	12
Average:	+ 0,79		- 1,08	

Table 8.

Mean Sexual Expression Values of Different Series

Series	♂♂ M	♀♀ M
Majs, III-IV.c.	+ 0,53	- 0,69
Ártánd, IX.c. (Éry, 1967)	+ 0,70	- 0,58
Sárbogárd, X.c. (Éry, 1966-67)	+ 0,71	- 0,55
Kérpuszta, XI.c. (Éry et al., 1963)	+ 0,28	- 0,21
Fonyód, XIV-XVI.c. (Nemeskéri, 1963)	+ 0,79	- 0,66

Table 9.

The Penrose - Distances of Different Female Populations from Majs

Series	Number of		Size	Shape	C_R^2	Generalized Distance (D_p^2)
	crania	measurements				
Roman Period:						
Swiss - South-German territory (Hug, 1940)	40	10	0,05	0,10	0,11	1,42
Varna (Bulgaria) (Hajnis, 1965)	9	10	0,07	0,10	0,12	1,57
Rome (Moschen, 1894, Sergi, 1894-95)	20	10	0,10	0,20	0,22	2,87
Pompeii (Schmidt, 1884)	33	11	0,16	0,23	0,26	3,76
Pannonia	20	12	0,00	0,34	0,34	5,35
Intercisa (Hungary) (Nemeskéri, 1954)	7	12	0,00	0,44	0,44	6,79
La-Tène Period:						
Swiss - South-German territory (Hug, 1940)	25	10	0,01	0,29	0,29	3,79

Table 10.

Individual Representation Values, Age and Sex Data

No	Graves No	Repr. value Quant.	Repr. value Qual.	Sex	Degree of sex expression	Sex.repr. value	Estim. age	Criterions of estimation O	Criterions of estimation S	Criterions of estimation H	Criterions of estimation F	Notes+
1	1	0,0	0,00	o	–	–	0-1	–	–	–	–	1
2	2	0,6	0,25	♂	+ 0,69	0,7	37-46	I	–	–	III	
3	3	0,0	0,00	o	–	–	1-2	–	–	–	–	1
4	4	0,0	0,00	♂?	–	–	15-x	–	–	–	–	1
5	5	0,8	0,25	♀	- 0,93	0,8	31-35	I	I-II	II-III	II	
6	6	0,9	0,50	♂	+ 0,54	1,0	53-57	IV	III	III	III	
7	7	0,0	0,00	♂?	–	–	15-x	–	–	–	–	1
8	8	0,0	0,00	o	–	–	7-14	–	–	–	–	1
9	9	0,8	0,50	♂	+ 0,50	0,8	48-54	III	II-III	–	III	
10	11	0,8	0,50	♀	- 0,85	1,0	48-52	I	III	III-IV	IV	
11	12	0,3	0,25	♀	- 0,33	0,7	23-40	I	–	–	–	
12	13	0,8	0,75	♀	- 0,28	1,0	47-51	I	III-IV	IV	III	
13	14	0,0	0,00	o	–	–	7-14	–	–	–	–	1
14	15	0,3	0,00	♀	- 0,25	0,5	60-69	IV	–	–	III-IV	
15	16	1,0	1,00	o	–	–	9-10	–	–	–	–	
16	17	–	–	–	–	–	15-x	–	–	–	–	2
17	18	0,5	0,50	♂	+ 1,00	0,2	16-18	–	–	–	–	
18	19	0,8	0,50	♀	- 0,86	0,8	54-63	IV	–	–	III-IV	
19	20	0,1	0,00	♂	–	–	23-x	–	–	–	–	
20	21	0,8	0,25	♀	- 0,40	0,8	59-65	II	IV	–	IV	
21	22	0,6	0,25	♀	- 1,30	0,7	38-44	–	III	II	II	
22	23	0,6	0,25	♂	+ 1,00	0,5	49-58	III	–	–	III	
23	24	0,9	0,75	♂	+ 1,09	1,0	42-46	IV	II	II-III	II-III	
24	25	0,2	0,25	o	–	–	4-5	–	–	–	–	
25	27	0,7	0,50	♂	+ 0,71	0,7	40-44	–	II-III	III	II-III	
26	28	0,5	0,00	♀	- 0,60	0,7	47-56	I	–	–	III-IV	
27	29	0,9	0,50	♂	+ 1,00	1,0	47-51	I	III	III	III-IV	
28	30	1,0	1,00	♀	- 0,94	1,0	16-17	–	–	–	–	
29	31	–	–	–	–	–	15-x	–	–	–	–	2
30	33	0,9	0,50	♂	+ 0,10	1,0	53-57	IV	III	III	III	
31	34/a	1,0	0,75	♀	- 0,63	1,0	23-27	I	I	I-II	II	
32	34/b	1,0	1,00	o	–	–	newborn	–	–	–	–	3
33	35	–	–	–	–	–	0-x	–	–	–	–	2
34	36	1,0	0,50	♀	- 1,00	1,0	31-37	I	–	II	II-III	
35	37	0,9	0,50	♂	+ 0,40	1,0	51-55	IV	III	II	II-III	
36	38	0,0	0,00	o	–	–	7-14	–	–	–	–	1
37	39	0,0	0,00	o	–	–	6-7?	–	–	–	–	
38	40	0,5	0,50	♂	0,00	0,9	16-18	–	–	–	–	
39	41	0,6	0,25	♀	- 0,84	0,7	53-59	I	–	IV	III-IV	
40	42	–	–	–	–	–	0-x	–	–	–	–	2
41	43	–	–	–	–	–	0-x	–	–	–	–	2
42	44	0,2	0,25	♀	- 1,60	0,5	15-17?	–	–	–	–	
43	45	0,7	0,25	♀	- 1,71	0,7	45-51	I	–	III-IV	III-IV	
44	46	–	–	–	–	–	15-x	–	–	–	–	2
45	47	0,5	0,25	♂	0,00	0,8	47-53	II	III	–	III-IV	
46	48	–	–	–	–	–	15-x	–	–	–	–	2
47	49	0,6	0,25	♂	+ 0,21	0,7	54-63	IV	–	–	III-IV	
48	50/a	0,7	0,25	♂	+ 0,46	0,8	35-39	I	II-III	II	III	
49	50/b	–	–	–	–	–	40-x	–	–	–	–	2
50	51	0,0	0,00	o	–	–	0-7	–	–	–	–	1
51	52	0,9	0,50	♂	+ 0,66	1,0	57-61	I	IV	III	III-IV	
52	53	0,6	0,25	♂	+ 0,07	0,7	29-33	I	I	II	II	

+ Notes: 1 = Observations during excav.; 2 = Cremated burial; 3 = Intra uterine

Table 11/a.

Parameters of the Male and Female Series (Ad. - Sen.)

Martin No+	Cranium							
	Males				Females			
	N	M	Range	S.D.	N	M	Range	S.D.
1	8	183,5	172-196	10,11	9	178,7	169-186	6,31
5	6	98,2	90-111	6,97	6	94,8	92-98	2,64
8	10	143,9	133-157	8,23	9	139,7	132-151	6,29
9	11	98,1	91-105	4,64	10	94,7	90-104	4,16
12	8	112,3	103-123	6,09	7	107,3	99-115	5,08
17	6	131,2	126-139	5,16	7	127,3	121-133	4,19
23	7	517,7	493-546	21,02	8	502,9	492-516	9,15
24	9	314,2	292-343	14,38	9	306,8	298-325	7,99
25	8	369,9	340-408	21,03	8	364,1	350-382	12,04
26	10	125,9	115-134	6,92	11	125,6	120-138	4,92
27	9	122,6	113-140	9,62	9	125,3	117-140	7,19
28	8	123,0	107-134	10,53	8	113,9	109-121	4,58
29	10	109,8	100-117	5,61	10	109,1	104-114	3,21
30	9	111,4	103-125	7,98	8	111,5	104-119	5,01
31	8	99,6	88-106	6,65	9	94,9	89-100	3,13
40	4	91,0	85-99	-	6	91,2	89-97	3,25
43/1	11	96,3	88-102	4,40	10	94,4	86-100	3,86
45	3	132,3	127-141	-	6	125,2	122-129	2,40
46	8	93,9	88-97	3,09	6	93,2	86-99	4,62
47	5	114,2	104-125	7,66	7	108,3	100-116	6,13
48	6	69,3	67-75	2,88	8	63,6	60-67	1,77
51	7	41,7	36-44	2,81	9	41,3	36-45	3,00
52	7	35,3	34-37	1,39	8	33,9	31-36	1,88
54	9	24,3	21-26	1,58	10	24,3	21-28	2,50
55	7	52,6	49-59	3,69	8	49,3	47-53	2,32
60	3	52,7	49-55	-	5	51,8	47-56	3,27
61	6	62,7	56-68	4,63	6	57,0	51-61	3,63
62	3	45,7	45-46	-	6	44,5	42-48	2,25
63	5	40,8	38-44	2,59	6	36,2	29-41	4,02
65	7	120,9	115-131	6,91	6	115,0	107-123	5,10
66	10	99,1	82-110	8,45	8	93,0	85-98	4,34
68/1	10	102,7	96-114	5,96	9	101,1	95-109	4,62
69	9	29,1	25-33	2,76	8	25,5	23-30	2,26
72	2	-	87-92	-	7	86,1	84-89	1,77
74	2	-	86-90	-	7	77,4	66-83	6,42
75/1	2	-	26-36	-	4	27,3	23-32	-
8:1	8	77,6	72,3-90,7	5,83	8	77,5	72,5-86,4	4,50
17:1	6	73,0	71,3-75,3	1,41	7	71,0	68,7-72,7	1,29
17:8	6	93,3	82,1-98,6	5,92	6	94,2	85,2-105,6	6,85
9:8	10	68,2	61,8-74,5	3,36	9	68,1	59,6-71,2	3,66
47:45	3	88,7	86,1-90,6	-	6	86,5	77,5-94,3	6,47
48:45	3	53,1	52,8-53,5	-	6	50,8	48,1-54,9	2,71
52:51	7	84,7	77,3-94,4	5,16	8	81,0	72,7-92,1	6,68
54:55	7	46,3	41,2-51,0	3,36	8	48,5	41,2-54,9	5,50
61:60	3	119,3	114,3-125,9	-	4	115,0	107,5-117,6	-
63:62	3	91,0	84,4-95,7	-	4	86,8	76,1-95,3	-
68/1:65	7	86,9	80,2-92,2	4,38	6	87,5	74,8-92,6	6,69

+ Cranium:

1. Maximum cranial length (g-op)
5. Basi-nasal length (n-ba)
8. Maximum cranial breadth (eu-eu)
9. Minimum frontal breadth (ft-ft)
12. Biasterionic breadth (ast-ast)
17. Basi-bregmatic height (ba-b)
23. Horizontal circumference
24. Transverse arc (po-b-po)
25. Median sagittal arc (n-o)
26. Nasion-bregma arc (n-b)
27. Bregma-lambda arc (b-l)
28. Lambda-opisthion arc (l-o)
29. Nasion-bregma chord (n-b)
30. Bregma-lambda chord (b-l)
31. Lambda-opisthion chord (l-o)
40. Basi-alveolar length (ba-pr)
43/1. Interorbital breadth (fmo-fmo)
45. Bizygomatic breadth (zy-zy)
46. Bimaxillar breadth (zm-zm)
47. Nasion-gnathion height (n-gn)
48. Upper facial height (n-pr)
51. Orbital breadth (mf-ek)(left)
52. Orbital height
54. Nasal breadth
55. Nasal height (n-ns)
60. Maxillo-alveolar length (pr-alv)
61. Maxillo-alveolar breadth (ekm-ekm)
62. Palatal length (pl-sta)
63. Palatal breadth (enm-enm)
65. Bicondylar breadth (kdl-kdl)
66. Bigonial breadth (go-go)
68/1. Maximum projective mandibular length
69. Chin height (id-gn)
72. Total facial angle (n-pr)
75/1. Nasalspine angle

++ Post-cranium:

Humerus: 1. Maximum length
2. Caput-capitulum length
7. Minimum circumference of diaphysis
Radius: 1. Maximum length
Ulna: 1. Maximum length
Femur: 1. Maximum length
2. Bicondylar length
6. Antero-posterior diameter of diaphysis at middle
7. Lateral diameter of diaphysis at middle
9. Maximum diameter of subtrochanteric flattening (lateral)
10. Minimum diameter of subtrochanteric flattening (antero-post.)
Tibia: 1. Length (from the lateral condyle to the medial malleolus)
1/b. Length (from the medial condyle to the medial malleolus)
8/a. Maximum antero-posterior diameter (at level of the nutrient foramen)
9/a. Projective transverse diameter (at level of the nutrient foramen)

Table 11/b.

Martin No++			Post-cranium							
			Males				Females			
			N	M	Range	S.D.	N	M	Range	S.D.
Humerus	1	R	4	319,3	286-350	-	7	289,9	272-301	10,17
		L	7	312,6	278-346	22,65	5	287,8	276-295	7,46
	2	R	5	314,0	280-345	24,10	6	284,0	269-296	9,33
		L	7	307,7	274-340	22,26	5	282,8	270-289	7,79
	7	R	13	66,4	60-79	5,99	11	57,4	52-62	3,39
		L	12	64,4	55-75	4,96	10	56,5	52-62	3,14
	7:1	R	4	22,0	20,4-24,1	-	7	19,5	18,6-20,5	3,74
		L	7	21,3	19,6-24,1	1,68	5	20,0	18,4-21,5	1,22
Radius	1	R	6	234,8	211-262	19,83	5	209,2	189-219	12,66
		L	7	240,6	216-257	14,62	6	209,2	186-222	13,69
Ulna	1	R	3	253,7	237-274	-	5	228,0	209-244	14,88
		L	7	267,1	248-281	12,52	4	230,3	205-245	-
Femur	1	R	13	443,2	409-473	20,33	10	406,0	374-430	18,88
		L	13	441,9	391-471	24,09	7	408,7	275-425	17,17
	2	R	13	441,2	407-471	18,42	7	404,9	370-421	18,12
		L	13	439,6	389-470	23,23	8	401,9	368-422	18,15
	6	R	13	28,7	26-33	1,85	12	24,8	21-28	2,06
		L	14	29,0	26-32	1,66	9	24,6	22-28	1,94
	7	R	13	28,2	25-30	1,52	12	24,5	22-27	1,45
		L	14	28,5	26-31	1,60	9	25,6	23-27	1,33
	9	R	13	33,2	31-36	1,60	12	29,8	27-34	2,18
		L	14	34,0	32-37	3,08	9	30,6	28-34	1,81
	10	R	13	26,1	23-32	2,29	12	22,3	20-25	1,55
		L	14	25,6	20-29	2,72	9	22,5	21-25	1,24
	6:7	R	13	102,2	90,0-116,0	8,24	12	101,3	80,8-116,7	10,12
		L	14	101,9	92,9-115,4	6,53	9	96,1	81,5-108,3	7,75
	10:9	R	13	79,3	63,9-91,4	6,83	12	75,6	64,7-92,6	9,90
		L	14	75,2	60,6-82,9	6,28	9	73,7	64,7-83,3	6,06
Tibia	1	R	7	354,7	308-394	25,74	7	324,6	305-342	13,44
		L	8	348,6	313-394	29,58	8	327,8	310-340	9,59
	1/b	R	9	355,2	311-393	26,31	8	325,0	305-336	11,60
		L	8	346,4	310-389	31,18	8	328,0	308-336	8,72
	8/a	R	14	34,1	29-40	2,46	10	29,0	24-33	2,62
		L	13	34,1	32-39	1,85	9	28,7	24-34	3,50
	9/a	R	14	23,5	19-28	2,41	10	21,8	20-25	1,55
		L	14	23,6	20-29	2,53	9	21,6	20-25	1,81
	9/a:8/a	R	14	68,9	59,4-77,8	4,70	10	74,9	66,7-83,3	5,88
		L	13	68,9	61,8-77,1	4,50	9	75,8	61,8-83,3	7,26
Radio-Humeral index		R	2	-	75,9-77,2	-	4	73,0	70,3-74,6	-
		L	4	76,3	74,2-78,2	-	4	77,8	74,1-86,3	-
Tibio-Femoral index		R	7	83,4	77,6-85,2	2,51	8	80,9	78,8-84,8	2,10
		L	7	80,3	75,5-84,3	3,55	7	81,1	79,1-84,2	1,81
Pubis length			7	93,1	80-101	6,74	3	98,7	92-103	-
Ischium length			7	98,3	90-107	6,45	3	86,3	80-90	-
Index			7	94,9	87,0-104,0	6,27	3	115,0	102,2-128,8	-
Cot.isc.breadth			10	37,7	32-44	3,45	5	34,4	33-35	0,89
Inc.isc.ma.br.			10	32,0	24-36	3,89	5	46,0	39-51	4,80
Index			10	118,6	100,0-146,8	16,34	5	75,4	69-87	7,88
Stature			15	164,0	154-171	5,20	11	152,4	146-156	2,80

Table 12.

Distribution of Measurements and Indices

M. No	Distribution (according to Hug)		♂♂ N	♀♀ N	Martin No	Distribution (according to Martin)		♂♂ N	♀♀ N
1	short	x-179 x-169	4	1	8:1	dolichocranial	70,0-74,9	3	3
	medium	180-189 170-179	1	3		mesocranial	75,0-79,9	4	3
	long	190-x 180-x	3	5		brachycranial	80,0-84,9	-	1
						hyperbrachyc.	85,0-89,9	-	1
5	very short	x-92 x-87	1	-		ultrahyperbr.c.	90,0-x	1	-
	short	x-97 x-92	2	1					
	medium	98-102 93-97	2	3	17:1	chamaecranial	x-69,9	-	2
	long	103-x 98-x	-	2		orthocranial	70,0-74,9	5	5
	very long	108-x 103-x	-	2		hypsicranial	75,0-x	1	-
8	narrow	x-139 x-134	2	3	17:8	tapeinocranial	x-91,9	1	3
	medium	140-149 135-144	5	5		metriocranial	92,0-97,9	4	2
	broad	150-x 145-x	3	1		acrocranial	98,0-x	1	1
9	very narrow	x-91 x-87	2	-	9:8	stenometopic	x-65,9	2	2
	narrow	x-96 x-92	1	3		metriometopic	66,0-68,9	3	1
	medium	97-101 93-97	5	5		eurymetopic	69,0-x	5	6
	broad	102-x 98-x	3	1					
	very broad	107-x 103-x	-	1	47:45	hypereuryprosop.	x-79,9	-	1
						euryprosopic	80,0-84,9	-	2
17	low	x-129 x-123	3	1		mesoprosopic	85,0-89,9	2	1
	medium	130-137 124-131	2	5		leptoprosopic	90,0-94,9	1	2
	high	138-x 132-x	1	1					
					48:45	euryen	45,0-49,9	-	2
45	narrow	x-129 x-121	2	-		mesen	50,0-54,9	3	4
	medium	130-137 122-129	-	6					
	broad	138-x 130-x	2	-	52:51	chamaeconchous	x-75,9	-	2
						mesoconchous	76,0-84,9	3	3
47	very low	x-105 x-97	1	-		hypsiconchous	85,0-x	4	3
	low	x-113 x-105	1	3					
	medium	114-121 106-113	2	2	54:55	leptorrhinian	x-46,9	4	3
	high	122-x 114-x	1	2		mesorrhinian	47,0-50,9	2	1
						chamaerrhinian	51,0-57,9	1	4
48	low	x-68 x-64	3	5					
	medium	69-73 65-69	2	3					
	high	74-x 70-x	1	-	Stature (according to Pearson)	short	♂ 150,0-159,9	3	2
							♀ 140,0-148,9		
51	narrow	x-38	1	2					
	medium	39-41	2	3		short medium	♂ 160,0-163,9	4	5
	broad	42-x	4	3			♀ 149,0-152,9		
	very broad	45-x	-	1					
						medium	♂ 164,0-166,9	3	3
52	low	x-31	-	1			♀ 153,0-155,9		
	medium	32-34	3	3					
	high	35-x	4	4		tall medium	♂ 167,0-169,9	3	1
							♀ 156,0-158,9		
54	narrow	x-22	1	3					
	medium	23-25	6	3		tall	♂ 170,0-179,0	2	-
	broad	26-x	2	4			♀ 159,0-167,0		
55	medium	49-51 47-49	4	4					
	high	52-x 50-x	1	3					
	very high	55-x 53-x	2	1					

Table 13.

Individual Cranial and Post-Cranial Measurements and Indices

M a l e s

Martin No \ Grave No	2	6	9	23	24	27	29
1	182	172	177?	-	195	-	178
5	98	90	97?	-	111	-	98
8	141	156	157	-	141	-	133
9	95	100	97	-	105	-	91
12	110	115	123	-	119	-	103
17	136	128	130?	-	139	-	128
23	513	-	525	-	542	-	495
24	317	322	343	-	314	-	292
25	370	366	372	-	385	-	347
26	130	123	128	-	134	-	120
27	113	114	118	-	119	-	120
28	127	129	126	-	132	-	107
29	112	108	115	-	114	-	106
30	104	103	107	-	110	-	111
31	105	104	102	-	102	-	88
40	-	-	-	-	99	-	87
43/1	90	99	98	-	101	-	88
45	-	-	-	-	141	-	127
46	97	96	92	-	97	-	94
47	-	-	-	-	125	-	115
48	63?	76?	70	-	75	-	67
51	38?	43	43	-	44	-	36
52	32?	37	37	-	36	-	34
54	24	25	23	-	26	-	21
55	51?	57?	50	-	59	-	51
60	-	54	-	-	55	-	-
61	64	68	-	-	65	-	-
62	-	46	-	-	46	-	-
63	-	44	-	-	43	-	-
65	-	131	128?	-	128	115	116
66	-	101	96	108	97	97	104
68/1	99	105	98	-	109	101	96
69	29?	32	30	-	31	-	32
72	-	-	-	-	87	-	-
74	-	-	-	-	86	-	-
75/1	-	-	-	-	26	-	-
8:1	77,5	90,7	88,7?	-	72,3	-	74,7
17:1	75,3	74,4	73,5?	-	71,3	-	71,9
17:8	96,5	82,1	82,8?	-	98,6	-	96,2
9:8	67,4	64,1	61,8	-	74,5	-	68,4
47:45	-	-	-	-	88,7	-	90,6
48:45	-	-	-	-	53,2	-	52,8
52:51	84,2?	86,1	86,1	-	81,8	-	94,4
54:55	47,1?	43,9?	46,0	-	44,0	-	41,1
61:60	-	125,9	-	-	118,2	-	-
63:62	-	95,7	-	-	93,5	-	-
68/1:65	-	80,2	76,6?	-	85,2	87,8	82,8

Table 13. (continued 1)

M a l e s

Martin No \ Grave No	33	37	47	49	50/a	52	53
1	172	179	-	196	194	-	177?
5	97	95	-	-	-	-	-
8	134	140	-	145	150	-	142
9	91	98	-	109	104	97	99
12	107	109	-	112	-	-	-
17	126	130	-	-	-	-	-
23	493	510	-	-	546	-	-
24	299	313	-	318	-	-	310
25	340	370	-	408	-	-	-
26	115	124	118	133	134	-	-
27	118	124	-	140	137	-	-
28	107	122	-	134	-	-	-
29	100	107	104	115	117	-	-
30	107	112	-	124	125	-	-
31	91	99	-	106	-	-	-
40	93	85	-	-	-	-	-
43/1	95	96	96	100	102	94	92?
45	122?	129	-	-	-	-	-
46	92	95	-	-	98?	88	-
47	104	111	110?	-	116	110?	-
48	62?	68	65?	-	68	68	-
51	41	41	-	-	44	41?	-
52	34	35	-	-	34	36?	-
54	24	26	25	-	25	25	-
55	50	53	49?	-	49	56	-
60	-	49	-	-	-	-	-
61	-	56	-	-	65	-	58
62	-	45	-	-	-	-	-
63	-	38	-	-	40	-	39
65	-	115	-	-	125	116	-
66	82	110	-	104	-	92	-
68/1	96	102	-	-	114	107	-
69	25	29	-	25?	33	31	26
72	-	92	-	-	-	-	-
74	-	90	-	-	-	-	-
75/1	-	36	-	-	-	-	-
8:1	77,9	78,2	-	74,0	77,3	-	80,2?
17:1	73,3	72,6	-	-	-	-	-
17:8	94,0	92,9	-	-	-	-	-
9:8	67,9	70,0	-	70,3	69,3	-	69,7
47:45	85,3?	86,1	-	-	-	-	-
48:45	50,8?	53,5	-	-	-	-	-
52:51	82,9	85,4	-	-	77,3	87,8?	-
54:55	48,0	49,1	51,0?	-	51,0	44,6	-
61:60	-	114,3	-	-	-	-	-
63:62	-	84,4	-	-	-	-	-
68/1:65	-	88,7	-	-	91,2	92,2	-

Table 13. (continued 2)

F e m a l e s

Martin No \ Grave No	5	11	12	13	15	19	21
1	183?	186	184	184	-	174	169
5	-	98	98?	93	-	93	-
8	-	142	138	126?	-	142	146
9	90	100	97	91	-	91	104
12	-	115	106	99?	111?	104	110
17	-	130	129?	133	-	121	-
23	-	522	512	504	-	497	499
24	-	310	311	305	-	305	325
25	-	382	369	367	-	352	362
26	124	130	125	126	-	120	126
27	140	129	137?	131	-	117	122
28	121	120	107?	110	106?	115	114
29	107	113	108	111?	-	104	109
30	119	117	121?	115?	-	104	110
31	100	94	88?	96	90?	98	96
40	-	93	94?	89	-	89	-
43/1	91	97	98	86	-	92	100
45	-	124	129	126	-	126	-
46	87?	99	94	86	-	90	90?
47	-	116	100	110	-	104	-
48	-	64	62	63	-	65	60?
51	36	43	44	41	-	41	43?
52	30?	33	32	36	-	35	30?
54	26	28	26	21	-	21	26
55	42?	51	48	51	-	50	48?
60	53	-	51	-	-	47	-
61	57	-	60	51	-	55	-
62	43	-	46	-	-	42	45
63	37	-	35	29	-	38	-
65	115	-	114	116	-	115	-
66	93	-	95	95	-	94	98
68/1	100	103	95	99	-	109	95
69	25	30	23	23	-	25	27
72	-	89	88	86	-	86	-
74	-	83	81	82	-	82	-
75/1	-	-	25?	32	-	28	-
8:1	82,5?	76,3	75,0	68,5?	-	81,6	86,4
17:1	-	69,9	70,1?	72,3	-	70,8	-
17:8	-	91,6	93,5?	105,6?	-	85,2	-
9:8	59,6	70,4	70,3	72,2?	-	64,1	71,2
47:45	-	93,6	77,5	87,3	-	82,5	-
48:45	-	51,6	48,1	50,0	-	51,6	-
52:51	83,3	76,7	72,7	87,8	-	85,4	69,8?
54:55	61,9	54,9	54,2	41,2	-	42,0	54,2?
61:60	107,5	-	117,6	-	-	117,0	-
63:62	86,1	-	76,1	-	-	90,4	-
68/1:65	87,0	-	92,6	87,4	-	74,8	-

Table 13. (continued 3)

F e m a l e s

Martin No \ Grave No	22	28	34/a	36	41	45
1	-	-	185	172	182	178
5	-	-	95	92	101?	98
8	-	-	138	136	132	132
9	-	-	94	94	94	93
12	-	-	110	107	99	106?
17	-	-	131	125	125	126
23	-	-	516	492	510	493
24	-	-	304	303	300	298
25	-	-	378	350	-	353
26	-	125	138	122	121	125
27	-	-	125	121	125	118
28	-	-	112	109	-	110
29	-	113	114	108	107	108
30	-	-	114	108	112	108
31	-	-	93	89	94	94
40	-	-	89	90	-	97
43/1	-	-	98	95	94	91
45	-	-	128?	124	-	122
46	-	-	93?	96	95	94
47	-	-	110	103	-	115
48	-	-	63	60	65	67
51	-	-	44	40	45	38
52	-	-	33	31	36	35
54	-	-	25	24	25	21
55	-	-	47	47	53	47
60	-	-	52	-	-	56
61	-	-	61	58	-	-
62	-	-	43	-	-	48
63	-	21?	41	37	-	-
65	107	-	123	-	-	-
66	85	-	96	88	-	-
68/1	100	-	106	103	-	-
69	-	-	26	25	-	35?
72	-	-	85	85	78?	84
74	-	-	76	66	-	72
75/1	-	-	-	23	35?	26
8:1	-	-	74,6	79,1	72,5	74,2
17:1	-	-	70,8	72,7	68,7	70,8
17:8	-	-	94,9	91,9	105,6	95,5
9:8	-	-	68,1	69,1	71,2	70,5
47:45	-	-	85,9?	83,1	-	94,3
48:45	-	-	49,2?	48,4	-	54,9
52:51	-	-	75,0	77,5	80,0	92,1
54:55	-	-	53,2	51,1	47,2	44,7
61:60	-	-	117,3	-	-	-
63:62	-	-	95,3	-	-	-
68/1:65	93,5	-	89,6	-	-	-

Table 13. (continued 4)

M a l e s

Martin No		Grave No	2	6	9	20	23	24	27
Humerus	1	R	-	312	-	-	-	350	286
		L	-	311	-	-	-	346	278
	2	R	-	304	-	-	-	345	280
		L	-	303	-	-	-	340	274
	7	R	63	67	66	-	69	79	69
		L	62	65	67	-	-	75	67
	7:1	R	-	21,5	-	-	-	22,6	24,1
		L	-	20,1	-	-	-	21,7	24,1
Radius	1	R	-	230?	-	-	234	262	215
		L	-	233	250	-	-	257	216
Ulna	1	R	-	-	-	-	-	-	237
		L	-	253	275	-	-	281	-
Femur	1	R	453	427	458	-	430	468	-
		L	-	430	463	-	440	471	391
	2	R	450	423	454	-	428	465	-
		L	-	424	460	-	435	470	389
	6	R	29	29	29	-	29	33	-
		L	29	30	30	-	29	32	29
	7	R	30	29	30	-	29	29	-
		L	30	30	30	-	28	31	29
	9	R	33	32	34	-	32	35	-
		L	35	33	34	-	33	37	33
	10	R	28	25	27	-	26	32	-
		L	29	26	26	-	20	29	25
	6:7	R	96,7	100,0	96,7	-	100,0	113,8	-
		L	96,7	100,0	100,0	-	103,6	103,2	100,0
	10:9	R	84,9	78,1	79,4	-	81,3	91,4	-
		L	82,9	78,8	76,5	-	60,6	78,4	75,8
Tibia	1	R	-	355	-	-	-	394	308
		L	-	353	385	325	-	394	313
	1/b	R	-	354	387	326	-	393	311
		L	-	353	388	322	-	389	310
	8/a	R	33	35	36	36	34	40	33
		L	33?	35	35	35	34	39	35
	9/a	R	23	25	28	23	24	28	23
		L	26	25	27	24	25	29	23
	9/a:8/a	R	69,7	71,4	77,8	63,9	70,6	70,0	69,7
		L	78,8?	71,4	77,1	68,6	73,5	74,4	65,7
Radio-Humeral index		R	-	75,7?	-	-	-	75,9	-
		L	-	76,9	-	-	-	75,6	-
Tibio-Femoral index		R	-	83,7	85,2	-	-	84,5	-
		L	-	83,3	84,3	-	-	82,8	79,7
Pubis length			-	98	-	-	-	96	92
Ischium l.			-	96	-	-	-	106	99
Index			-	102,1	-	-	-	90,6	92,9
Cot.isc.breadth			-	38	38	-	-	44	34
Inc.isc.ma.br.			-	27	36	-	-	33	32
Index			-	140,7	105,6	-	-	133,3	106,3
Stature			167,0	162,1	168,5	156,0	163,3	171,4	154,0

Table 13. (continued 5)

M a l e s

Martin No			Grave No 29	33	37	47	49	50/a	52	53
Humerus	1	R	329	-	-	-	-	-	-	-
		L	-	328	289	-	-	322	315	-
	2	R	325	-	-	-	-	315	-	-
		L	-	326	283	-	-	316	310	-
	7	R	67	68	-	60	60	65	66	64
		L	68	65	63	55	59	63	64	-
	7:1	R	20,4	-	-	-	-	-	-	-
		L	-	19,8	21,8	-	-	19,6	20,3	-
Radius	1	R	251	-	211	-	-	-	233	-
		L	251	-	-	-	-	247	230	-
Ulna	1	R	274	-	-	-	-	-	250	-
		L	274	-	-	-	275	264	248	-
Femur	1	R	438	463	409	433	448	429	442	473
		L	443	465	415	436	449	432	450	470
	2	R	437	460	407	430	442	427	441	471
		L	439	463	412	434	444	429	449	467
	6	R	27	29	27	26	27	31	28	29
		L	26	30	28	26	28	29	31	29
	7	R	28	27	30	27	27	27	28	25
		L	28	26	30	27	26	27	28	29
	9	R	36	32	36	33	31	33	31	33
		L	37	32	35	33	34	36	32	32
	10	R	23	25	26	23	25	26	27	25
		L	24	25	25	24	27	26	26	26
	6:7	R	96,4	107,4	90,0	96,3	100,0	114,8	100,0	116,0
		L	92,9	115,4	93,3	96,3	107,7	107,4	110,7	100,0
	10:9	R	63,9	78,1	78,8	69,7	80,7	78,8	87,1	78,8
		L	64,9	78,1	71,4	72,7	79,4	72,2	81,3	81,3
Tibia	1	R	360	-	-	359	-	365	341	-
		L	359	-	315	-	-	-	346	-
	1/b	R	362	-	-	360	-	362	342	-
		L	355	-	311	-	-	-	343	-
	8/a	R	35	34	34	34	-	33	32	29
		L	32	33	33	33	-	33	34	32
	9/a	R	22	22	24	24	-	23	19	21
		L	20	22	23	23	-	21	21	22
	9/a:8/a	R	62,9	64,7	70,6	70,6	-	69,7	59,4	72,4
		L	62,5	66,7	69,7	69,7	-	63,6	61,8	68,8
Radio-Humeral index		R	77,2	-	-	-	-	-	-	-
		L	-	-	-	-	-	78,2	74,2	-
Tibio-Femoral index		R	82,8	-	-	83,7	-	84,8	77,6	-
		L	80,9	-	75,5	-	-	-	76,4	-
Pubis length			80	94	101	-	-	-	91	-
Ischium l.			92	90	107	-	-	-	98	-
Index			87,0	104,0	94,4	-	-	-	92,9	-
Cot.isc.breadth			38	24	39	32	-	-	41	38
Inc.isc.ma.br.			34	35	35	32	-	-	31	36
Index			111,8	145,8	111,4	100,0	-	-	132,3	105,6
Stature			165,8	168,3	156,5	163,7	166,0	164,2	162,4	170,5

Table 13. (continued 6)

F e m a l e s

Martin No		Grave No	5	11	13	15	19	21
Humerus	1	R	286	295	285	-	-	-
		L	-	293	276	-	-	-
	2	R	282	290	280	-	-	-
		L	-	289	270	-	-	-
	7	R	58	55	55	57	62	60
		L	55	54	54	-	58	55
	7:1	R	20,3	18,6	19,3	-	-	-
		L	-	18,4	19,6	-	-	-
Radius	1	R	-	-	205	-	219	-
		L	-	-	200	-	-	216
Ulna	1	R	-	230	217	-	240	-
		L	-	-	-	-	-	-
Femur	1	R	413	397	413	392	-	383
		L	413	398	414	-	-	-
	2	R	408	393	409	387	-	382
		L	408	392	411	-	-	-
	6	R	24	21	25	28	26	24
		L	25	22	24	-	26	-
	7	R	23	26	24	24	25	25
		L	25	27	26	-	27	-
	9	R	28	30	30	27	30	31
		L	29	32	31	-	31	-
	10	R	22	21	21	25	23	21
		L	23	21	22	-	23	-
	6:7	R	104,4	80,8	104,2	116,7	104,0	96,0
		L	100,0	81,5	92,3	-	96,0	-
	10:9	R	78,6	70,0	70,0	92,6	76,7	67,7
		L	79,3	65,6	71,0	-	74,2	-
Tibia	1	R	334	325	322	305	-	-
		L	327	330	324	-	-	321
	1/b	R	331	321	325	305	-	-
		L	330	330	329	-	-	325
	8/a	R	30	27	30	29	30	30
		L	30	26	30	-	31	25
	9/a	R	22	20	25	22	22	20
		L	21	20	25	-	24	20
	9/a:8/a	R	73,3	74,1	83,3	78,9	73,3	66,7
		L	70,0	76,9	83,3	-	77,4	80,0
Radio-Humeral index		R	-	-	73,2	-	-	-
		L	-	-	74,1	-	-	-
Tibio-Femoral index		R	81,1	81,7	79,5	78,8	-	-
		L	80,9	84,2	80,0	-	-	-
Pubis length			-	103	92	-	-	-
Ischium l.			-	80	90	-	-	-
Index			-	128,8	102,0	-	-	-
Cot.isc.breadth			-	-	35	-	-	35
Inc.isc.ma.br.			-	-	50	-	-	45
Index			-	-	70,0	-	-	77,8
Stature			152,9	151,5	150,5	148,0	154,0	150,0

Table 13. (continued 7)

F e m a l e s

Martin No \ Grave No			22	28	34/a	36	41	45
Humerus	1	R	272	-	301	293	298	-
		L	-	-	295	286	289	-
	2	R	269	-	296	287	-	-
		L	-	-	289	282	284	-
	7	R	52	-	61	57	61	53
		L	-	56	60	59	62	52
	7:1	R	19,1	-	20,3	19,5	20,5	-
		L	-	-	20,3	20,6	21,5	-
Radius	1	R	189	-	219	214	-	-
		L	186	-	219	212	-	222
Ulna	1	R	209	-	244	231?	-	-
		L	205	-	244	230	245	-
Femur	1	R	374	-	422	427	409	430
		L	375	-	422	425	414	-
	2	R	368	-	420	422	408	-
		L	370	-	420	421	412	-
	6	R	22	23	27	26	26	25
		L	22	-	28	26	24	24
	7	R	22	27	25	24	26	23
		L	23	-	27	24	26	25
	9	R	30	32	27	31	34	27
		L	28	-	30	31	34	29
	10	R	20	22	25	22	22	23
		L	21	-	25	22	22	23
	6:7	R	100,0	85,2	108,0	108,3	100,0	108,7
		L	95,7	-	103,7	108,3	92,3	96,0
	10:9	R	66,7	68,8	92,6	71,0	64,7	85,2
		L	75,0	-	83,3	71,0	64,7	79,3
Tibia	1	R	310	-	342	334	-	-
		L	310	-	340	333	337	-
	1/b	R	312	-	336	335	335	-
		L	308	-	336	333	333	-
	8/a	R	24	-	32	27	33	-
		L	24	-	32	26	34	-
	9/a	R	20	-	23	22	22	-
		L	20	-	22	21	21	-
	9/a:8/a	R	83,3	-	71,9	81,5	66,7	-
		L	83,3	-	68,8	80,8	61,8	-
Radio-Humeral index		R	70,3	-	74,0	74,6	-	-
		L	-	-	75,8	75,2	86,3	-
Tibio-Femoral index		R	84,8	-	80,0	79,4	82,1	-
		L	83,2	-	80,0	79,1	80,8	-
Pubis length			-	-	101	-	-	-
Ischium l.			-	-	89	-	-	-
Index			-	-	113,5	-	-	-
Cot.isc.breadth			-	-	33	34	35	-
Inc.isc.ma.br.			-	-	45	39	51	-
Index			-	-	73,3	87,2	68,6	-
Stature			145,9	-	154,3	153,0	152,9	156,0

Plate I: Majs. Males

1. Grave 37 2. Grave 50

Plate II: Majs. Females

1. Grave 13 2. Grave 36

ANTHROPOLOGIA HUNGARICA

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Section Anthropologique du Musée d'Histoire Naturelle

DATA TO THE ANTHROPOLOGY OF THE AVAR PERIOD POPULATION OF THE TRANSDANUBIA

(The anthropology of the Avar Period cemetery at Kékesd)

By

S. WENGER

There are but e few reports on the anthropology of the Avar Period populations of the Transdanubia despite the fact that a relatively high number of graves have been excavated. Studies and publications in this respect were made by L. BARTUCZ (1,2,3,4), T. TÓTH (10,11), and J. NEMESKÉRI (7). The working up of the Avar Period cemetery at Előszállás-Bajcsihegy (12), as well as the present paper, also aimed at the augmentation of our knowledge concerning the populations of the Transdanubia.

Excavation data

The locus of the excavations was the village Kékesd, Com. Baranya. It is situated 18-20 km of Pécs, the country town of the Comitat. Excavations were led in 1936, 1937, and 1938, by the late J. DOMBAI, Director of the Janus Pannonius Museum in Pécs. The results of the archeological findings have not yet been published. On the basis of the data entered in the inventory books and the excavation diaries deposited in the Museum, the cemetery is dated to the VIII-IX centuries A.D. In the course of excavations, 244 graves were exposed, of which graves No. 1-16 had been excavated by systematic research work directed by J. DOMBAI.

Material and methods

The anthropological material of 39 graves was saved in the course of excavations, namely the skull and skeletal bones of 13 individuals, the skulls of merely 20, and only the skeletal bones of 6 further persons. The material consists of the findings of 1 Inf.II, 1 Juv., and 37 adults. The distribution of the material as to sex and age groups is submitted in Table I, whereas Table II contains the per cent distribution according to sex and age groups of the saved skulls.

Owing to the unfortunate fact that merely the well-preserved skulls and skeletal bones had been saved during excavation, and as their number is also rather meagre as related to the graves exposed, no detailed paleodemographic assessment can be given.

Concerning the metric data, I have taken, following MARTIN's (6) prescriptions, the maximum 45 brain case and facial skeleton measurements, according to the state of preservation of the skulls. Cranial capacity has been established by glass-beads. The male measurements and indices are given in Tables III, IV, V, VI, VII, and VIII, the female ones in Tables IX, X, XI, and XII. Tables X and XII also contain the brain case and facial skeleton measurements and indices of an Inf. II and a Juvenile individual, Table XIII gives the mean values (M), the absolute deviation (s^2), deviation (s), and variational dispersion (v), of the more important measurements and indices. The group-frequencies of the principal measurements and indices, derived by the application of SCHEIDT's (9) and MARTIN's gradings,are submitted in Tables XIV and XV. Stature was established,by recourse to WOLANSKI's (13) nomogram, from the longitudinal measurements of the long bones (Table XVI).

Description of the material

The results of the craniometrical, craniomorphological, and paleopathological examinations (8) are submitted, per each grave studied, as follows.

Grave No. 16. - Inventory No. 57.43. Well preserved skeletal bones. Female. small medium stature (151,7 cm). Miositis ossificans.

Grave No. 17. - Inventory No. 57.44. Well preserved skeletal bones. Male. Low stature (156,5 cm).

Grave No. 18. - Inventory No. 57.45. Well preserved but incomplete skeletal bones. Female. Great medium stature (157,4 cm). Lower epiphysis of right femur with a sharp-edged exostosis on the condylus lateralis.

Grave No. 20. - Inventory No. 57.46. Incomplete skull with mandible. Zygomatic bones, base, nasal and orbitals incomplete, damaged. Male (Ad.). Glabella: 2. Occiput convex. Protuberantia occipitalis externa: 1. Fossa canina deep. Palate very deep.

Skull mesocranial, eurymetopic, chamaemetopic.

Grave No. 27. - Inventory No. 57.47. Well preserved skull with mardible. Male (Mat.). Glabella: 5. Occiput convex. Protuberantia occipitalis externa: 2. Processus mastoideus squat. Nose projecting, nasal ridge concave. Apertura piriformis infantile. Fossa canina deep. Palate deep. Alveolar prognathism.

Skull mesocranial, orthocranial, tapeinocranial, metriometopic, chamaemetopic, aristencephalic, euryprosopic, euryen, mesoconch, leptorrhinian, mesurane, brachystaphyline.

Grave No. 33. - Inventory No. 57.48. Incomplete skull with mandible, well preserved but incomplete skeletal bones. Facial skeleton wanting, base damaged. Female (Mat.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small.

Skull brachycranial, hypsicranial, metriocranial, metriometopic. Medium stature (154,6 cm).

Grave No. 42. - Inventory No. 57.49. Well preserved skull with mandible. Male (Ad.). Glabella: 4. Occiput convex. Protuberantia occipitalis externa: 2. Processus mastoideus thick. Crista supramastoidea. Large processus styloideus. Nose flat, nasal root wide. Sulcus praenasalis. Fossa canina deep. Alveolar prognathism.

Skull dolichocranial, orthocranial, metriocranial, eurymetopic, orthometopic,

aristencephalic, mesoprosopic, euryen, chamaeconch, chamaerrhinian, mesurane, brachystaphyline.

Grave No. 54. - Inventory No. 57.50. Well preserved skull with mandible. Female (Mat.). Glabella: 2. Occiput convex. Protuberantia occipitalis externa:0. Processus mastoideus small. Nasal ridge straight, nasal root wide. Sulcus praenasalis. Fossa canina filled. Palate deep. Alveolar prognathism.

Skull mesocranial, orthocranial, metriocranial, eurymetopic, orthometopic, oligencephalic, mesoprosopic, mesen, mesoconch, chamaerrhinian, dolichurane, leptostaphyline.

Grave No. 60. - Inventory No. 57.51. Incomplete skull with mandible, well preserved but incomplete skeletal bones. Right facial skeleton and basis missing. Female (Ad.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 1. Processus mastoideus small.

Skull brachycranial, metriometopic, orthometopic, hypsiconch. Small medium stature (150,1 cm).

Grave No. 64. - Inventory No. 57.52. Well preserved skull with mandible. Inf. II. Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 0. Ossa Wormiana. Processus mastoideus small. Nose projecting. Fossa canina filled. Palate deep.

Skull hyperbrachycranial, hypsicranial, metriocranial, metriometopic, orthometopic, euencephalic, hypereuryprosopic, euryen, mesoconch, mesorrhinian, dolichurane, brachystaphyline.

Grave No. 85. - Inventory No. 57.33. Skull with mandible. Squama occipitalis slightly damaged. Male (Ad.). Glabella: 3. Occiput convex. Protuberantia occipitalis externa: 1. Processus mastoideus thick. Nose projecting. Fossa canina deep.

Skull mesocranial, hypsicranial, acrocranial, eurymetopic, orthometopic, aristencephalic, mesen, hypsiconch, mesorrhinian.

Grave No. 88. - Inventory No. 57.54. Skull with mandible. Squama occipitalis damaged, left processus mastoideus and left branch of mandible incomplete. Male (Sen.). Glabella: 5. Occiput convex. Protuberantia occipitalis externa: 2. Processus mastoideus large. Processus supramastoideus. Nasal ridge weakly convex. Fossa praenasalis. Fossa canina medium. Palate very deep. Alveolar prognathism.

Skull mesocranial, orthocranial, metriocranial, eurymetopic, orthometopic, leptoprosopic, mesen, mesoconch, leptorrhinian, mesurane, brachystaphyline.

Grave No. 89. - Inventory No. 57.55. Well preserved skull with mandible. Male (Ad.). Glabella: 4. Occiput convex. Protuberantia occipitalis externa: 3. Processus mastoideus squat. Nasal ridge straight, nasal root wide. Apertura piriformis anthropine. Spina nasalis anterior: 4. Fossa canina filled. Processus styloideus. Palate deep.

Skull mesocranial, orthocranial, metriocranial, eurymetopic, orthometopic, aristencephalic, mesoprosopic, mesen, mesoconch, mesorrhinian, mesurane, brachystaphyline.

Grave No. 116. - Inventory No. 57.56. Brain case with mandible. Sphenoidal bone incomplete. Male (Ad.). Glabella: 4. Occiput convex. Protuberantia occipitalis externa 3. Processus mastoideus medium. Crista supramastoidea.

Skull dolichocranial, orthocranial, acrocranial, eurymetopic, orthometopic.

Grave No. 118. - Inventory No. 57.57. Medium preserved incomplete skeletal bones. Male. Small medium stature (160,5 cm).

Grave No. 123. - Inventory No. 57.58. Well preserved skull with mandible,

well preserved skeletal bones, rough with muscular attachments. Male (Mat.). Glabella: 5. Occiput convex. Protuberantia occipitalis externa: 2. Os incae tripartitum. Nose projecting, nasal ridge straight. Lower portion of nasal bone broken owing to a blow. Sulcus praenasalis. Spina nasalis anterior: 4. Fossa canina deep. Palate very deep. Alveolar prognathism.

Skull dolichocranial, hypsicranial, acrocranial, eurymetopic, chamaemetopic, aristencephalic, mesoprosopic, euryen, hypsiconch, chamaerrhinien, brachyurane, brachystaphyline. Small medium stature (161,6 cm).

Grave No. 133. - Inventory No. 57.59. Skull with mandible. Left side of facial skeleton injured. Small os incae. Constriction of foramen jugulare. Female (Mat.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small. Nose projecting, nasal ridge straight. Apertura piriformis infantile. Spina nasalis anterior: 4. Fossa canina filled.

Skull dolichocranial, orthocranial, metriocranial, metriometopic, orthometopic, oligencephalic, hypsiconch, hyperchamaerrhinian, dolichurane, brachystaphyline.

Grave No. 134. - Inventory No. 57.60. Well preserved skull with mandible, well preserved but incomplete skeletal bones. Clavicle with exostosis. Male (Ad.). Glabella: 6. Occiput convex. Protuberantia occipitalis externa: 3. Processus mastoideus thick. Crista supramastoidea. Nose projecting, nasal ridge concave, nasal root wide. Sulcus praenasalis. Spina nasalis anterior: 2. Fossa canina deep. Palate deep. Alveolar prognathism.

Skull mesocranial, hypsicranial, metriocranial, eurymetopic, orthometopic, aristencephalic, euryprosopic, euryen, mesoconch, hyperchamaerrhinian, brachyurane, brachystaphyline. Small medium stature (162,0 cm).

Grave No. 135. - Inventory No. 57.61. Incomplete skull with mandible, well preserved but incomplete skeletal bones. Base, nasal bones, palate damaged. Male (Ad.). Glabella: 3. Occiput flat. Protuberantia occipitalis externa: 0. Processus mastoideus very large. Crista supramastoidea. Sulcus praenasalis. Fossa canina deep. Palate very deep. Alveolar prognathism.

Skull ultrabrachycranial, stenometopic, orthomethopic, mesoprosopic, mesen, hypsiconch, mesorrhinian. Great medium stature (168,1 cm).

Grave No. 137. - Inventory No. 57.62. Incomplete skull with mandible, well preserved but incomplete skeletal bones. Squama occipitalis, left squama temporalis and frontal bone damaged. Male (Ad.). Glabella: 3. Processus mastoideus thick. Crista supramastoidea. Nose projecting, nasal ridge convex. Sulcus praenasalis. Fossa canina filled. Palate deep. Alveolar prognathism.

Skull ultrabrachycranial, hypsicranial, tapeinocranial, stenometopic, ortnometopic, mesoprosopic, mesen, hypsiconch, chamaerrhinian, brachystaphyline. Small medium stature (163,5 cm).

Grave No. 155. - Inventory No. 57.63. Incomplete skull with mandible, incomplete and fragmentary skeletal bones. Base incomplete, nasal and orbital areas and zygomatic arches slightly injured. Male (Ad.). Glabella: 4. Occiput convex. Protuberantia occipitalis externa: 2. Processus mastoideus large, pointed. Crista supramastoidea. Nasal ridge straight. Apertura piriformis anthropine. Spina nasalis anterior: 3. Fossa canina filled. Palate deep.

Skull dolichocranial, metriometopic, chamaemetopic, mesoprosopic, mesen, hypsiconch, mesorrhinian. Small medium stature (163,4 cm).

Grave No. 172. - Inventory No. 57.64. Well preserved skull with mandible, well preserved but incomplete skeletal bones. Male (Ad.). Glabella: 5. Occiput truncate. Processus mastoideus thick. Crista supramastoidea. Nose projecting,nasal ridge straight. Apertura piriformis anthropine. Nasal cavity strikingly narrow. Fossa canina medium deep. Palate very deep.

Skull hyperbrachycranial, hypsicranial, metriocranial, stenometopic, orthometopic, aristencephalic, mesoprosopic, mesen, hypsiconch, leptorrhinian, dolichurane, mesostaphyline. Large medium stature (168,7 cm).

Grave No. 174. - Inventory No. 57.65. Incomplete skull with mandible, well preserved but incomplete skeletal bones. Facial skeleton incomplete, damaged. Male (Ad.). Glabella: 5. Occiput convex. Protuberantia occipitalis externa: 2. Processus mastoideus thick. Nasal ridge straight.

Skull dolichocranial, orthocranial, metriocranial, stenometopic, chamaemetopic, mesoconch. Medium stature (166,3 cm).

Grave No. 174. - Inventory No. 57.66. Well preserved skull with mandible, well preserved skeletal bones. Female (Juv.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small, pointed. Nose projecting,nasal ridge convex. Apertura piriformis infantile. Spina nasalis anterior: 2. Fossa canina medium deep. Palate medium deep. M-3 molars appearing.

Skull brachycranial, hypsicranial, metriocranial, stenometopic, chamaemetopic, euencephalic, mesoprosopic, euryen, mesoconch, chamaerrhinian, brachyurane, brachystaphyline. Skeletal bones not measurable owing to juvenile state.

Grave No. 176. - Inventory No. 57.67. Incomplete skull with mandible, well preserved but incomplete skeletal bones. Male (Ad.). Facial skeleton damaged, incomplete. Glabella: 4. Occiput convex. Protuberantia occipitalis externa: 2. Processus mastoideus large, thick. Crista supramastoidea. Apertura piriformis anthropine. Fossa canina deep. Palate very deep.

Skull mesocranial, hypsicranial, acrocranial, eurymetopic, orthometopic, hypsiconch, chamaerrhinian. Large medium stature (168,8 cm).

Grave No. 179. - Inventory No. 57.68. Fragmentary, incomplete skull with well preserved mandible. Facial skeleton fragmentary, incomplete, base damaged. Female (Ad.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 1. Processus mastoideus medium. Very strong torus frontalis. Left parietal bone with 2,8 x 2,4 indentation (probably healed trepanation).

Skull dolichocranial, eurymetopic.

Grave No. 181. - Inventory No. 57.69. Slightly injured skull with mandible. Occipital base and palate damaged. Female (Ad.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small,nasal ridge straight, nasal root wide. Apertura piriformis anthropine. Fossa canina filled. Sutures open. Upper teeth, lower molars and praemolars absent, alveus entirely absorbed probably owing to some oral disease.

Skull dolichocranial, eurymetopic, orthometopic, mesoconch, hyperchamaerrhinian.

Grave No. 182. - Inventory No. 57.70. Slightly damaged skull with mandible, well preserved skeletal bones. Occipital base slightly injured. Female (Ad.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small. Nasal ridge straight, nasal root wide. Slight alveolar prognathism.

Skull mesocranial, orthocranial, metriocranial, eurymetopic, orthometopic,

leptoprosopic, mesen, mesoconch, chamaerrhinian, dolichurane, brachystaphyline. Medium stature (153,4 cm).

Grave No. 184. - Inventory No.- - Male (Ad.),buried with his horse.The finding is exhibited, in situ, in the Janus Pannonius Museum, Pécs.

Grave No. 198. - Inventory No. 57.71. Right femur. Adult male. Femur broken but healed, shortened, laterally distorted; with osteomyelitis.

Grave No. 204. - Inventory No. 57.72. Well preserved skull with mandible. Female (Ad.). Sutura metopica. Glabella: 2. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small. Nasal ridge convex. Apertura piriformis anthropine. Spina nasalis anterior: 2. Fossa canina deep. Palate medium deep.

Skull brachycranial, hypsicranial, acrocranial, eurymetopic, orthometopic, euencephalic, mesoprosopic, mesen, mesoconch, mesorrhinian, mesurane, brachystaphyline.

Grave No. 216. - Inventory No. 57.73. Left femur. Adult male. Femur broken but healed, shortened, with deformed axis and healed osteomyelitis.

Grave No. 217. - Inventory No. 57.74. Slightly incomplete skull with mandible. Base, right zygomatic and left condyle of mandible damaged, incomplete. Frontal bone with 2,9 x 1,1 cm healed hollow. Male (Mat.). Glabella: 5. Occiput convex. Protuberantia occipitalis externa: 4. Processus mastoideus large, thick. Nasal ridge straight, nasal root wide. Apertura piriformis anthropine. Spina nasalis anterior: 3. Fossa canina deep. Palate very deep.

Skull dolichocranial, eurymetopic, orthometopic, mesoconch, mesorrhinian, brachyurane, brachystaphyline.

Grave No. 226. - Inventory No. 57.76. Well preserved skull with mandible. Male (Ad.). Glabella: 3. Occiput moderately convex. Praelambdoid flattening. Protuberantia occipitalis externa: 1. Processus mastoideus pointed. Nasal ridge concave, nasal root wide. Lower part of nasal bones with healed injury. Sulcus praenasalis. Spina nasalis anterior: 3. Fossa canina deep. Palate very deep.

Skull brachycranial, orthocranial, tapeinocranial, stenometopic, orthometopic, euencephalic, euryprosopic, mesen, hypsiconch, chamaerrhinian, brachyurane, brachystaphyline.

Grave No. 230. - Inventory No. 57.77. Skull with mandible. Base and right condyle of mandible slightly damaged. Praelambdoid area with a 6,2 x 5,4 cm hollow. Male (Ad.). Glabella: 2. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small. Nose projecting, nasal ridge convex, nasal root wide. Apertura piriformis anthropine. Fossa canina filled. Palate deep. Slight alveolar prognathism.

Skull mesocranial, hypsicranial, metriocranial, eurymetopic, orthometopic, euryprosopic, euryen, mesoconch, chamaerrhinian, brachyurane, brachystaphyline.

Grave No. 233. - Inventory No. 57.78. Well preserved skull with slightly damaged mandible. Condyles slightly injured. Male (Mat.). Glabella: 3. Occiput convex. Protuberantia occipitalis externa: 1. Processus mastoideus very large. Crista supramastoidea. Nose projecting, nasal ridge concave, nasal root wide. Apertura piriformis anthropine. Spina nasalis anterior: 2. Fossa canina deep. Palate very deep. Alveolar prognathism.

Skull brachycranial, hypsicranial, tapeinocranial, metriometopic, orthometopic, euencephalic, leptoprosopic, mesen, mesoconch, hyperchamaerrhinian, brachyurane, brachystaphyline.

Grave No. 236. - Inventory No. 57.79. Skull with mandible. Both zygomatics slightly damaged. Male (Ad.). Glabella: 4. Occiput convex. Protuberantia occipitalis externa: 1. Processus mastoideus medium, pointed. Crista supramastoidea. Nasal ridge straight. Apertura piriformis anthropine. Spina nasalis anterior: 3. Fossa canina deep. Upper left M^3 slightly slanting outwards.

Skull dolichocranial, hypsicranial, acrocranial, eurymetopic, orthometopic, euencephalic, mesoconch, chamaerrhinian, brachyurane, brachystaphyline.

Grave No. 238. - Inventory No. 57.80. Well preserved skull with mandible. Female (Ad.). Glabella: 1. Occiput convex. Protuberantia occipitalis externa: 0. Processus mastoideus small. Nose projecting, nasal ridge concave, nasal root wide. Apertura piriformis anthropine. Spina nasalis anterior: 2. Fossa canina medium. Palate deep.

Skull brachycranial, orthocranial, tapeinocranial, eurymetopic, orthometopic, aristencephalic, euryprosopic, mesen, mesoconch, chamaerrhinian, mesurane, brachystaphyline.

Grave No. 242. - Inventory No. 57.81. Skull with mandible. Os sphenoideum injured. Female (Mat.). Glabella: 1. Occiput convex. Praelambdoid flattening. Protuberantia occiputalis externa: 1. Processus mastoideus very small. Nasal ridge straight. Apertura piriformis infantile. Fossa canina filled. Palate medium deep. Alveolar prognathism.

Skull mesocranial, hypsicranial, metriocranial, eurymetopic, orthometopic, mesoprosopic, mesen, hypsiconch, leptorrhinian, mesurane, brachystaphyline.

General anthropological analysis

Studying the mean values of the male skulls, it can be established that they are moderately long (182,90), moderately wide (143,70), moderately high (137,25), their capacity large (1492 cm^3), the bizygomatic breadth moderately wide (134,29), the total and upper facial heights moderate (116,18 and 69,84, respectively).

The female skull are characterized by long (175,20), narrow (136,80), and moderately high (131,42) features, a medium capacity (1232 cm^3), moderately wide bizygomatic breadth (125,16), and moderately high total and upper face (107,20 and 65,42, respectively).

If the mean values of the cranial indices are examined it will be found that the medium long index group (78,30 and 78,10) is characteristic for both the male and the female skulls. With respect to the length-height index, the male skulls belong to the medium high (74,82), the female ones to the high (75,14), index-group. With respect to this index, the difference between the index-groups of the two sexes derives from the fact that it is the upper limit of orthocrany which is characteristical for the male skulls, and the lower limit of orthocrany for the female ones. As regards the breadth-height index, both the male and the female skulls are medium high (95,88 and 95,14). The transversal-parietal index is wide for both sexes (males 69,35, females 70,50). The total and upper face indices are similarly agreeing (males 86,08 and 51,21, females 86,60 and 52,40), that is, medium for both sexes.

The orbital and nasal indices reveal some differences between the two sexes. While the male skulls are of a mesoconch (83,17) and mesorrhinian (50,82) cha-

racter,the female ones belong to the hypsiconch (85,27) and chamaerrhinian (53,85) index-groups. As for the palatal index,a short palate is characteristical for both sexes (95,30 and 86,16).

The main measurements and indices of the skulls may, on the basis of group-frequency, be evaluated as follows:

It has been possible to determine the cranial length of the skulls of all adult individuals (100 per cent). The skulls are preponderantly long: 65 per cent of the males, and 40 per cent of the females. Extremely long is only one female skull (10 per cent). Moderately long is 15 per cent of the male, and 50 per cent of the female, skulls. Short skulls could be observed only in the males (20 per cent).

The highest width of the skulls was measured on also 100 per cent of the material. Narrow skulls predominate in both sexes, in 45 per cent of the males, and 50 per cent of the females. The frequency of also the moderately wide skulls is also significant, 40 per cent in the males and 50 per cent in the females. Wide skulls could be observed in only the males (15 per cent).

The cranial height was established on 77 per cent of the material. The majority of both the male (63 per cent) and female (71 per cent) skulls is moderately high. High male and female skulls were present in 37 and 29 per cents, but no low skulls were found in the material.

With respect to cranial capacity, 47 per cent of the skulls were suitable for examination. Of the male skulls 60 per cent, of the female ones 25 per cent, have a large capacity. The frequency of medium capacity is 40 per cent for the males, and 50 per cent for the females. Only one female skull showed a low capacity (25 per cent).

The bizygomatic breadth was established for 67 per cent of the skulls. For both sexes, the moderately broad group-frequency is characteristic (males 57 per cent, females 67 per cent). A wide bizygomatic breadth was found in 36 per cent of the males, and 33 per cent of the females. Only one male skull exhibited a narrow bizygomatic breadth (7 per cent).

For the determination of the facial height, 70 per cent of the material was suitable. It was found that 56 per cent of the male and 20 per cent of the female skulls are low. Moderately high are 25 per cent of the males and 80 per cent of the females. Three male skulls are high (19 per cent).

It was possible to measure 80 per cent of the skulls to determine the upper facial height. For both sexes, the moderately high upper-face frequency is characteristic (males 44 per cent, females 100 per cent). Low are 39 per cent of the males, and high 17 per cent.

Let us now examine the frequencies of the main index-group of the skulls.

The length-breadth index was determinable in the entire adult material. On the basis of examinations, there is a difference between the two sexes. The shape of the male skulls is preponderantly (40 per cent) medium long (mesocranial), 35 per cent are long (dolichocranial), and 25 per cent short and extremely short, respectively (brachy-, hyperbrachy-, and ultrabrachycranial). On the other hand, the short (brachycranial) group-frequency is the highest (40 per cent) in the females, while the frequency of the medium long (mesocranial) and long (dolichocranial) characters is equal for both groups (30 per cent).

To sum up, 37 per cent of the examined skulls are medium long (mesocranial),

33 per cent long (dolichocranial), and 30 per cent short or very short, respectively (brachy-, hyperbrachy- and ultrabrachycranial).

The length-height index was determinable on 77 per cent of the material. Here again, there is a difference between the two sexes. While 56 per cent of the male skulls are high (hypsicranial) and 44 per cent medium high (orthocranial), the majority of the female skulls (57 per cent) is medium high (orthocranial) and 43 per cent high (hypsicranial).

Combining the two sexes with reference to this index, 52 per cent of the examined skulls are high (hypsicranial) and 48 per cent medium high (orthocranial). Skulls of low characteristics have not been observed.

The breadth-height index was determinable in 77 per cent of the skulls. The majority of both the male (44 per cent) and the female (72 per cent) skulls is moderately high (metriocranial). High (acrocranial) is 31 per cent of the males, and 14 per cent of the females, whereas low (tapeinocranial) are 25, and 14, per cents, respectively, of the two sexes.

On the basis of the combined results,52 per cent of the skulls are moderately high (metriocranial), 26 per cent high (acrocranial), and 22 per cent low (tapeinocranial).

The frontal-parietal index was determinable in the entire material.The skulls show a preponderantly wide forehead (eurymetopic), 65 per cent of the males and 70 per cent of the females belonging to this group. A medium forehead (metriometopic) is shown by 15 per cent of the males and 30 per cent of the females. A narrow forehead (stenometopic) was found in the males only (20 per cent).

According to the combined results, the frequency of the skulls with a wide forehead (eurymetopic) is 67 per cent, that of the medium ones (metriometopic) 20 per cent, and that of the narrow ones (stenometopic) 13 per cent.

The total facial index was calculable for 60 per cent of the skulls. The index-groups are distributed as follows: 54 per cent of the male and 60 per cent of the female skulls have medium wide faces (mesoprosopic), 31 and 20 per cents are wide (euryprosopic), and 15 and 20 per cents narrow (leptoprosopic).

Accordingly, the majority (55 per cent) of the examined skulls is, in this respect, medium wide (mesoprosopic), 28 per cent wide (euryprosopic), and 17 per cent narrow (leptoprosopic).

The upper face index was determinable for 63 per cent of the skulls.According to my data, the upper face of the skulls is preponderantly medium wide (mesen). To this group belong 64 per cent of the males and 100 per cent of the females. A wide upper face (euryen) is shown by 36 per cent of the males. No skull showing a narrow upper face character (lepten) was found in the material.

Consequently, 74 per cent of the skulls display a medium wide (mesen), and 26 per cent a wide (euryen), upper face.

The orbital index was calculable for 87 per cent of the skulls. The majority of the orbital index (males 50 per cent, females 63 per cent) is medium (mesoconch); the frequency of the high orbital (hypsiconch) is 44 per cent in the males and 37 per cent in the females. Skulss showing a low orbital (chamaeconch) were found in the males only (6 per cent).

Therefore 54 per cent of the skulls exhibit medium (mesoconch), 42 per cent high (hypsiconch), and 4 per cent low (chamaeconch), orbitals.

The evaluation of the nasal index was possible in 80 per cent of the mate-

rial. The distribution of the frequency-groups is as follows: wide and very wide (chamaerrhinian and hyperchamaerrhinian) are 47 and 6 per cents of the male, and 43 and 29 per cents of the female, skulls. Medium wide (mesorrhinian) are 29 per cent of the males and 14 per cent of the females, while narrow (leptorrhinian) are 18 per cent and 14 per cent, respectively, of the two sexes.

To sum up, 46 and 12 per cents of the skulls show a wide and very wide (chamaerrhinian and hyperchamaerrhinian), 25 per cent medium wide (mesorrhinian), and 17 per cent a narrow (leptorrhinian), nasal character.

The palatal index was determinable on 63 per cent of the skulls. The palate of most skulls is short (brachystaphyline). To this group belong 92 per cent of the males and 83 per cent of the females. A medium long (mesostaphyline) palatal character was observable only in the males (8 per cent), whereas long (leptostaphyline) only in the females (17 per cent).

By the combined results, 90 per cent of the examined skulls display a short (brachystaphyline), and 5 per cents each a medium long and long (meso- and leptostaphyline), palatal character.

The body height of 83 per cent of the adult material was determinable. It was found that 50 per cent of the males and 40 per cent of the females had a small medium stature. Medium tall were 10 per cent of the males and 40 per cent of the females; high medium 30 and 20 per cents, respectively. Low statures were found only in the males (10 per cent).

The calculated main height is accordingly, 163,80 cm for the males, and 153,40 cm for the females.

On the basis of the main morphometric data and the mean values of the respective indices, as well as their group frequencies and the subsequent evaluation, it can now be stated that the cranial configuration of the partial population deriving from Kékesd vas medium long (mesocranial), laterally high (hypsicranial), occipitally medium high (metriocranial), the forehead wide (eurymetopic), the total and upper face medium wide (mesoprosopic and mesen, respectively), the orbital medium (mesoconch), the nose wide (chamaerrhinian), the palate short (brachystaphyline), the cranial capacity large (aristencephalic); the brain case was characterized by the occipital convexity, and the stature was small medium.

There is a certain differentiation observable between the two sexes, appearing mainly in the distribution of certain characteristics of the brain case and the facial skeleton (length-height, orbital, and nasal indices). This differentiation is further discernible also in some morphoscopic characteristics, as for instance in the rate of development of the glabella, the processus mastoideus, and the protuberantia occipitalis externa, in all of which the massive and gracile features can be traced easily.

Taxonomic analysis

In order to use our research material for further comparison and an eventual ethnogenetical evaluation, a study of the taxonomic composition of the population is also necessary. On the basis of the comparative metrico-morphological analysis of the character-groups. I was able to distinguish two distinct subgroups. The taxonomic analysis and the grouping, respectively, was made by a combination of cha-

racters of 26 skulls, and the results tabulated (Tables XVI, XVIII). Table XVII contains the main characters of the skulls comprising the subgroup, while Table XVIII shows the means of the main measurements and indices.

The two distinct character-groups of the partial population of the Avar Period in the Kékesd area are as follows:

I. The Dolicho-Mesocranial-Mesoprosopic Subgroup

This subgroup comprises 14 skulls (9 males and 5 females). The skulls are long to medium long (dolicho-mesocranial), laterally medium high (orthocranial), occipitally high to medium high (acro-metrocranial), their forehead wide (eurymetopic), the total and upper face medium wide (mesoprosopic-mesen), the orbitals medium high to high (meso-hypsiconch), the nose medium wide to wide (meso-chamaerrhinian); the stature medium (Table I, above and in centre). By the metrico-morphological analysis, the skulls of this subgroups reveal mostly Cromagnoid-A,gracile Mediterranean, and features characteristic of Northern elements.

II. The Brachy-Mesocranial, Meso-Euryprosopic Subgroup

Eleven skulls (8 male and 3 female) belong here. Contrary to the preceding subgroup, these skulls are mostly (73 per cent) short (brachycranial), laterally high (hypsicranial), occipitally medium high (metriocranial), the forehead medium wide to wide (metrio-eurymetopic), the total and upper face medium wide to wide (meso-euryprosopic and mesen-euryen, respectively), the orbital medium high (mesoconch),the nose wide to medium wide (chamae-mesorrhinian); the stature is medium (Table I: below).

The skulls belonging to this subgroup may be distinguished from the preceding one by the character-complex of brachycrany and meso- and euryprosopy, characteristic of the Cromagnoid-B type, as well as the less projecting and concave nasal ridge. Two skulls, on the other hand (Graves No. 135, 172), display a character-complex referring to the Dinaric type (very short skull, a steep and flat occiput, medium wide total and upper face, medium wide to narrow nose, high medium stature).

By the comparative metric and morphological analysis of the character-complexes, it can be established that the male and female skeletons of the two taxonomic subgroups discussed above exhibit Europoide features. In no case has a Mongoloide physiognomy been observed,though certain Mongoloide features (among others the frontally situated zygomatics (13), leptoprosopy, weakly convex nasal ridge, leptorrhiny, can be observed on the skull of merely one grave (No.88).

Owing to the rather meagre number of skulls and skeletal bones excavated from the Avar Period cemetery at Kékesd,it were unsafe to draw far-reaching inferences; what can be stated is that the population of the cemetery is characterized by heterogeneity, corroborated also by the subgroups distinguishable on the basis of the taxonomical characters.

Comparative analysis

The next problem is what place the cemetery at Kékesd takes among the Avar Period cemeteries of the Transdanubia, and what are their interrelationships.

The cemetery at Kékesd may be relegated to the third group of the Avar Period cemeteries (5), since the Mongoloide racial characteristics are almost entirely absent and with the Europoide types predominating in their stead.

The anthropological material of certain Avar Period cemeteries in the Transdanubia - for instance the one in Mosonszentjános of a Mongoloide racial character, that of Öskü of a Mongoloide character, further the skeletons found in Comitat Fejér: those from Előszállás-Öreghegy of a Mongoloide and Europoide, and the ones from Cece, of chiefly Mongoloide, characters - could, owing to their ethnic composition, not subserve as a comparative basis with regard to the cemetery at Kékesd. The findings at Győr are in a similar position, wherein only a single skull showed some Dinaroide features further obscured by the preponderance of the Mongoloide characters.

Consequently, comparisons could be drawn only with the heretofore published anthropological materials and the mean values of their main measurements and indices, of a Europoide character, of the Avar Period cemeteries excavated at Jutas, Szebény, Csákverény, and Előszállás-Bajcsihegy. The comparative data are submitted in Tables XIX, XX, XXI and XXII.

By comparing the mean values of the main measurements of the male skulls deriving from Kékesd with those of the Transdanubian findings mentioned above, it can be stated that they differ, with regard to the length of the skull, from the Jutas and Előszállás ones, while with respect to the breadth of the skulls, from the Jutas as well as the Szebény and Csákberény crania. Namely the male skulls from Kékesd are moderately long and moderately wide, whereas those from Jutas are long and narrow; the Szebény and Csákberény skulls are,though of a moderate length similarly to the Kékesd ones, narrow, while the Előszállás skulls, though as moderately wide as the Kékesd ones, are long. Concerning the height of the skulls, the values are identical with the Kékesd ones in all male series, that is, they are moderately high. The bizygomatic arch of the Kékesd and the other Transdanubian findings, except for the Szebény skulls,is moderately broad. (The latter ones have a wide arch on the average.) As for the total and upper facial lengths, the values of the Csákberény and Előszállás skulls agree with those of the Kékesd ones, that is, the total and upper face of the male skulls of all three cemeteries is moderately high. On the other hand, the Jutas skulls have a low, the Szebény skulls a high to low, total and upper face.

By comparing the main indices and the stature data, it can be established that whereas the Kékes males are mesochranial - orthocranial - metriocranial - eurymetopic - mesoprosopic - mesen - mesoconch - mesorrhinian and of a small medium stature, the Jutas ones differ from them by reason of thei dolichocranial and leptorrhinian, the Szebény ones by the metriometopic and leptoprosopic, characters and medium stature, the Csákberény males by their metriometopic feature (no stature data hadn been published), and the Előszállás population by the metriometopic - leptoprosopic - hypsiconch - chamaerrhinian characters and medium stature.

As a result of the comparison it can now be stated that it is the findings from Csákvár which show the greatest agreement with the male material of the cemetery under examination.

It should be remarked here that a certain morphological agreement, expressed in the mean values of the main indices, does not indicate the similarity, as to the single types of a great race,of the populations of the cemeteries cited above. In this respect, the analysis of the main indices, e.g. the distribution of the values of the cranial, total and upper face, indices, is most important. Results show that the frequency of the dolicho- and hyperdolichocranial character is the

greatest in the Jutas findings (86 per cent), diminishing in the Szebény ones (40 per cent),the Kékesd skulls (35 per cent),the Előszállás skulls (29 per cent), and showing the lowest value in the Csákberény material (23 per cent). The rate of mesocrany is the highest in the Előszállás material (58 per cent), approximately identical in the Kékesd and Csákberény findings (40-38 per cents), essentially smaller in the Szebény material (28 per cent), and merely 14 per cent in Jutas. The proportion of the brachy- and hyperbrachycranial characters increases from Előszállás (12 per cent), Kékesd (25 per cent), Szebény (32 per cent), to Csákberény (38 per cent), but fails to appear in Jutas.

In the course of analysing the facial indices of the male skulls, it can be observed that the proportions of skulls with wide to very wide faces are nearly equal in the Kékesd, Jutas, and Előszállás materials (31, 33, 28 per cents, respectively), they are the highest in the Csákberény findings (60 per cent), but absent in the Szebény material. Male skulls with a medium wide upper face are most frequent in the Kékesd material (54 per cent), the values decreasing in the Jutas (33 per cent) and the Csákberény findings (20 per cent), and absent in the Szebény and Előszállás individuals.

With respect to skulls with a narrow to very narrow faces, the highest ratio occurs in the Szebény and Előszállás skulls (100-72 per cents, respectively), followed by the Jutas, Csákberény, and Kékesd crania, with essentially smaller proportions (33, 20, 15 per cents, respectively).

Concerning the upper face indices of the male skulls, the distribution of the ratios is as follows: the wide to very wide frequency is 36 per cent in Kékesd, 33 per cent in Jutas, 25 per cent in Szebény, and 20 per cent each in Csákberény and Előszállás. The medium wide upper face character is the most frequent in every Transdanubian male skull: Csákberény = 70 per cent, Jutas = 66 per cent, Kékesd = 64 per cent, Előszállás = 50 per cent, Szebény I = 37 per cent. As for the male skulls with a narrow to very narrow upper face character, none could be observed in the Kékesd and Jutas materials, then about equal in Előszállás and Szebény (30, 37 per cents, respectively), and essentially smaller in Csákberény (10 per cent).

By the analysis of the distribution of the values of the main indices it can be stated that it is the Csákberény material which stands relatively nearest to the male population of the cemetery at Kékesd.

Comparing the mean values of the main measurements of the female skulls deriving from the Transdanubia, it is found that the findings at Kékesd show the greatest similarity with the Jutas skulls with respect to the mean value of the cranial length, and with the Szebény, Csákberény, and Előszállás materials as regards breadth. Namely, while the Kékesd and Jutas skulls are long according to their mean values and the Szebény, Csákberény, and Előszállás crania differ by their moderate lengths, the female skulls of these three latter cemeteries are narrow similarly to the Kékesd skulls, whereas those from Jutas are, on the other hand,moderately wide. The values of the cranial height and the bizygomatic breadth agree in all female series from the Transdanubia, that is, they are moderately high and moderately wide, respectively. According to the values of the measurements of the total and upper face, the Jutas and Előszállás skulls stand nearer to the Kékesd ones, since the total and upper face of the female skulls of both cemeteries are moderately high, while the upper face of the Csákberény skulls, though high similarly to the Kékesd ones, differs in the mean value of the total face measure-

ment, insofar as it is low. The total and upper face lengths of the Szebény material are low, as compared to the Kékesd findings.

By comparing the main indices and stature values, it will be found that whereas the Kékesd females have a mesocranial - hypsicranial - metriocranial - eurymetopic - mesoprosopic - mesen - hypsiconch - chamaerrhinian character and a medium stature, those from Jutas differ by leptoprosopic - mesoconch - mesorrhinian features and a small medium stature, the Szebény population by brachycranial - orthocranial - metriometopic - euryen - mesoconch - mesorrhinian characters and also a small medium stature, the Csákberény females by orthocranial - tapeinocranial - stenometopic - mesoconch - mesorrhinian characters (no stature data had been published), and the Előszállás individuals by orthocranial - tapeinocranial - metriometopic - leptoprosopic features and a small medium stature.

As a result of the comparative analysis, it can be stated that the females of Jutas stand relatively the nearest to the female findings from Kékesd.

Let us now examine the distribution of the group-frequencies of the cranial, total and upper face indices revealed by the female skulls of the Transdanubian cemeteries. As regards the cranial index, the proportion of brachy- and hyperbrachycrany is rather significant in all female findings, similarly to the Kékesd group (40 per cent): namely 54 per cent in Előszállás, 50 per cent in Szebény, and 43 per cent each in Jutas and Csákberény. The frequency of mesocrany is the highest in Szebény (50 per cent) and Csákberény (43 per cent) but considerably smaller in Kékesd, Előszállás, and Jutas (30, 23, 21 per cents, respectively). Long to very long are 36 per cent of the female skulls from Jutas, 30 per cent in Kékesd, 23 per cent in Előszállás, and 14 per cent in Csákberény. No dolicho- to hyperdolichocranial skulls have been observed in the Szebény material.

In analysing the facial index, it appears that the proportion of skulls with a wide to very wide face is rather small in the Jutas findings (18 per cent) as also in the Kékesd ones (20 per cent), but relatively higher and of equal proportions in Szebény and Csákverény (33 per cents each), whereas it was not observable in the Előszállás material. Skulls with a medium wide face are most frequent in Csákberény (66 per cent), Kékesd (60 per cent), and Előszállás (50 per cent), the ratio decreasing in Szebény (33 per cent),and reaching its smallest value in Jutas (9 per cent). The proportion of lepto- to hyperleptoprosopic skulls is equally significant in the Jutas and Előszállás materials (73, 50 per cents), less in Szebény (33 per cent) and Kékesd (20 per cent), and entirely absent in Csákberény.

In comparing the upper face index, it can be observed that female skulls with wide to a very wide upper face did not occur in Kékesd, Csákberény, and Előszállás, and only to a small extent in Jutas (8 per cent); it was the most frequent in the Szebeny material (60 per cent). The proportion of skulls with a medium wide upper face is the highest in Kékesd and Előszállás (100 per cents each), significant in Jutas (50 per cent), considerably smaller in Szebény (20 per cent), and absent in the Csákberény material. Skulls with a narrow to very narrow upper face are the most frequent in Csákberény (100 per cent), decreasing in Jutas to 41 per cent and still further in Szebény (20 per cent); none were observable in the Kékesd and Előszállás materials.

The results of the analysis of the value distributions with respect to the main indices show that the Előszállás material stands relatively nearest to the female findings deriving from the cemetery at Kékesd.

Let us now attempt to analyse, or compare, the populations of the Transdanubian cemeteries, discussed above, as to ethnic composition.

L. BARTUCZ regards the partial population of Jutas as a mixed northern - Mediterranean - East Baltic - Alpine material. T. TÓTH observed the preponderance of Protoeuropoide - Mediterranean - brachycranial Europoide elements in the Szebény findings, and those of brachycranial Europoide - Protoeuropoide types in the Csákvár material. On the basis of my investigations, the Előszállás material reveals northern - Mediterranean - Cromganoid-A - brachycranial Europoide type elements. On the partial population of the Avar Period inhabiting the Kékesd area, features characterizing mainly Cromagnoid-A - Cromagnoid-B - gracile Mediterranean-northern elements can be observed.

On the basis of the occurrence or distinguishability, respectively, of the type elements discernible in the anthropological material of the Transdanubian cemeteries, it can be stated that the partial population of Kékesd is most similar to that of Jutas.

Summary

1. The anthropological examination of the Avar Period cemetery at Kékesd resulted in the separation of the following taxonomic subgroups:

I. A dolicho - mesocranial - mesoprosopic group, revealing features characterizing mainly Cromagnoid-A, gracile Mediterranean, and northern elements;

II. A brachy - mesocranial - meso - euryprosopic group, with features resembling chiefly the Cromagnoid-B (eastern Europoide) type.

2. With respect to the entire aspect of the cemetery, Europoide features predominate. Some features of the Mongoloide physiognomy are observable on merely one skull.

3. In accordance with the simultaneous assessment of the morphological characters, the findings of the Kékesd cemetery can be relegated to BARTUCZ's group III (Europoide) of the Avar Period cemeteries in Hungary.

4. On the basis of comparison with the male and female series of a Europoide character from the Avar Period in the Transdanubia (Jutas, Szebény I, Csákberény, Előszállás), the male and female findings of Kékesd show most morphological agreements with the Csákberény (male), and the Jutas as well as the Előszállás (female) materials.

5. The racial composition of the Transdanubian, and in general the native Avar Period, population is repeatedly found in the most divers cemeteries, hence it were most important, on the one hand, to delimit archeologically, cronologically and typologically the Avar Period cemeteries of a Mongoloide and Europoide character, and on the other, to further delineate the criteria defining the Europoide type elements, as well as to investigate the preceding population anthropolgically, which involves, last but not least, the obtaining of as much authentic anthropological material as possible for the establishment of the outlines of the ethnic groups, the racial composition, and the distribution, of the population in the Avar Period.

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Table I.

Distribution of sexes and ages

Findings	Age / Sex	Inf.II.	Juv.	Ad.	Mat.	Sen.	Indeterm. (Ad.Mat.Sen.)	Item
Crania and extremities	Males	-	-	8	1	-	-	9
	Females	-	1	2	1	-	-	4
	Total	-	1	10	2	-	-	13
Crania	Males	-	-	8	3	1	-	12
	Females	-	-	4	3	-	-	7
	Indeterm.	1	-	-	-	-	-	1
	Total	1	-	12	6	1	-	20
Postcranial skeleton	Males	-	-	-	-	-	4	4
	Females	-	-	-	-	-	2	2
	Total	-	-	-	-	-	6	6
Item		1	1	22	8	1	6	39

Table II.

Distribution of sexes and ages

Age	Sex / Case	Indeterm. N	Indeterm. %	♂ N	♂ %	♀ N	♀ %	♂ + ♀ N	♂ + ♀ %	Item N	Item %
Infantilis II.		1	100,0	-	-	-	-	-	-	1	3,0
Juvenilis		-	-	-	-	1	9,0	1	3,1	1	3,0
Adultus		1	-	16	76,2	6	55,5	22	68,8	22	66,8
Maturus		-	-	4	19,0	4	36,5	8	25,0	8	24,2
Senilis		-	-	1	4,8	-	-	1	3,1	1	3,0
Total		1	100,0	21	100,0	11	100,0	32	100,0	33	100,0

Table III.

Measurements and indices (Brain case: males)

Measurements and indices	No of graves Inventory number Age	20 57.46 Ad.	27 57.47 Mat.	42 57.49 Ad.	85 57.53 Ad.	88 57.54 Sen.	89 57.55 Ad.
1	Glabello-occipitalis length	188	190	186	185	191	188
2	Glabella-inions length	178	178	175	183	189	185
3	Glabella-lambda length	180	183	181	179	189	185
5	Basion-nasion length	-	100	98	101	103	102
7	Foramen magnum length	-	38	33	-	-	36
8	Maximum breadth of cranium	143	150	139	139	144	144
9	Minimum frontal diameter	101	103	100	100	103	106
10	Maximum frontal diameter	124	126	120	123	120	126
11	Bi-auricular diameter	-	133	118	121	127	126
12	Bi-asterial diameter	-	116	108	112	109	106
13	Bi-mastoid breadth	-	117	102	107	-	102
17	Basion-bregma height	-	135	131	140	136	134
20	Porion-bregma height	-	116	114	117	115	116
23	Max. cranial circumference	553	540	518	526	526	528
24	Transverse arc	-	315	312	318	-	313
25	Sagittal arc	388	376	384	-	-	336
26	Frontal section of sagittal arc	128	120	129	126	131	136
27	Parietal section of sagittal arc	138	136	136	135	136	135
28	Occipital sect. of sagittal arc	122	120	119	-	-	65
29	Nasion-bregma chord	116	117	112	111	116	119
30	Bregma-lambda chord	120	124	122	118	124	119
31	Occipital chord	112	100	99	-	-	62
38	Cranial capacity	-	1670	1450	1580	-	1510
8:1	Cranial index	76,06	78,95	74,73	75,14	75,39	76,60
17:1	Length-height index	-	71,05	70,43	75,68	71,20	71,28
17:8	Breadth-height index	-	90,00	93,57	100,72	94,44	93,06
9:10	Frontal index	81,45	81,75	83,33	81,30	85,83	84,13
9:8	Transverse frontopar. index	70,63	68,67	71,94	71,94	71,53	73,61
27:26	Parieto-frontal arc index	107,81	113,33	105,43	107,14	103,82	99,26
45:8	Cranio-facial index	-	90,00	94,24	93,53	96,53	93,75
29:26	Frontal chord-arc index	90,63	97,50	86,82	88,10	88,55	87,50

Table IV.

(Continuation)

Martin	116 57.56 Ad.	123 57.59 Mat.	134 57.60 Ad.	135 57.61 Ad.	137 57.62 Ad.	155 57.63 Ad.	172 57.64 Ad.
1	190	186	185	170	174	186	173
2	186	180	178	163	-	182	165
3	180	184	179	169	173	180	169
5	102	104	100	-	106	-	99
7	33	35	34	-	-	-	40
8	136	138	144	156	157	138	153
9	99	100	100	95	97	94	99
10	122	122	120	130	126	117	130
11	120	121	121	142	122	121	130
12	110	113	114	129	105	112	114
13	101	112	109	121	104	103	109
17	134	141	141	-	135	-	144
20	110	117	115	115	113	114	122
23	520	520	526	515	517	520	510
24	309	315	311	322	320	310	337
25	372	379	384	-	-	-	359
26	124	132	129	128	122	122	125
27	130	133	132	130	124	130	120
28	118	114	123	-	-	-	114
29	110	119	112	113	107	111	111
30	117	120	121	111	108	115	106
31	99	99	101	-	-	-	101
38	-	1540	1530	-	-	-	1500
8:1	71,58	74,19	77,84	91,76	90,23	74,19	88,44
17:1	70,53	75,81	76,22	-	77,14	-	83,24
17:8	98,53	102,17	97,92	-	85,90	-	94,12
9:10	81,15	81,97	83,30	73,08	76,98	80,34	76,15
9:8	72,79	72,46	69,44	60,90	61,78	68,12	64,71
27:26	104,84	100,76	102,33	101,56	101,64	106,56	96,00
45:8	-	94,93	95,83	91,67	82,80	95,65	90,20
29:26	88,71	90,15	86,82	88,28	87,70	90,98	88,80

Table V.

(Continuation)

Martin	174 57.65 Ad.	176 57.67 Ad.	217 57.74 Mat.	226 57.76 Ad.	230 57.77 Ad.	233 57.78 Mat.	236 57.79 Ad.
1	192	189	191	181	181	174	178
2	187	182	191	170	171	165	174
3	186	183	186	174	177	170	169
5	107	103	-	97	104	95	99
7	41	34	-	37	32	34	39
8	140	142	142	148	143	145	133
9	100	100	103	96	101	96	95
10	126	120	125	128	123	125	118
11	127	130	-	132	122	120	120
12	109	111	111	117	109	108	107
13	109	108	115	105	110	104	103
17	137	143	-	135	140	132	138
20	122	115	117	116	116	115	111
23	530	525	536	520	513	508	503
24	327	314	322	320	315	320	303
25	387	389	392	368	376	361	355
26	128	129	137	126	124	125	123
27	137	127	135	134	125	124	124
28	122	133	120	108	127	112	108
29	117	115	119	102	108	112	107
30	120	112	122	118	105	112	111
31	102	109	95	91	108	96	89
38	-	-	-	1450	-	1380	1310
8:1	72,92	75,13	74,35	81,77	79,01	83,33	74,72
17:1	71,35	75,66	-	74,59	77,35	75,86	77,53
17:8	97,86	100,70	-	91,22	97,90	91,03	103,76
9:10	79,39	83,33	82,40	75,00	82,11	76,80	80,51
9:8	71,43	70,42	72,54	64,86	70,63	66,21	71,43
27:26	107,03	98,45	98,54	106,35	100,81	99,20	100,81
45:8	-	-	-	94,59	93,01	86,21	-
29:26	91,41	89,15	86,86	80,95	87,10	89,60	86,99

Table VI.

Measurements and indices (Facial skeleton: males)

Measurements and indices		No of graves Inventory number Age	20 57.46 Ad.	27 57.47 Mat.	42 57.49 Ad.	85 57.53 Ad.	88 57.54 Sen.	89 57.55 Ad.
40	Basion-prosthion length		-	95	95	92	97	90
42	Basion-gnathion length		-	110	111	-	112	106
43	Upper facial breadth		111	106	105	102	108	109
44	Bi-orbital breadth		97	97	97	94	100	97
45	Bizygomatic breadth		-	135	131	130	139	135
46	Maxillar breadth		91	90	95	89	96	95
47	Total facial height		-	109	112	-	127	119
48	Upper facial height		79	65	63	69	73	73
51	Orbital breadth		-	43	42	40	43	42
52	Orbital height		41	34	31	34	36	34
54	Nasal breadth		-	24	27	25	23	25
55	Nasal height		-	52	49	52	53	52
60	Maxillo-alveolar length		-	52	57	-	55	51
61	Maxillo-alveolar breadth		63	59	63	57	62	61
62	Palatal length		-	43	49	-	45	41
63	Palatal breadth		40	41	42	43	43	41
65	Bicondylar diameter		-	-	123	116	-	125
66	Bigonial diameter		106	-	112	86	-	96
68	Mandibular length		79	74	82	72	82	79
69	Symphyseal height		39	29	32	30	-	33
70	Ramus height		67	68	57	57	66	65
71/a	Minimum ramus breadth		28	32	34	31	36	39
79	Mandibular angle		124°	121°	134°	116°	118°	118°
47:45	Total facial index		-	80,74	85,50	-	91,37	88,15
48:45	Upper facial index		-	48,15	48,09	53,08	52,51	54,07
52:51	Orbital index		-	79,07	73,81	85,00	83,72	80,95
54:55	Nasal index		-	46,15	55,10	48,08	43,40	48,08
61:60	Maxillo-alveolar index		-	113,46	110,53	-	112,73	119,61
63:62	Palatal index		-	95,35	85,71	-	95,56	100,00

Table VII.

(Continuation)

Martin	116 57.56 Ad.	123 57.59 Mat.	134 57.60 Ad.	135 57.61 Ad.	137 57.62 Ad.	155 57.63 Ad.	172 57.64 Ad.
40	-	90	97	-	100	-	96
42	-	110	108	-	112	-	112
43	108	103	108	118	101	106	101
44	-	95	100	113	92	98	94
45	-	131	138	143	130	132	138
46	-	91	98	96	-	102	90
47	-	113	114	124	113	114	123
48	-	64	67	74	71	71	71
51	-	41	42	44	40	39	43
52	-	36	34	38	35	34	37
54	-	26	26	27	26	27	20
55	-	49	47	55	50	54	53
60	-	48	55	-	-	-	52
61	-	59	65	69	63	69	58
62	-	40	46	-	44	-	45
63	-	41	44	49	40	46	37
65	116	111	126	123	119	118	122
66	103	111	102	109	106	103	97
68	81	76	80	78	68	84	85
69	42	31	29	33	33	32	33
70	62	63	67	69	55	80	68
71/a	33	29	32	34	27	33	28
79	131°	131°	119°	127°	138°	119°	129°
47:45	-	86,26	82,61	86,71	86,92	86,36	89,13
48:45	-	48,85	48,55	51,74	54,62	53,79	51,44
52:51	-	87,80	80,95	86,36	87,50	87,18	86,05
54:55	-	53,06	55,32	49,09	52,00	50,00	37,74
61:60	-	122,92	118,18	-	-	-	98,11
63:62	-	102,50	95,65	-	90,91	-	82,22

Table VIII.

(Continuation)

Martin	174 57.65 Ad.	176 57.69 Ad.	217 57.74 Mat.	226 57.76 Ad.	230 57.77 Ad.	233 57.78 Mat.	236 57.79 Ad.
40	-	101	-	92	96	95	89
42	-	104	-	108	115	113	97
43	-	-	111	104	105	102	103
44	-	-	105	97	97	95	96
45	-	-	-	140	133	125	-
46	-	-	100	98	92	96	-
47	-	124	122	118	109	113	105
48	-	75	75	72	62	66	67
51	41	39	46	42	41	43	42
52	33	36	39	36	33	33	33
54	-	28	27	29	25	27	25
55	-	53	56	52	45	43	49
60	-	-	57	51	48	54	49
61	-	67	67	65	63	63	64
62	-	-	42	47	41	47	37
63	-	47	43	44	41	41	40
65	124	133	-	132	-	-	117
66	97	108	111	109	98	89	104
68	75	71	78	80	72	-	63
69	-	37	39	34	33	33	29
70	71	66	69	65	65	-	63
71/a	33	31	35	32	32	30	28
79	113°	133°	127°	121°	121°	-	123°
47:45	-	-	-	84,29	81,95	90,40	-
48:45	-	-	-	51,42	46,62	52,80	-
52:51	80,49	92,31	84,78	85,71	80,49	76,74	78,57
54:55	-	52,83	48,21	55,77	55,56	62,69	51,02
61:60	-	-	117,57	127,45	131,25	116,67	130,61
63:62	-	-	102,38	93,62	100,00	87,23	108,11

Table IX.

. Measurements and indices (Brain case: Females, Juv., Inf.II.)

Measurements and indices	No of graves / Inventory number / Age	33 / 57.48 / Mat.	54 / 57.50 / Mat.	60 / 57.51 / Ad.	133 / 57.59 / Mat.	179 / 57.68 / Ad.	181 / 57.69 / Ad.
1	Glabello-occipital length	172	174	175	177	188	178
2	Glabella-inions length	160	166	167	168	172	172
3	Glabella-lambda length	167	169	171	168	182	174
5	Basion-nasion length	-	99	-	100	-	95
7	Foramen magnum length	36	31	-	34	-	-
8	Maximum breadth of cranium	140	139	140	131	140	133
9	Minimum frontal diameter	95	96	95	88	102	100
10	Maximum frontal diameter	123	117	116	106	113	116
11	Bi-auricular diameter	120	123	-	116	118	120
12	Bi-asterial diameter	102	104	-	104	105	107
13	Bi-mastoid breadth	92	104	-	105	99	99
17	Basion-bregma height	133	130	-	126	-	-
20	Porion-bregma height	107	111	-	103	114	108
23	Max. cranial circumference	495	493	503	490	527	502
24	Transverse arc	302	303	-	281	312	291
25	Sagittal arc	-	348	370	351	-	-
26	Frontal section of sagittal arc	-	123	132	115	-	124
27	Parietal section of sagittal arc	127	120	125	115	138	132
28	Occipital sect. of sagittal arc	120	105	113	121	112	-
29	Nasion-bregma chord	-	107	114	103	-	108
30	Bregma-lambda chord	114	110	112	102	128	116
31	Occipital chord	97	89	94	97	91	-
38	Cranial capacity	-	1120	-	1120	-	-
8:1	Cranial index	81,40	79,89	80,00	74,01	74,47	74,72
17:1	Length-height index	77,33	74,71	-	71,19	-	-
17:8	Breadth-height index	95,00	93,53	-	96,18	-	-
9:10	Frontal index	77,24	82,05	81,90	83,02	90,27	86,21
9:8	Transverse frontopar. index	67,86	69,06	67,86	67,18	72,86	75,19
27:26	Parieto-frontal arc index	-	87,50	94,70	100,00	-	106,45
45:8	Cranio-facial index	-	89,93	-	-	-	93,98
29:26	Frontal chord-arc index	-	86,99	86,36	89,57	-	87,10

Table X.

(Continuation)

Martin	182 57.70 Ad.	204 57.72 Ad.	238 57.80 Ad.	242 57.81 Mat.	174 57.66 Juv.	64 57.52 Inf.II.
1	174	170	175	169	170	161
2	170	166	168	164	166	160
3	173	162	169	164	165	157
5	94	96	96	88	94	95
7	-	35	31	37	32	32
8	135	136	140	134	140	138
9	95	98	99	93	90	92
10	118	112	124	114	120	117
11	113	118	123	122	114	118
12	108	105	101	103	102	99
13	92	94	97	102	93	102
17	127	138	128	128	129	130
20	108	111	110	104	107	108
23	496	490	507	486	490	476
24	300	299	309	285	305	302
25	-	350	367	355	348	348
26	129	120	128	120	120	128
27	124	115	120	132	119	100
28	-	115	119	103	109	120
29	110	103	106	103	104	108
30	110	106	107	114	107	92
31	-	94	95	87	91	102
38	-	1180	1410	-	1290	1230
8:1	77,59	80,00	80,00	79,29	82,35	85,71
17:1	72,99	81,18	73,14	75,74	75,88	80,75
17:8	94,07	100,47	91,43	95,52	92,14	94,20
9:10	80,51	87,50	79,84	81,58	75,00	78,63
9:8	70,37	72,06	70,71	69,40	64,29	66,67
27:26	96,12	95,83	93,75	110,00	99,17	78,13
45:8	88,89	91,91	92,86	94,03	85,00	89,13
29:26	85,27	85,83	82,81	85,83	86,67	84,38

Table XI.

Measurements and indices (Facial skeleton: Females, Juv., Inf.II.)

Measurements and indices		No of graves Inventory number Age	33 57.48 Mat.	54 57.50 Mat.	60 57.51 Ad.	133 57.59 Mat.	179 57.68 Ad.	181 57.69 Ad.
40	Basion-prosthion length		-	97	-	93	-	-
42	Basion-gnathion length		-	108	-	-	-	-
43	Upper facial breadth		-	102	-	-	-	102
44	Bi-orbital breadth		-	95	-	-	-	39
45	Bizygomatic breadth		-	125	-	-	-	125
46	Maxillar breadth		-	92	-	-	93	97
47	Total facial height		-	107	-	-	-	-
48	Upper facial height		-	64	65	65	-	-
51	Orbital breadth		-	40	41	39	-	40
52	Orbital height		-	33	37	34	-	33
54	Nasal breadth		-	26	-	28	-	27
55	Nasal height		-	49	-	45	-	46
60	Maxillo-alveolar length		-	53	-	56	-	-
61	Maxillo-alveolar breadth		-	54	-	59	-	-
62	Palatal length		-	45	-	44	-	-
63	Palatal breadth		-	33	-	38	-	-
65	Bicondylar diameter		113	108	119	118	127	117
66	Bigonial diameter		90	93	95	84	102	98
68	Mandibular length		70	74	75	76	76	78
69	Symphyseal height		23	28	32	31	-	-
70	Ramus height		53	57	60	54	63	60
71/a	Minimum ramus breadth		27	31	30	28	32	38
79	Mandibular angle		120°	133°	129°	133°	126°	122°
47:45	Total facial index		-	85,60	-	-	-	-
48:45	Upper facial index		-	51,20	-	-	-	-
52:51	Orbital index		-	82,50	90,24	87,18	-	82,50
54:55	Nasal index		-	53,06	-	62,22	-	58,70
61:60	Maxillo-alveolar index		-	101,89	-	105,36	-	-
63:62	Palatal index		-	73,33	-	86,36	-	-

Table XII.

(Continuation)

Martin	182 57.70 Ad.	204 57.72 Ad.	238 57.80 Ad.	242 57.81 Mat.	174 57.66 Juv.	64 57.52 Inf.II.
40	93	91	98	85	90	87
42	102	103	109	94	98	88
43	102	103	106	108	95	96
44	93	95	97	94	89	90
45	120	125	130	126	119	123
46	94	95	91	84	85	90
47	108	110	108	108	103	98
48	65	68	67	64	59	61
51	40	41	41	42	39	40
52	33	34	34	39	32	33
54	26	24	27	23	22	22
55	46	50	52	50	43	45
60	54	50	57	51	50	51
61	58	57	63	57	59	57
62	43	43	47	42	40	40
63	38	40	43	36	38	38
65	112	118	116	117	107	103
66	99	101	99	95	85	82
68	71	76	81	65	75	69
69	32	28	27	27	29	26
70	57	65	66	61	54	44
71/a	30	32	33	29	30	29
79	129°	119°	123°	126°	130°	129°
47:45	90,00	88,00	83,08	85,71	86,55	79,67
48:45	54,17	54,40	51,54	50,79	49,58	49,59
52:51	82,50	82,93	82,93	92,86	82,05	82,50
54:55	56,52	48,00	51,92	46,00	51,16	48,89
61:60	107,41	114,00	110,53	111,76	118,00	111,76
63:62	88,37	93,02	91,49	85,71	95,00	95,00

Table XIII.

Parameters of the male and female series measurements and indices

Martin	Males					Females				
	N	M	S^2	S	V	N	M	S^2	S	V
1	20	182,90	52,20	7,22	170-192	10	175,20	25,40	5,03	169-188
8	20	143,70	39,00	6,24	133-157	10	136,80	11,20	3,34	131-140
9	20	99,40	9,70	3,11	94-106	10	96,10	15,30	3,91	88-102
12	19	111,32	32,73	5,72	105-129	9	104,34	4,77	2,18	101-108
17	16	137,25	14,75	3,84	131-144	7	131,42	15,14	3,88	126-138
38	10	1492	11040,00	330,22	1310-1670	4	1232	11925,50	340,53	1120-1410
45	14	134,29	22,71	4,76	125-143	6	125,16	8,50	2,91	120-130
47	16	116,18	43,31	6,58	105-127	5	107,20	1,00	1,00	107-110
48	18	69,84	22,50	4,74	62-79	7	65,42	2,14	1,46	64-68
8:1	20	78,30	32,50	5,70	72-92	10	78,10	5,10	2,23	74-81
17:1	16	74,82	13,81	3,71	70-83	7	75,14	9,28	3,04	71-81
17:8	16	95,88	28,12	5,30	86-104	7	95,14	7,71	2,77	91-100
9:8	20	69,35	13,25	3,64	61-74	10	70,50	8,10	2,84	67-75
47:45	13	86,08	9,15	3,02	81-91	5	86,60	5,80	2,40	83-90
48:45	14	51,21	6,35	2,54	47-55	5	52,40	2,00	1,41	51-54
52:51	18	83,17	20,05	4,47	74-92	8	85,27	19,00	4,35	82-93
54:55	17	50,82	31,52	5,61	38-63	7	53,85	32,42	5,69	46-62
63:62	13	95,30	50,00	7,07	82-108	6	86,16	41,16	6,41	73-93
Stat.	10	163,80	16,60	4,07	156-169	5	153,40	6,00	2,44	150-157

Measurements and indices:

1	Maximum cranial length
8	Maximum cranial breadth
9	Minimum frontal cranial breadth
12	Bi-asterial diameter
17	Basion-bregma height
38	Cranial capacity
45	Maximum bizygomatic breadth
47	Total cranial facial height
48	Upper cranial facial height
8:1	Cranial index
17:1	Length-height index
17:8	Breadth-height index
9:8	Transverse frontoparietal index
47:45	Total facial index
48:45	Upper facial index
52:51	Orbital index
54:55	Nasal index
63:62	Palatal index
	Stature

Table XIV.

Percental distribution of decesive cranial measurements

Measurements	Characteristics	Males			Females			Item	
		Min.-Max.	N	%	Min.-Max.	N	%	N	%
1 Maximum cranial length	short	x-174	4	20,0	x-166	-	-	4	13,3
	medium	175-182	3	15,0	167-174	5	50,0	8	26,7
	long	183-192	13	65,0	175-184	4	40,0	17	56,7
	very long	193-x	-		185-x	1	10,0	1	3,3
	Total		20	100,0		10	100,0	30	100,0
8 Maximum cranial breadth	narrow	132-142	9	45,0	126-136	5	50,0	14	46,7
	medium broad	143-151	8	40,0	137-145	5	50,0	13	43,3
	broad	152-x	3	15,0	146-x	-	-	3	10,0
	Total		20	100,0		10	100,0	30	100,0
17 Basion-bregma height	medium high	128-138	10	62,5	121-131	5	71,4	15	65,2
	high	139-x	6	37,5	132-x	2	28,6	8	34,8
	Total		16	100,0		7	100,0	23	100,0
38 Cranial capacity	small	x-1300	-	-	x-1150	1	25,0	1	7,1
	medium	1301-1450	4	40,0	1151-1300	2	50,0	6	42,9
	large	1451-x	6	60,0	1301-x	1	25,0	7	50,0
	Total		10	100,0		4	100,0	14	100,0
45 Maximum bizygomatic breadth	narrow	x-127	1	7,1	x-117	-	-	1	5,0
	medium broad	128-135	8	57,2	118-125	4	66,7	12	60,0
	broad	136-144	5	35,7	126-134	2	33,3	7	35,0
	Total		14	100,0		6	100,0	20	100,0
47 Total cranial facial height	low	x-114	9	56,3	x-105	1	20,0	10	47,9
	medium high	115-123	4	25,0	106-114	4	80,0	8	38,1
	high	124-132	3	18,7	115-123	-	-	3	14,0
	Total		16	100,0		5	100,0	21	100,0
48 Upper cranial facial height	low	x-68	7	38,9	x-63	-	-	7	28,0
	medium high	69-74	8	44,4	64-69	7	100,0	15	60,0
	high	75-80	3	16,7	70-75	-	-	3	12,0
	Total		18	100,0		7	100,0	25	100,0
Stature	short	150-159,9	1	10,0	140-148,9	-	-	1	6,7
	short average	160-163,9	5	50,0	149-152,9	2	40,0	7	46,7
	average	164-166,9	1	10,0	153-155,9	2	40,0	3	20,0
	tall average	167-169,9	3	30,0	156-158,9	1	20,0	4	26,6
	Total		10	100,0		5	100,0	15	100,0

Table XV.

Percental distribution of decesive cranial indices

Indices	Characteristics	Min.-Max.	Males		Females		Item	
			N	%	N	%	N	%
8:1 Cranial index	Dolichocranial	70,0-74,9	7	35,0	3	30,0	10	33,3
	Mesocranial	75,0-79,9	8	40,0	3	30,0	11	36,7
	Brachycranial	80,0-84,9	2	10,0	4	40,0	6	20,0
	Hyperbrachycranial	85,0-89,9	1	5,0	-	-	1	3,3
	Ultrabrachycranial	90,0-x	2	10,0	-	-	2	6,7
	Total		20	100,0	10	100,0	30	100,0
17:1 Length-height index	Chamaecranial	x-69,9	-	-	-	-	-	-
	Orthocranial	70,0-74,9	7	43,8	4	57,1	11	47,8
	Hypsicranial	75,0-x	9	56,2	3	42,9	12	52,2
	Total		16	100,0	7	100,0	23	100,0
17:8 Breadth-height index	Tapeinocranial	x-91,9	4	25,0	1	14,3	5	21,7
	Metriocranial	92,0-97,9	7	43,8	5	71,4	12	52,2
	Acrocranial	98,0-x	5	31,2	1	14,3	6	26,1
	Total		16	100,0	7	100,0	23	100,0
9:8 Transv. frontopar. index	Stenometopic	x-65,9	4	20,0	-	-	4	13,3
	Metriometopic	66,0-68,9	3	15,0	3	30,0	6	20,0
	Eurymetopic	69,0-x	13	65,0	7	70,0	20	66,7
	Total		20	100,0	10	100,0	30	100,0
47:45 Total facial index	Euryprosopic	80,0-84,9	4	30,8	1	20,0	5	27,8
	Mesoprosopic	85,0-89,9	7	53,8	3	60,0	10	55,5
	Leptoprosopic	90,0-94,9	2	15,4	1	20,0	3	16,7
	Total		13	100,0	5	100,0	18	100,0
48:45 Upper facial index	Euryen	45,0-49,9	5	35,7	-	-	5	26,3
	Mesen	50,0-54,9	9	64,3	5	100,0	14	73,7
	Lepten	55,0-59,9	-	-	-	-	-	-
	Total		14	100,0	5	100,0	19	100,0
52:51 Orbital index	Chamaeconch	x-75,9	1	5,6	-	-	1	3,8
	Mesoconch	76,0-84,9	9	50,0	5	62,5	14	53,8
	Hypsiconch	85,0-x	8	44,4	3	37,5	11	42,4
	Total		18	100,0	8	100,0	26	100,0
54:55 Nasal index	Leptorrhinian	x-46,9	3	17,6	1	14,3	4	16,7
	Mesorrhinian	47,0-50,9	5	29,4	1	14,3	6	25,0
	Chamaerrhinian	51,0-57,9	8	47,1	3	42,8	11	45,8
	Hyperchamaerrhinian	58,0-x	1	5,9	2	28,6	3	12,5
	Total		17	100,0	7	100,0	24	100,0
63:62 Palatal index	Leptostaphyline	x-79,9	-	-	1	16,7	1	5,3
	Mesostaphyline	80,0-84,9	1	7,7	-	-	1	5,3
	Brachystaphyline	85,0-x	12	92,3	5	83,3	17	89,4
	Total		13	100,0	6	100,0	19	100,0

Table XVI.

Long bones and stature measurements

Grave No.	Inventory No.	Sex	Right					Left					Stature (cm)
			Hum.	Rad.	Ulna	Femur	Tibia	Hum.	Rad.	Ulna	Femur	Tibia	
16	57.43	♀	288	219	234	390	325	287	218	233	389	325	151,7
17	57.44	♂	296	209	225	403	341	-	210	-	402	340	156,5
18	57.45	♀	316	237	258	-	347	314	-	257	415	349	157,4
33	57.48	♀	-	228	247	425	324	-	-	-	425	327	154,6
60	57.51	♀	-	-	-	396	326	279	-	-	392	329	150,1
118	57.57	♂	305	225	244	-	-	305	-	-	431	339	160,5
123	57.58	♂	316	220	244	444	343	311	224	245	444	344	161,6
134	57.60	♂	310	234	250	423	353	305	-	250	430	355	162,0
135	57.61	♂	350	-	269	452	372	345	-	264	451	367	168,1
137	57.62	♂	-	234	251	436	355	324	230	250	433	356	163,5
155	57.63	♂	-	243	249	436	353	312	342	-	-	-	163,4
172	57.64	♂	334	246	265	466	392	-	242	263	463	392	168,7
174	57.65	♂	-	245	267	453	365	323	241	-	448	366	166,3
176	57.67	♂	343	242	-	470	377	348	250	265	459	376	168,8
182	17.70	♀	287	218	240	406	347	284	221	240	407	346	153,4

Table XVII

The main characters of the several groups

Group	Grave No.	Sex	8:1	17:1	17:8	9:8	47:45	48:45	52:51	54:55	Stature
I.	42	♂	dolichocranial	orthocranial	metriocranial	eurypetopic	mesoprosopic	euryen	chamaeconch	chamaerrhinian	-
	54	♀	mesocranial	orthocranial	metriocranial	eurymetopic	mesoprosopic	mesen	mesoconch	chamaerrhinian	-
	85	♂	mesocranial	hypsicranial	acrocranial	eurymetopic	mesomorphic	mesen	hypsiconch	mesorrhinian	-
	89	♂	mesocranial	orthocranial	metriocranial	eurymetopic	mesoprosopic	mesen	mesoconch	mesorrhinian	-
	123	♂	dolichocranial	hypsicranial	acrocranial	eurymetopic	mesoprosopic	euryen	hypsiconch	chamaerrhinian	short av.
	133	♀	dolichocranial	orthocranial	metriocranial	metriometopic	mesomorphic		hypsiconch	hyperchamaerrh.	-
	155	♂	dolichocranial	-	-	metriometopic	mesoprosopic	mesen	hypsiconch	mesorrhinian	tall av.
	174	♂	dolichocranial	orthocranial	metriocranial	stenometopic	mesomorphic		mesoconch	-	average
	176	♂	mesocranial	hypsicranial	acrocranial	eurymetopic	mesomorphic		hypsiconch	chamaerrhinian	tall av.
	181	♀	dolichocranial	-	-	eurymetopic	mesomorphic		mesoconch	hyperchamaerrh.	-
	182	♀	mesocranial	orthocranial	metriocranial	eurymetopic	leptoprosopic	mesen	mesoconch	chamaerrhinian	average
	217	♂	dolichocranial	-	-	eurymetopic	mesomorphic		mesoconch	mesorrhinian	-
	236	♂	dolichocranial	hypsicranial	acrocranial	eurymetopic	mesomorphic		mesoconch	chamaerrhinian	-
	242	♀	mesocranial	hypsicranial	metriocranial	eurymetopic	mesoprosopic	mesen	hypsiconch	leptorrhinian	-
II.	27	♂	mesocranial	orthocranial	tapeinocranial	metriometopic	euryprosopic	euryen	mesoconch	leptorrhinian	-
	60	♀	brachycranial	-	-	metriometopic	eurymorphic		hypsiconch	-	short av.
	134	♂	mesocranial	hypsicranial	metriocranial	eurymetopic	euryprosopic	euryen	mesoconch	hyperchamaerrh.	short av.
	135	♂	ultrabrachycr.	-	-	stenometopic	mesoprosopic	mesen	hypsiconch	mesorrhinian	tall av.
	137	♂	ultrabrachycr.	hypsicranial	tapeinocranial	stenometopic	mesoprosopic	mesen	hypsiconch	chamaerrhinian	short av.
	172	♂	hyperbrachycr.	hypsicranial	metriocranial	stenometopic	mesoprosopic	mesen	hypsiconch	leptorrhinian	tall av.
	204	♀	brachycranial	hypsicranial	acrocranial	eurymetopic	mesoprosopic	mesen	mesoconch	mesorrhinian	-
	226	♂	brachycranial	orthocranial	tapeinocranial	stenometopic	euryprosopic	mesen	hypsiconch	chamaerrhinian	-
	230	♂	mesocranial	hypsicranial	metriocranial	eurymetopic	euryprosopic	euryen	mesoconch	chamaerrhinian	-
	233	♂	brachycranial	hypsicranial	tapeinocranial	metriometopic	leptoprosopic	mesen	mesoconch	hyperchamaerrh.	-
	238	♀	brachycranial	orthocranial	tapeinocranial	eurymetopic	euryprosopic	mesen	mesoconch	chamaerrhinian	-

Table XVIII.

The mean values of the main measurements and indices of the several groups

Measurements and indices		Group I.				Group II.			
		Males		Females		Males		Females	
		N	M	N	M	N	M	N	M
1	Glabello-occipital length	9	186,77	5	174,40	8	177,62	3	173,34
8	Maximum breadth of cranium	9	140,44	5	134,40	8	149,50	3	138,67
9	Minimum frontal diameter	9	97,78	5	95,20	8	100,12	3	97,34
17	Basion-bregma height	7	137,71	5	127,75	7	137,42	2	133,00
38	Cranial capacity	5	1465	2	1170	5	1560	2	1295
45	Bizygomatic breadth	5	131,80	4	124,00	8	135,37	2	127,50
47	Total facial height	7	115,57	3	107,66	8	116,12	2	109,00
48	Upper facial height	8	69,62	4	64,50	8	68,37	3	66,67
8:1	Cranial index	9	74,55	5	77,20	8	83,75	3	80,00
17:1	Length-height index	7	74,00	4	73,75	7	76,42	2	77,16
17:8	Breadth-height index	7	99,00	4	94,79	7	92,57	2	95,50
9:8	Transverse frontopar.index	9	71,44	5	70,00	8	66,00	3	70,34
47:45	Total facial index	4	86,25	3	87,10	8	85,37	2	85,54
48:45	Upper facial index	5	51,22	3	52,03	8	50,75	2	52,97
52:51	Orbital index	9	83,44	5	85,20	8	82,62	3	84,66
54:55	Nasal index	8	50,75	5	55,20	8	51,75	2	49,96
	Stature	4	165,00	1	153,4	4	165,50	1	150,1

Table XIX.

Numerical analysis differences (Cranial series: Males)

Measurements and indices		Jutas		Szebény I.		Csák-berény		Elő-szállás		Kékesd	
		Bartucz-Malán		Tóth		Tóth		Wenger		Wenger	
		1931		1961		1962		1967		1968	
		N	M	N	M	N	M	N	M	N	M
1	Glabello-occipital length	7	188,7	25	181,7	14	180,5	25	185,7	20	182,9
8	Maximum breadth of cranium	7	138,6	27	141,1	13	140,1	28	143,6	20	143,7
9	Minimum frontal diameter	7	95,8	29	96,4	14	95,4	34	97,5	20	99,4
17	Basion-bregma height	5	135,4	13	131,7	11	130,7	11	132,8	16	137,2
38	Cranial capacity	-	-	-	-	-	-	8	1563	10	1492
45	Bizygomatic breadth	4	129,5	8	136,1	10	135,2	10	131,4	14	134,3
47	Total facial height	3	111,3	1	130,0	7	116,4	11	118,7	16	116,2
48	Upper facial height	4	63,3	17	68,6	14	69,2	17	70,4	18	69,8
8:1	Cranial index	7	73,6	25	77,8	13	77,8	24	76,8	20	78,3
17:1	Length-height index	5	72,0	12	72,5	11	72,6	10	70,1	16	74,8
17:8	Breadth-height index	5	97,4	13	93,7	10	93,1	10	93,4	16	95,9
9:8	Transverse frontopar.index	7	69,6	27	68,6	13	68,5	28	68,3	20	69,3
47:45	Total facial index	3	86,0	1	94,9	5	85,4	7	93,0	13	86,1
48:45	Upper facial index	3	50,7	8	52,1	10	51,1	10	53,2	14	51,2
52:51	Orbital index	5	79,4	21	77,7	12	79,4	21	89,2	18	83,2
54:55	Nasal index	4	50,7	18	49,4	13	47,3	18	51,1	17	50,8
	Stature	5	162,2	22	165,6	-	-	16	165,3	10	163,8

Table XX.

Numerical analysis differences (Cranial series: Females)

Measurements and indices		Jutas		Szebény I.		Csák-berény		Elő-szállás		Kékesd	
		Bartucz-Malán		Tóth		Tóth		Wenger		Wenger	
		1931		1961		1962		1967		1968	
		N	M	N	M	N	M	N	M	N	M
1	Glabello-occipital length	14	178,1	8	168,8	7	170,3	14	174,6	10	175,2
8	Maximum breadth of cranium	14	137,6	9	136,2	7	135,7	17	136,4	10	136,8
9	Minimum frontal diameter	14	97,3	10	92,4	7	91,5	30	92,4	10	96,1
17	Basion-bregma height	13	129,9	6	124,0	7	124,5	7	127,9	7	131,4
38	Cranial capacity	-	-	-	-	-	-	4	1407	4	1232
45	Bizygomatic breadth	12	121,8	5	123,0	4	123,0	4	121,8	6	125,2
47	Total facial height	12	110,2	5	103,4	3	105,0	7	107,9	5	107,2
48	Upper facial height	13	65,9	8	62,7	7	64,4	15	66,2	7	65,4
8:1	Cranial index	14	78,9	8	80,6	7	79,7	13	79,1	10	78,1
17:1	Length-height index	12	75,4	6	73,9	7	73,1	7	74,0	7	75,1
17:8	Breadth-height index	12	96,7	6	92,3	7	91,9	6	90,8	7	95,1
9:8	Transverse frontopar.index	14	69,6	8	67,5	7	65,9	16	68,1	10	70,5
47:45	Total facial index	11	91,0	3	85,3	3	87,0	4	91,0	5	86,6
48:45	Upper facial index	12	53,7	5	59,8	4	53,4	4	53,0	5	52,4
52:51	Orbital index	13	79,7	8	81,2	6	84,2	18	89,7	8	85,3
54:55	Nasal index	12	49,8	7	49,6	6	48,9	17	52,7	7	53,8
	Stature	4	150,6	9	151,7	-	-	20	151,7	5	153,4

Table XXI.

Numerical analysis differences (Cranial series: Males)

Martin	Jutas	Szebény I.	Csákberény	Előszállás	Kékesd
	Bartucz-Malán	Tóth	Tóth	Wenger	Wenger
	1931	1961	1962	1967	1968
1	long	medium	medium	long	medium
8	narrow	narrow	narrow	medium broad	medium broad
17	medium high	medium high	medium high	medium high	medium high
45	medium broad	broad	medium broad	medium broad	medium broad
47	low	high	medium high	medium high	medium high
48	low	low	medium high	medium high	medium high
8:1	dolichocran.	mesocranial	mesocranial	mesocranial	mesocranial
17:1	orthocranial	orthocranial	orthocranial	orthocranial	orthocranial
17:8	metriocranial	metriocranial	metriocranial	metriocranial	metriocranial
9:8	eurymetopic	metriometopic	metriometopic	metriometopic	eurymetopic
47:45	mesoprosopic	leptoprosopic	mesoprosopic	leptoprosopic	mesoprosopic
48:45	mesen	mesen	mesen	mesen	mesen
52:51	mesoconch	mesoconch	mesoconch	hypsiconch	mesoconch
54:55	leptorrhinian	mesorrhinian	mesorrhinian	chamaerrhin.	mesorrhinian
Stature	short average	average	-	average	short average

Table XXII.

Numerical analysis differences (Cranial series: Females)

Martin	Jutas	Szebény I.	Csákberény	Előszállás	Kékesd
	Bartucz-Malán	Tóth	Tóth	Wenger	Wenger
	1931	1961	1962	1967	1968
1	long	medium	medium	medium	long
8	medium broad	narrow	narrow	narrow	narrow
17	medium high	medium high	medium high	medium high	medium high
45	medium broad	medium broad	medium broad	medium broad	medium broad
47	medium high	low	low	medium high	medium high
48	medium high	low	medium high	medium high	medium high
8:1	mesocranial	brachycranial	mesocranial	mesocranial	mesocranial
17:1	hypsicranial	orthocranial	orthocranial	orthocranial	hypsicranial
17:8	metriocranial	metriocranial	tapeinocran.	tapeinocran.	metriocranial
9:8	eurymetopic	metriometopic	stenometopic	metriometopic	eurymetopic
47:45	leptoprosopic	mesoprosopic	mesoprosopic	leptoprosopic	mesoprosopic
48:45	mesen	euryen	mesen	mesen	mesen
52:51	mesoconch	mesoconch	mesoconch	hypsiconch	hypsiconch
54:55	mesorrhinian	mesorrhinian	mesorrhinian	chamaerrhin.	chamaerrhin.
Stature	short average	short average	-	short average	average

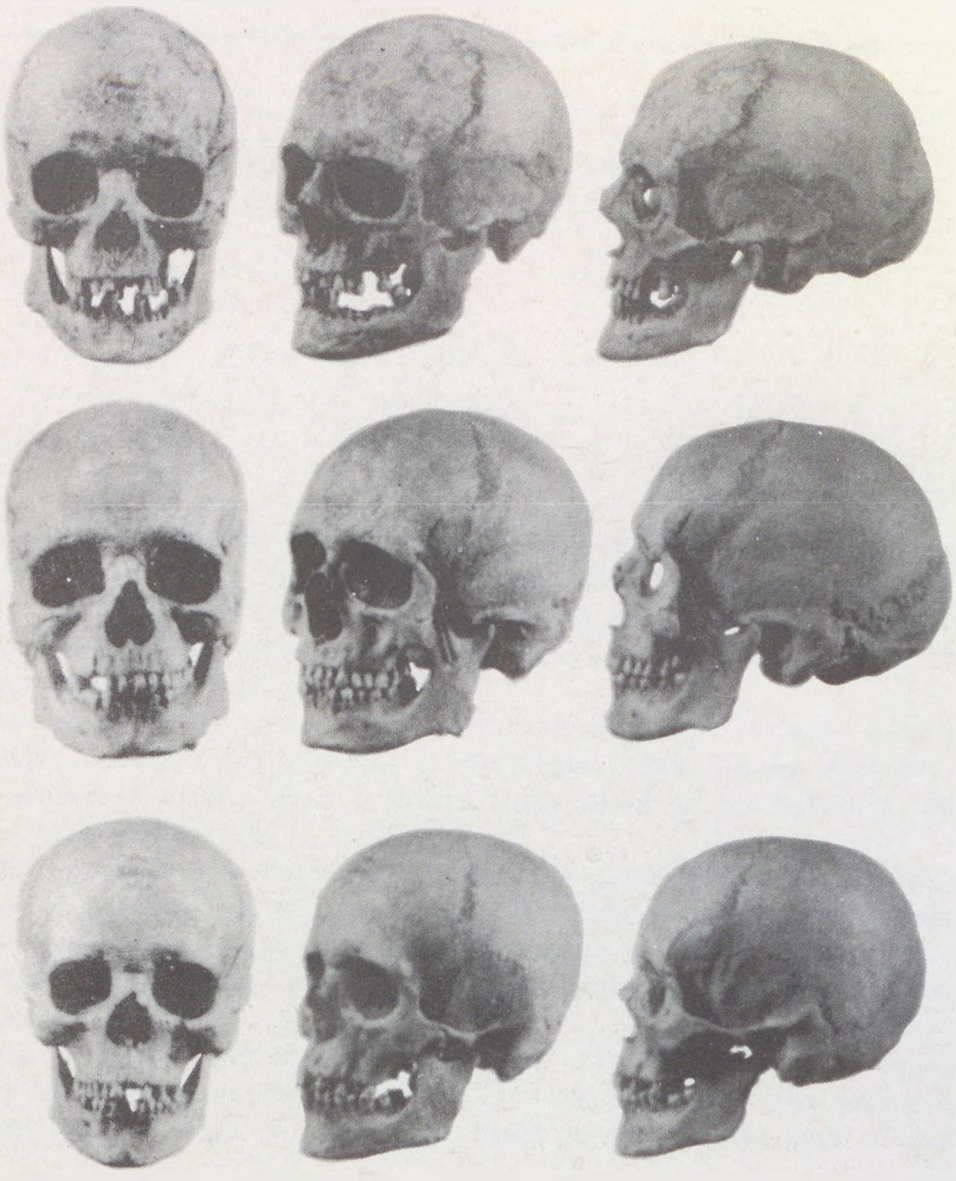

Plate I

Above: Grave No. 123 - Inventory No. 57.58
Centre:Grave No. 236 - Inventory No. 57.79
Below: Grave No. 233 - Inventory No. 57.78

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THE OUTLINES OF AN ANTHROPOLOGICAL RECONSTRUCTION OF THE CEMETERY (XI-XV c.) AT SOPRONBÁNFALVA, WEST HUNGARY

By

L. O. BOTTYÁN

The village Sopronbánfalva lies 3 km west of Sopron, at the northern slopes of the Sopron Range above the valley of the rivulet called Ráb. Dr. Á. BOTTYÁN, archeologist of the Hungarian National Museum, began excavations in the autumn of 1943 around the rather neglected chapel, dedicated to Mary Magdalene, in the village of several thousands of inhabitants.

The chapel was built probably in the XI-XII centuries. It hails back to the Árpád Age X-XIII century) and, erected in the Roman style, it was enlarged some two or three centuries later, with a Gothic spire added to the entrance and the original chapel also remodelled.

Beneath the church,the skeletons of 3 males and a child were excavated. Still further down,the ruins of a building from the Roman Period were found.The remnants of its walls continued even beyond the confines of the chapel.Even the air-heating equipment of the enormous Roman mansion was discovered in the course of excavations (Archeological Archives).

An extensive cemetery surrounded the church; it could partly be exposed by the aid of the excavating ditches laid out in the area, but the houses of the village, erected over it, have to a certain extent restricted the work of exploration.

The bottom layer of the multi-layered cemetery originates from the XI century, the others derive from later centuries, up to the fifteenth A.D. Beginning from 80 cm down, skeletal remains were found to a depth of 2 m. Owing to the all too dense stratification, the separation of the several layers was, unfortunately, utterly impossible. Furthermore, continuous burials wellnigh prohibited the excavation of graves originating from the early Árpád Age, since fresh burials had damaged the older ones (oral communication of Dr. J. NEMESKÉRI).

According to the records of the Archives, BOTTYÁN excavated 18 graves from the Árpád Age and 18 further ones from the late Middle Ages, in the autumn of 1943 and the spring of 1944; indeed, excavations continued under the auspices of the National Museumheadquarters in 1949, with the successful exposure of 10 further graves from the late Middle Ages in the same site. Owing to the damages suffered by the material preserved in the cellars of the National Museum during the war,

the findings of 5 graves became unidentifiable, so that my research material comprises now the skeletal remains of merely 41 graves.

The source-value, from an anthropological point of view, of the material is slight. No more than 49 % of the 41 graves consists of merely skeletal bones, 17 % only of skulls, and it is but 34 % which yielded both skulls and skeletal bones (cf. Table 1).

Since the excavating archeologist died in the war, and as he failed to submit detailed records and/or the descriptions of the graves to the Archives, I could but identify the anthropological material only on the basis of the laconic data of the Inventory. The inventoried skeletal material precluded the possibility of an exact determination of origin as to Age (Arpadian or late Medieval), thus I am compelled to discuss the combined bone material of a rather extensive period comprising five centuries.

Whenever, therefore, the population of Sopronbánfalva is mentioned in the present paper, it denotes the community, reconstructed on the basis of the sporadic data originating from the XI-XV centuries, of the cemetery at the site of the chapel in Sopronbánfalva.

The aim of this work is, accordingly, a detailed anthropological analysis of the available material, and its comparison with other contemporary findings.

Determination of age and sex

The distribution as to age and sex is given in Table 2. Determinations were made according to the principles of the classic method, with due attention to all morphological characters. The respective determinations were also corroborated by dr. I. LENGYEL's biochemical examinations.*

The determinations, made by the two different kinds of methods, completely coincide as to sex, but there are some deviations, in positive and negative directions, with regard to determinations of age. These deviations are, of course, wholly understandable, since it is well-known that chemical determinations do not completely agree with biological ones owing to the fact that also other influencing factors (diseases, morbid deformations etc.) than changes due to age affect the bones. In our investigations, the results of the chemical and biological examinations coincided in 12 cases, whereas the biochemical testing showed one or two decades less in age in 6 cases, and two decades more in 1 case (this latter for skull No. 4760). I accepted the biological determinations of age.

In fourteen cases, I accepted only the biochemical determination, since they were represented merely by skeletal bones. In five other cases, however, only a biological determination of age was possible, since they were only skulls. Biochemical determination happens namely on the basis of spongy bones.

As is to be seen from Table 2, the majority of our material are males, that is, 29 of 41 individuals. Four are infans I and II, and juvenile, and merely 8 are females. The problem of the great number of male skeletons immediately arises. In his monograph on the cemetery excavated around the church of the XIII-XIV c. in

* I am indebted to Dr. I.LENGYEL, physician, for the cession of the data of his biochemical investigations.

Sweden, GEIWALL (1960) reports that there was to be found a peculiar order of burial in the cemetery, as the majority of the males have been interred on the southern side of the church while the females on its northern side. There is no known analogy for this burial usage in Hungary. The possibility of this stats of affairs with respect to our cemetery arose solely in connection with this disproportionate distribution of the skeletal remains excavated at Sopronbánfalva.

General anthropological analysis

The metric data of 12 males and 3 females, found in the exposed material of the graves at Sopronbánfalva, are suitable for a detailed morphological and typological analysis.

In the course of analysis, I applied R.MARTIN's (1928) method for the evaluation of the indices, E. HUG's (1940) categories for that of the absolute measurements, and R.MARTIN's (1928) process for the assessment of the long bones. The height of the mandibular ramus was measured according to Th. MOLLISON's (1938) method, while stature was determined following N. WOLANSKI's (1953) nomogram.

In the biometric treatment, I calculated means, intervals, standard deviations according to Students method, as well as applying HOWELLS's „sigma ratio" method.

The general characterization of the male series, on the basis of the mean values and with due attention to the morphological characteristics, is as follows.

The skulls are medium long and medium wide (mesocranial), medium high. As to shape, they very mostly between the ovoid and pentagonoid forms. The forehead is weakly slanting backward, medium wide. The glabellar area is moderately developed (Broca I, II). The zygomatic arch is narrow, the upper face low (chamaecranial). The facial profile is mesognathous, the angle of the alveolare prognathous. The nasal cavity is medium wide, the apertura piriformis medium high, its margin of a sulcus and fossa praenasalis type. The bony nasal ridge is narrow-rooted, partly straight partly slightly convex. The orbita are oblong and rather high. The fossa canina is medium deep. The maxilla is long, medium wide, the palate also long but wide. The os alveolare is generally U-shaped (Tables 3 and 10). The measurements of stature are also medium.

In general, the entire male series is characterized by medium values, hence the indices are also similar, with the exception of the short palatal index (brachystaphyline) (Table 5).

This characterization shows, however, a very generalized picture of the examined male series excavated at Sopronbánfalva. I submit no characterization of the female series, merely the respective data (Table 5), thus no discussion of the sexual dimorphism can be made. It should be noted, however, that similarly to the female skulls also the marority of the male ones are gracile.

Anatomical variations occurred in rather small numbers in the material of the examined population at Sopronbánfalva. No sutura metopica, so characteristic of the skulls of series originating from the Avar Epoch, was found on a single skull, and merely a partial metopism could be observed in some cases (in skulls No. 4750, 4753, 4757, 4759, 4760, 4769, 477, 4779, 5762). The ossa wormiana occurred also rarely. There was one bonelet wedged in the lambda area of skull No. 4751; three each on the right and left sides of the sutura lambdoidea of skull No. 4760; and

one each in the same place on skull No. 4762. Skulls No. 4750/b, 1760, and 4779 showed the phenomenon of sutura petrosquamosa mastoidea. Examining the palatum of the skulls, a very slightly developed torus palatinus could be shown on skulls No. 4751, 4762, 4771, 4774, and a torus of somewhat greater degree on the male skull No. 4769. With regard to morbid deformations and injuries, one or two interesting cases were found. The male skull No.4760 probably refers to blindness, since there is a 1 x 1 cm large osseous excrescence on the inner side of the right orbita (according to the expert testimony of Dr. I. LENGYEL). Laterally incrassate and anteriorly entirely absorbed alveoli, due to chewing, are encountered on skull No. 4774 of a senile individual. Hydrocephaly can be established on the male skull No. 4769 (owing to the unusual dimensions of this skull, I have omitted its measurements from the calculations of the means). Beside hydrocephaly, this individual had also a very small stature. Skull No. 4770 is also abnormal, plagiocephalic, that is, distorted to the left side, but the deformation is not a post mortem occurrence. On skull No. 4757, there is a healed, oval wound, 2 x 3 cm, on the right side;one of the ribs of the same individual is grown to the accompanying vertebral bone.

Examining the long bones, it can be established that the mature male No. 5762 was strongly gouty; furthermore, its right caput femoris is inordinately large (deformed) (expert opinion of Dr. I. LENGYEL). According to the archeological description, the skeleton of grave No. 5763 was buried in a folded position. This individual was lame, as inferable from the examination of the long bones; the left femur is more strongly developed than the right one, while the left fibula and tibia evince osseous tumor.

Type diagnosis (homogeneity - heterogeneity)

In investigating cemeteries, one of the most important questions with regard to type diagnosis is the determination of the rate of homogeneity or heterogeneity of the analysed population. First of all, however, there arises the problem of the criteria defining homogeneity. I have examined it from two aspects, namely on the basis of the primary and the secondary taxonomical descriptive characters and the respective metric data.

With respect to the primary taxonomic characters of the male series, the examined group of the population at Sopronbánfalva is homogeneous, since there occur only the Europoide racial elements in the material. Though I had no facial profile data available, still, on the basis of the other morphometric examinations, no character referring to Mongoloids could be found in the small series. There could not very well have been, since TÓTH (1958) has shown that the presence of the Mongoloide element is considerably less significant in the populations of the Great Migrations than was previously supposed. And this component could not have increased during the Árpád Age.

With respect to the secondary taxonomic features in the course of further investigations, the material of the male series might be divided into two subgroups. The first one consists of the components of a Cro-Magnoide B and a Mediterranoide type. To this subgroup belong the skulls No. 4754, 4760, 4762, 4770, 4774, 5762. They are all characterized by a brachy-mesocranial shape and a low but

also narrow upper face, a smooth glabellar area and narrow, low forehead, medium high, angular orbita, a wide apertura piriformis, medium high nasal cavity, a slightly convex or concave - or even straight - bony nose,a medium strong alveolar prognathism, small and large medium stature and gracile bones.

The other subgroup is a mixture of the Cro-Magnoide A and the Nordic types. This comprises skulls No. 4771, 4774, 4778. They are characterized by a massive and strong, mesocranial skull, strongly expressed glabellar area, medium wide, high forehead, medium high and medium wide upper face, oblong and medium high orbita, medium wide apertura piriformis, straight and large nasal ridge, massive, divergent mandible with a developed mentum, and large medium to tall stature.

It goes without saying that the two arbitrarily separated subgroups do not represent clear types, and this is why two types each had to be indicated in the subclassification. And beside the above ones, the male skulls No. 4751, 4753, 4769 could not be relegated to either one of the two subgroups.

On the basis of the available data, therefore, our material may be designated, by the secondary taxonomic characters, as slightly heterogeneous.

Concerning the female skull, merely 3 of the 8 crania are suitable for type analysis, hence any taxonomic relegation is vaiwed.

In his paper, NEMESKÉRI (1947) demonstrated that Eastern Baltic, Dinarian and Nordic types predominate in the Hungarian population of the Árpád Age, with some Turanide and Tauride types also occuring in the populations in the western confines of the Transdanubia.At the same time,he also pointed out the especial significance of examining the cranial shape. Working out of variations of an index, he also made some comparisons with regard to some series originating from the Árpád Age.

The presence of the above mentioned Eastern Baltic, Dinarian, and Nordic type elements is in fact demonstrable, in a smaller to greater percentage, in the material of most cemeteries of the Árpád Age. The Eastern Baltic and Nordic elements occur in our material, too, but the Dinarian type is absent, the same as the Turanide and Tauride types, characteristic, according to the aboves, especially for the Western Transdanubia.

The rate of homogeneity, calculable on the basis of variations appearing in the values of the absolute measurements and indices, was established by the application of HOWELLS's „sigma ratio" method (THOMA, 1957).

The mean of the S R values of seven absolute measurements (1,8,9,17,45,47,48) is, in our material, 102,1, referring to a low rate of heterogeneity, since the value is slightly above 100. The S R mean, calculated from seven indices (8:1, 17:1, 17:8, 9:8, 48:45, 52:51, 54:55), is 104,4, hence the situation is essentially the same. (As related to the material of the cemetery at Kérpuszta (XI c.), our material is more homogeneous,since the S R means of Kérpuszta are 116,9 and 117,7, respectively.)

Comparative analysis

The comparisons of only the male series were made, on the basis of mean values. I had to calculate some necessary mean values myself (thus for Mohács-Csele, Devin, and Dolny-Jatov), since the respective authors had not published them.

I have examined the materials of some regions, originating from the Árpád Age

and the late Middle Ages, respectively, and drawn them into comparison with our material (cf. Table 6).

1. The Great Plains: Orosháza, X-XII c. (LIPTÁK, 1962); Zenta-Paphalom, X c. (BARTUCZ-FARKAS, 1957).

2. Transdanubia: Sárbogárd, X c. (ÉRY, 1967); Veszprém, X-XI c. (ACSÁDI-NEMESKÉRI, 1957); Kérpuszta, XI c. (LIPTÁK, 1953); Fonyód, XI-XV c. (DEZSŐ et al); Mohács-Csele, XIV-XV c. (NEMESKÉRI-DEÁK).

3. The Small Plains: Mlynarce, X XI c. (MALA, 1960); Devin, XI-XII c. (FRANKENBERGER, 1935); Dolny-Jatov, XI-XII . (FRANKENBERGER, 1935).

4. Germany, Switzerland: Middle a i Late Medieval group, X-XV c. (HUG, 1940).

In order to evaluate similarities on the basis of exact numerical data, I have calculated the absolute Martin measurements 1,8,9,17,45,48, the indices 8:1, 17:1, 17:8, 9:8, 48:45, 52:51, 54:55, thus the per cent deviations referring to the mean values of a total of thirteen anthropo- and biometrical data. Unfortunately, owing to the small number of the published absolute measurements and indices of the materials deriving from the Small Plains and Germany-Switzerland, I could draw in but few such anthropometric data into the comparison. Even so, some data are still missing, mainly with respect to the German-Swiss material; in such cases, I have substituted the mean deviation for the per cent deviation of the lacking measurement or index mean value.

In Table 7, the second column shows the absolute sum of these percental deviations, the third column their squared sum. Columne four and five contain the order of sequence of similarity inferable from the size of these sums. Sequence was calculated also by the mean value of these sums, and also by a comparative calculating method discussed in detail in a previous paper (BOTTYÁN, 1967). The sequence of these two latter processes fell between the two sequences given in the table. Since the order of sequences given in the Table differ but slightly from one another, I deem it unnecessary to discuss the problem any further. The correctness of the applied method, disputable from mathematical and anthropological points of view, was discussed in detail in my paper cited above.

As regards similarity, our material stands nearest to that from Kérpuszta. In the second place, Zenta-Paphalom and HUG's published German and Swiss materials show similarities. The series from Fonyód and Veszprém are the most removed ones from our material.

The similarity with Kérpuszta on a taxonomic[illegible] basis (the conformity as to homogeneity was given at and of the preceding chapter) is understandable because there, too, the gracile Mediterranean and the Cro-Magnoide A and B types predominate (LIPTÁK, 1953), just as in the Sopronbánfalva series treated here. The greatest length and width of the skull, the smallest breadth of the forehead, the basion-bregma height, the height of the upper face, the measurements of the orbita and the nose, and their respective indices stand near the mean values of Kérpuszta. The facial width differs strongly, since the male skulls of our material have narrower faces.

The similarity is somewhat less with the anthropological material of Zenta-Paphalom. They also have wider faces and their orbita are lower. The majority of this material is East Baltic, Mediterranean, Nordoide, and Dinarian (BARTUCZ-FARKAS, 1957).

The comparison with HUG's published skulls is not entirely factual, since, as

was mentioned above, HUG's data are rather incomplete (HUG, 1940) from this view. The material found at Lindau, Bavaria, is the one nearest to Hungary. The rather small number of 50 skulls found in 12 localities warns against the drawing of far-reaching inferences. The material originates from a rather extensive area:combined from 12 localities south of the upper reaches of the Danube and the middle reaches of the Rhine.

With regard to the series from the Small Plains, West Hungary and Czechoslovakia, the comparatively greatest similarity is to be found in the material deriving from Devin. Also, this locality is the nearest to Sopron. Nordic, Eastern Baltic, and Dinarian elements predominate in the population of Devin (FRANKENBERGER, 1935). The other two sites from the Small Plains differ in considerably more characteristics from our material.

The first subgroup of the material from Fonyód, originating equally from the eleventh to fifteenth centuries A.D., comprises Nordoide, Mediterranean, and Dinarian elements (50%), the second subgroup shows the preponderance of Europo-brachycranial and Pamiro-Ferghanian elements. This population is highly heterogeneous (DEZSŐ et al.). Owing to the great number of Mongoloide elements, this series completely differs from our material.

The brachycranial skulls found at Veszprém (ACSÁDI-NEMESKÉRI, 1957) are also far removed from the Sopronbánfalva series.

A comparison by mean values may,of course,be also misleading, especially in a case involving a meagre amount of material, since these numerical data fail to characterize satisfactorily the facial treats and indicate rather similarities in the cranial structure. Unfortunately, no meritorious comparisons could be made in want of comparative data. This is also one of the reasons in making only prudent statements in the determination of ethnic relationships.

Concerning the population in the eleventh century of Sopron and its neighbourhood, I. KNIEZSA published some data with respect to the history of settling, based on historical, linguistic, and archeological investigations. According to our famous linguist, there lived Frankonians, Bavarians, and Slavs in the Sopron area before the Magyar Conquest. This movement obstructed any further Germanic expansion, indeed, they have fled or perished; in any case, the German population contemporaneous with the Great Migration disappeared in contrast with the Slavs who, inhabiting the fringes of mountains and the valleys, remained there. A survival during the Avar Age can also be assumed in these localities. The Germans, living now in and around Sopron, descend from settlers in the twelfth and thirteenth centuries. The population of the lake Fertő-area became mixed with also Türk (Besenyő) elements (KNIEZSA, 1938).

In fact, the intermingling of all these elements played their role in the evolvement of the population at Sopronbánfalva. It is probably indisputable that the majority of the inhabitants represented a Mediterranoide population of low stature and gracile bones, - as far as inferable from the small number of available data. And correspondingly, the presence of Mongoloide components must also have been extremely slight in the Sopron area.

Evaluation and comparison of the skeletal bones

In working up the skeletal bones, I measured only the so-called long bones since, owing to their strongly fragmentary state, no other bones could be adequately assessed. The skeletal bones of merely 15 males and 3 females were suitable for analysis.

I was compelled to use different approaches in working up the male and female skeletons because while I considered the values of only those bones in the males which allowed measurements in pairs (right and left sides) - and thus calculated the means and variations on the basis of these values - but having a considerably smaller amount of data available in the female series, I examined separately and individually the long bones of both the right and left sides. Accordingly, the mean values of the females appear slightly distorted in the course of evaluation.

The interpretation of the male series, according to the means of the indices, is as follows (Table 8):

The right side mean value of the 7:1 length-width index of the humerus is 20,6, that of the left side 20,4; they indicate a medium strong robusticity. The robusticity index of the femur is weak for both the right and the left sides, therefore there is no pilaster as its value is below 100. Similarly, the platymery index is eurymeric, medium round, implying small muscular strength. This index is the most suitable to demonstrate sexual dimorphism, because the femoral bone of the females is considerably flatter than that of the males. The cnemic index 9/a:8/a is, according to the grading given by MANOUVRIE and VERNAU, strongly round (eurycnemic).

The measurements of the female long bones are presented without evaluation, owing to the small number of cases, in the corresponding Table (Table 8).

No examination according to the „sigma ratio" method was made, because HOWELLS had not published any „mean sigma" values for the long bones.

As regards asymmetry in the long bones of the males, inferences should be made rather prudently (owing to the small number - fifteen pairs in the average - of the cases), yet it can be stated that the right side lower arms are generally longer and more robust than the left side ones; similarly, the right side femora are longer and stronger than those of the left side. Both asymmetries are natural, since manual work is more exerting on the right arm and, accordingly, weight during work falls on the right leg.

By the application of WOLANSKI's nomogram, the stature of 25 males and 8 females could be calculated from the measurements of the long bones. The 164,7 cm body height of the males is a medium value, with a variation of 6,53 cm; the stature of 156,8 cm of the females is large medium, with a variation of 7,70 cm. (Height assessed according to MARTIN's categories.)

The S R value of stature in the males is 112,1, in the females 132,8. These values refer to a definite heterogeneity. (It should not be forgotten that the S R size of the females is based on HOWELLS's „mean sigma" value for the males, hence the actual rate of heterogeneity in the females is greater than 132,8.)

The comparison of the long bones was made on the basis of only the male data. Of the series from the Árpád Age suitable for comparison only some few materials have been evaluated in detail with respect to the long bones. Among the series compared, the evaulation of the right and left extremities is available of a single

anthropological series, namely that of Sárbogárd. The radio-humeral (dolichokerky) index for both the left and right long bones, and the cnemic index (eurycnemic), agree in both the Sárbogárd and Sopronbánfalva series. The other measurements and indices are different. The humeri of the Sárbogárd material are longer, their circumference greater, the pilaster of the femora stronger and more muscular. According to the platymeric indices, the femora are flatter. The examined male group of Sárbogárd is taller than that of Sopronbánfalva.

In want of a suitable method, comparison as to heterogeneity was made by a comparison of the standard mean deviations. The vaules are 6,04 for Sárbogárd and 13,94 for Sopronbánfalva, indicating a high rate of heterogeneity in the the Sopronbánfalva series as related to the Sárbogárd material.

The material of Mohács-Csele yields only mean values and no deviations, hence a short comparison could be made only on the basis of the mean values. In this connection, the fact should be emphasized that, according to the value of the radio-humeral index, the lower arm is shorter in relation to the upper arm: a case exactly opposite to that found in the Sopronbánfalva series. The femora originating from Mohács-Csele are more robust, hence the males from Mohács-Csele are stronger and more muscular than the gracile males from Sopronbánfalva.

With respect to the other series originating from the Árpád Age, the authors of the Fonyód series published very few data referring to the long bones, hence no meritorious comparison can be made.

Summary

The relevant and significant remarks concerning the material may be summarized in three points.

1. Owing to lack of identification of the archeological findings, the material, deriving from a very extensive period (XI-XV c.), can be discussed only collectively.

2. Of the material of the excavated 41 graves, 29 skeletons are male. Accordingly, only the male series was evaluated.

3. Owing to the small number of female skeletons, it seems justified to assume that the females have been interred on the other side of the church, where the presence of houses prohibits any further excavations.

With regard to the examined material, the following inferences can be made:

1. The material is homogeneous on the basis of the primary taxonomic characters. Only Europoide elements are represented. Concerning the secondary characters, however, the series is slightly heterogeneous and can be separated into two subgroups:

a. Cro-Magnoide B and Mediterranoide in the majority;

b. Cro-Magnoide A and Nordic in a smaller percentage.

2. Comparisons on the basis of mean values imply that the findings deriving from cemeteries in the eleventh century at Kérpuszta, at Zenta-Paphalom, and from those in the tenth to fifteenth centuries in Germany and Switzerland, stand the nearest to our material.

3. Owing to the small amount of the material, no inferences should be made as to ethnic relegation.

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Table I.

The state of preservation

	Measurable			Immeasurable				
	♂	♀	Inf. Juv.	♂	♀	Inf. Juv.	N	%
Skeleton	10	2	-	1	-	1	14	34,0
Skull	3	-	1	1	-	2	7	17,0
Extremities	13	6	-	1	-	-	20	49,0
Total	26	8	1	3	-	3	41	100

Table II.

Distribution of the Population at Sopronbánfalva according to Age and Sex

Age Limit	♂		♀		Infans Juvenil		Total	
	N	%	N	%	N	%	N	%
Infans I. 0-6,9	-	-	-	-	1	25	1	2,4
Infans II. 7-14,9	-	-	-	-	1	25	1	2,4
Juvenil 15-21,9	-	-	-	-	2	50	2	4,9
Adult 22-39,9	14	48,3	3	37,5	-	-	17	41,5
Mature 40-59,9	10	34,5	5	62,5	-	-	15	36,6
Senil 60-x	2	6,9	-	-	-	-	2	4,9
Of undefined age	3	10,3	-	-	-	-	3	7,3
Total	29	100	8	100	4	100	41	100

Table III.

Statistical values of metric data

Males

Measurements		N	Min.-Max.	Var interv.	M	s
1	Glabello-occipital length	12	173-197	24	184,0	7,29
5	Basion-nasion length	5	96-105	9	101,0	3,61
8	Maximum breadth of cranium	13	133-150	17	142,7	5,84
9	Minimum frontal diameter	13	92-109	17	98,2	4,95
10	Maximum frontal diameter	12	111-130	19	121,4	5,41
12	Bi-asterial diameter	8	105-125	20	113,6	7,62
17	Basion-bregma height	5	130-140	10	133,4	4,22
40	Basion-prosthion length	4	94-105	11	99,2	6,08
45	Bizygomatic breadth	6	121-138	17	129,3	5,71
47	Total facial height	4	106-118	12	113,0	5,10
48	Upper facial breadth	10	63-74	11	69,1	3,76
51	Orbital breadth (mf-ek)	12	35-44	9	40,4	2,43
51/a	Orbital width (d-ek)	10	36-40	4	38,0	1,76
52	Orbital height	12	31-40	9	34,3	2,96
54	Nasal breadth	10	21-27	6	24,6	1,84
55	Nasal height	9	47-57	10	50,5	3,85
60	Maxillo-alveolar length	6	52-60	8	55,2	3,06
61	Maxillo-alveolar breadth	6	60-66	6	62,2	2,04
62	Palatal length	4	43-50	7	46,8	3,30
63	Palatal breadth	5	39-44	5	42,6	2,07
64	Palatal height	6	8-17	9	12,2	3,19
65	Bicondylar diameter	5	120-125	5	123,2	2,49
66	Bigonial diameter	7	84-112	28	100,7	8,88
68	Mandibular length (from go)	8	65-84	29	73,8	6,34
70	Ramus height	7	59-74	15	66,4	4,58
32	Frontal angle (nas-met)	9	70-90	20	81,1	11,47
-	Frontal angle (gl-met)	9	60-85	25	71,1	7,76
72	Total facial angle	8	73-90	17	77,5	3,02
73	Medium facial angle	8	75-85	10	77,1	2,17
74	Alveolar angle	7	60-95	35	73,6	9,78
75	Nasal profil angle	7	35-52	17	46,7	7,23
75/1	Nasalspine angle	7	23-39	16	31,1	6,28

Table IV.

Females

1	Glabello-occipital length	3	162-187	25	177,3	13,42
5	Basion-nasion length	1	88	-	-	-
8	Maximum breadth of cranium	3	135-140	5	137,3	2,52
9	Minimum frontal diameter	2	87-100	13	93,5	9,19
10	Maximum frontal diameter	2	110-117	7	118,5	9,19
12	Bi-asterial diameter	2	112-125	13	113,5	4,95
17	Basion-bregma height	1	-	-	120,0	-
40	Basion-prosthion length	1	-	-	83,0	-
45	Bizygomatic breadth	1	-	-	120,0	-
48	Upper facial breadth	1	-	-	71,0	-
51	Orbital breadth (mf-ek)	2	36-42	6	39	4,24
51/a	Orbital width (d-ek)	1	-	-	33	-
52	Orbital height	2	34-34	-	34	0
54	Nasal breadth	2	22-24	2	23	1,41
55	Nasal height	2	45-50	5	47,5	3,54
68	Mandibular length (from go)	1	-	-	68,0	-
70	Ramus height	1	-	-	50,0	-
32	Frontal angle (nas-met)	2	82-89	7	85,5	4,95
-	Frontal angle (gl-met)	2	78,0	-	78,0	0
72	Total facial angle	2	78-80	2	79,0	1,41
73	Medium facial angle	2	80,0	-	80,0	0
74	Alveolar angle	2	80-90	10	85,0	7,07
75	Nasal profil angle	2	46-50	4	48,0	2,83
75/1	Nasalspine angle	2	30-32	2	31,0	1,41

Table V.

Statistical values of metric data

Males

Indices (Martin)	N	Min.-Max.	Var. interv.	M	s
8:1	11	70,3-83,3	13,0	77,6	4,20
17:1	5	68,4-76,3	7,9	72,7	3,15
17:8	4	92,9-96,6	3,7	94,7	4,61
9:8	12	64,7-75,2	10,5	68,7	2,94
48:45	6	48,5-54,3	5,8	51,6	3,15
52:51	12	70,4-95,2	24,8	83,7	7,72
52:51/a	10	77,5-100	22,5	88,8	7,11
54:55	9	36,8-56,3	19,5	49,3	5,96
68:65	4	56,0-69,4	13,4	63,6	5,58
61:60	6	101,6-119,2	17,6	112,9	6,95
63:62	4	78,0-102,3	24,3	89,4	11,47

Females

8:1	3	72,2-84,6	12,4	77,8	6,30
17:1	1	-	-	74,1	-
17:8	1	-	-	87,6	-
9:8	2	64,0-71,4	7,4	67,7	5,23
48:45	1	-	-	45,8	-
52:51	2	81,0-94,4	13,4	87,7	9,48
52:51/a	1	-	-	97,3	-
54:55	2	48,0-48,9	0,9	48,5	0,40
68:65	-	-	-	-	-
61:60	-	-	-	-	-
63:62	-	-	-	-	-

Table VI.

Some comparative data

Martin	Sopron-Bánfalva (Bottyán, 1967)		Kérpuszta (Lipták, 1953)		Sárbogárd (Éry, 1967)		Fonyód (Dezső et. al., 1963)		Veszprém (Acsádi-Nemeskéri, 1957)		Mohács-csele (Nemeskéri-Deák, 1956)	
1	180,0	12	183,4	84	180,0	17	173,3	27	171,1	19	185,4	18
8	142,7	13	142,6	84	142,1	19	146,9	28	146,5	19	143,9	18
9	98,2	13	99,0	76	96,7	16	98,4	37	-	-	96,9	22
17	133,4	5	135,1	74	135,2	14	135,1	14	135,5	18	136,8	16
45	129,3	6	133,7	72	133,6	10	136,8	14	134,8	17	125,0	16
48	63,1	10	69,3	70	68,0	11	69,8	26	69,1	18	66,0	19
72	77,5	8	86,7	51	84,6	13	-	-	-	-	-	-
8:1	77,6	11	77,9	83	78,8	17	83,3	24	82,9	9	80,1	18
17:1	72,7	5	74,4	72	75,1	13	77,6	14	76,3	18	76,0	17
17:8	94,7	4	95,6	75	96,1	14	93,2	13	92,9	18	96,3	18
9:8	68,7	12	69,7	79	68,6	14	67,0	28	66,5	18	66,3	20
48:45	51,6	6	52,3	62	51,3	9	51,4	13	52,6	17	53,2	14
52:51	83,7	12	83,2	63	76,5	14	79,3	27	78,2	18	7[illegible],6	19
54:55	49,3	9	49,9	70	51,3	12	50,0	28	47,1	17	5[illegible],2	18
Stature	164,7	25	164,8	104	166,5	21	167,3	46	-	-	166,9	22

(Continuation)

Martin	Orosháza (Lipták, 1962)		Zenta-Paphalom (Bartucz-Farkas, 1957)		Devin (Franken-berger, 1935)		Dolny-Jatov (Franken-berger, 1935)		Mlynarce (Mala, 1960)		X-XV Hoch und Spät-mittel-alters (Hug, 1940)	
1	185,8	87	179,5	48	180,6	76	185,8	44	186,0	20	184,8	50
8	137,7	85	140,7	42	145,1	71	140,3	44	138,0	20	144,2	50
9	95,6	79	95,8	49	97,7	70	96,3	43	-	-	97,1	31
17	133,9	56	133,0	21	134,2	71	134,3	38	134,0	11	131,9	35
45	130,6	48	133,3	29	133,6	58	133,2	33	127,0	15	-	-
48	72,2	70	70,1	39	69,3	61	70,6	38	-	-	-	-
72	83,6	42	84,1	37	-	-	-	-	-	-	-	-
8:1	74,3	81	77,8	40	80,5	71	75,5	44	74,2	18	78,2	50
17:1	72,2	47	73,9	21	73,9	71	72,4	38	72,4	11	72,2	34
17:8	97,7	50	94,6	20	92,6	71	95,7	38	97,9	18	92,0	34
9:8	69,9	76	68,8	40	67,4	70	68,8	43	70,0	17	66,6	31
48:45	55,7	48	52,4	25	52,3	58	53,2	32	55,1	15	-	-
52:51	83,3	69	81,6	39	80,0	63	79,5	39	79,5	17	-	-
54:55	49,3	63	48,5	36	49,5	57	50,5	35	46,9	16	48,2	14
Stature	166,8	15	165,3	54	-	-	-	-	164,2	23	-	-

Table VII.

Comparison of cranial measurements

Localities	$\Sigma\Delta$	$\Sigma\Delta^2$	In Order	
Kérpuszta (Lipták, 1953)	15	29	1	1
Zenta-Paphalom (Bartucz-Farkas, 1957)	18	38	2	3
X-XV. Hoch und Spätmittelalters (Hug, 1940)	20	35	3	2
Devin (Frankenberger, 1935)	23	63	4	4
Dolny-Jatov (Frankenberger, 1935)	26	75	5	5
Sárbogárd (Éry, 1967)	31	130	6-7	6
Orosháza (Lipták, 1962)	31	134	6-7	7
Mlynarce (Mala, 1960)	39	165	8	9
Mohács-Csele (Nemeskéri-Deák, 1956)	40	152	9	8
Fonyód (Dezső et al., 1963)	42	227	10	10
Veszprém (Acsádi-Nemeskéri, 1957)	50	253	11	11

Table VIII.

The measurements and indices of the long bones

Males Females

Martin No	Right			Left			Right			Left		
	N	M	s	N	M	s	N	M	s	N	M	s
H. 1	7	313,9	22,2	7	317,4	22,1	3	300,7	29,7	3	315,3	21,8
H. 2	7	309,0	22,0	7	312,1	22,6	3	296,0	29,6	3	312,0	23,1
H. 7	7	64,4	19,4	7	64,3	19,9	3	59,3	6,03	3	60,3	5,76
R. 1	7	248,1	20,8	7	242,3	21,9	3	228,7	26,7	1	220,0	-
U. 1	6	267,5	21,2	6	265,5	21,8	1	243,0	-	1	238,0	-
F. 1	15	451,4	38,8	15	451,1	37,6	3	408,7	14,8	2	410,0	18,1
F. 2	14	446,9	40,1	14	446,5	38,7	3	405,3	15,3	2	405,5	17,7
F. 6	15	27,3	2,93	15	27,3	2,93	3	25,3	0,82	2	25,0	0
F. 7	15	27,5	2,29	15	27,9	2,84	3	24,3	2,08	2	24,0	0
F. 9	15	32,7	2,96	15	32,9	2,92	3	30,7	4,51	2	29,5	0,70
F. 10	15	26,9	2,39	15	27,1	2,12	3	22,7	1,15	2	22,0	1,41
T. 1	9	366,6	34,4	9	365,1	32,0	3	334,0	3,84	3	329,3	21,1
8/a	9	32,1	4,08	9	31,7	3,06	3	29,0	1,73	3	26,7	1,53
9/a	9	23,9	3,06	9	23,0	2,12	3	22,3	3,06	3	19,7	0,57
7:1	7	20,6	1,06	7	20,4	1,32	1	15,0	-	3	17,9	2,46
-	6	80,0	4,31	6	79,6	5,57	2	79,1	1,70	1	73,4	-
6:7	15	99,0	12,7	15	97,9	10,23	3	104,5	7,79	2	100,05	5,73
10:9	14	83,1	7,09	14	82,4	8,50	3	74,6	6,65	2	76,2	8,77
9/a:8/a	9	74,5	5,35	9	72,8	5,22	3	76,7	6,87	3	72,7	6,41

Table IX.

Sopronbánfalva:

Measurements		Male skulls							
		4750 b/1 grave	4751 2 grave	4753 4 grave	4754 5 grave	4757 8 grave	4760 12 grave	4762 14 grave	4769 21 grave
1	Glabello-occipital length	178	192	-	-	190	173	190	182
5	Basion-nasion length	-	-	-	-	-	96	100	100
8	Maximum breadth of cranium	140	135	140	-	150	140	136	154?
9	Minimum frontal diameter	-	95	94	98	97	92	98	107
10	Maximum frontal diameter	-	117	120	-	125	117	120	135
12	Bi-asterial diameter	125	-	-	-	-	110	110	122
17	Basion-bregma height	-	-	-	-	-	130	130	132
40	Basion-prosthion length	-	-	-	-	-	94	104	105
45	Bizygomatic breadth	-	-	125?	-	-	128	129	135?
47	Total facial height	-	-	118	-	-	115	-	-
48	Upper facial breadth	-	72	70	60	-	63	70	74
51	Orbital breadth (mf-ek)	-	37	35	40	-	40	41	41
51/a	Orbital width (d-ek)	-	-	-	36	-	36	39	39
52	Orbital height	-	40	32	31	-	35	35	39
54	Nasal breadth	-	21	-	25	-	24	22	25
55	Nasal height	-	57	51?	47	-	49	50?	51
60	Maxillo-alveolar length	-	-	53	-	-	52	60	57
61	Maxillo-alveolar breadth	-	-	62	-	-	62	61	66
62	Palatal length	-	-	-	-	-	43	50	49
63	Palatal breadth	-	-	43	-	-	44	39	44
64	Palatal height	-	-	11	-	-	17	14	13
65	Bicondylar diameter	-	-	-	-	125	120	-	-
66	Bigonial diameter	-	103	-	-	98	100	-	-
68	Mandibular length (from go)	-	70	70	-	-	78	-	-
70	Ramus height	-	68	64	-	-	68	-	-
32	Frontal angle (nas-met)	-	-	-	-	-	78	80	90
-	Frontal angle (gl-met)	-	-	-	-	-	65	75	72
72	Total facial angle	-	-	-	-	-	75	74	78
73	Medium facial angle	-	-	-	-	-	80	76	75
74	Alveolar angle	-	-	-	-	-	75	60	72
75	Nasal profil angle	-	-	-	-	-	52	35	-
75/1	Nasalspine angle	-	-	-	-	-	23	39	-

Table IX.

(Continuation)

Martin No	Male skulls							Female skulls			Juvenil
	4770 22 grave	4771 23 grave	4773 25 grave	4774 26 grave	4775 27 grave	4779 33 grave	5762 24 grave	4750 a/1 grave	4759 10 grave	4772 24 grave	4782 35 grave
1	177	197	190	180	195?	182	177	162	183	187	176
5	-	105	-	-	-	-	104	88	-	-	100
8	133	145	150	150	146	146	144	137	140	135	142
9	90	109	100	100	-	103	98	87	100	-	99
10	111	126	120	130	-	127	122	112	125	-	121
12	106	120	-	-	-	105	111	117	110	-	120
17	-	140	-	-	-	-	135	120	-	-	145
40	-	-	-	-	-	-	94	83	-	-	85
45	121	132?	138	130	-	-	134	120	-	-	-
47	106	-	113	-	-	-	-	-	-	-	-
48	68	70?	68	63	-	73	70	-	71	-	64
51	40	42	44	41	-	43	41	36	42	-	39
51/a	35	38	40	39	-	40	38	34	-	-	37
52	35	34	31	31	-	35	33	33	34	-	34
54	27	-	25	26	-	25	26	22	24	-	23
55	48	-	49	47	-	56	54	45	50	-	48
60	-	-	56	53	-	-	-	-	-	-	-
61	-	-	60	62	-	-	-	-	-	-	-
62	-	-	-	45	-	-	-	-	-	-	-
63	-	-	-	43	-	-	-	-	-	-	-
64	-	-	10	8	-	-	-	-	-	-	-
65	-	121	125	-	-	125	-	-	-	-	-
66	84	112	100	-	-	108	-	-	-	-	85
68	65	84	80	73	-	70	-	68	-	-	62
70	59	87	74	-	-	65	-	50	-	-	50
32	85	80	70	83	-	73	85	82	89	-	90
-	85	70	60	75	-	63	75	78	78	-	85
72	80	-	73	80	-	80	80	80	78	-	90
73	78	-	75	75	-	80	78	80	80	-	85
74	73	-	65	80	-	82?	95	90	80	-	93
75	57	-	40	48	-	47	48	50	46	-	-
75/1	23	-	33	30	-	33	37	30	32	-	-

Table X.

Measurements		Male skulls							
		4750 b/1 grave	4751 2 grave	4753 4 grave	4754 5 grave	4757 8 grave	4760 12 grave	4762 14 grave	4769 21 grave
8:1	Cranial index	78,7	70,3	-	-	79,0	81,0	71,6	84,6?
17:1	Length-height index	-	-	-	-	-	75,1	68,4	72,5
17:8	Breadth-height index	-	-	-	-	-	92,8	95,6	85,7?
9:8	Transverse frontop.index	-	70,4	67,1	-	64,7	65,7	71,2	69,5
48:45	Upper facial index	-	-	56,0	-	-	49,2	54,3	54,8?
52:51	Orbital index	-	93,0	94,4	77,5	-	87,5	85,4	95,2
52a:51	Orbital index	-	-	-	86,1	-	97,2	89,7	100,0
54:55	Nasal index	-	36,8	-	53,2	-	49,0	44,0?	49,0
61:60	Maxillo-alveolar index	-	-	116,9	-	-	119,2	101,6	115,8
63:62	Gaumen index	-	-	-	-	-	102,3	78,0	81,6

Morphological Table+:

1.	Norma verticalis	-	O.	R.	-	O.	R.	O.	Sphr.
2.	Glabella	I.	II.	I.	II.	III.	II.	I.	II.
3.	Norma occipitalis	-	Curv.	-	-	Curv.	Plan.	Bath.	Curv.
4.	Fossa canina	-	2	-	3	-	3	3	1
5.	Apertura piriformis	-	4	2	4	-	3	3	2
6.	Spina nasalis anterior	-	3	-	2	-	-	-	-
7.	Alveolare	-	-	P	U	-	P	P	U
8.	Abrasio	-	2	1	3	3	2	2	0

+ 1. Norma verticalis (Sergi): O. = ovoid, R. = romboid, Sphr. = sphaeroid, Sphn. = sphenoid
2. Glabella (Broca): I. - II. - III. - IV. - V.
3. Norma occipitalis: Curvoccipital, - Planoccipital, - Bathrocran
4. Fossa canina: 1 - 2 - 3 - 4 - 5
5. Apertura piriformis (Hovorka): infantil: 1, fossa praenasalis: 2, sulcus praenasalis: 3, anthropin: 4
6. Spina nasalis anterior (Broca): 1 - 2 - 3 - 4 - 5
7. Alveolare (Olivier): E = ellipsoid, P = paraboid, U = Uform
8. Abrasio (Körber): 0 - 1 - 2 - 3 - 4 - 5.

Table X.

(Continuation)

Martin No	Male skulls							Female skulls			Juvenil
	4770 22 grave	4771 23 grave	4773 25 grave	4774 26 grave	4775 27 grave	4779 33 grave	5762 24 grave	4750 a/1 grave	4759 10 grave	4772 24 grave	4782 35 grave
8:1	75,1	73,6	79,0	83,3	74,9?	80,2	81,4	84,6	76,5	72,2	80,7
17:1	-	71,1	-	-	-	-	76,3	74,1	-	-	82,4
17:8	-	96,6	-	-	-	-	93,8	87,6	-	-	102,1
9:8	67,7	75,2	66,7	66,7	-	70,6	69,0	64,0	71,4	-	69,7
48:45	56,2	53,0?	49,3	48,5	-	-	52,2	45,8	-	-	-
52:51	82,5	81,0	70,4	75,6	-	81,4	80,5	94,4	81,0	-	87,8
52a:51	94,3	89,5	77,5	79,5	-	87,5	86,8	97,3	-	-	91,9
54:55	56,3	-	51,0	55,3	-	44,5	48,2	48,9	48,0	-	47,9
61:60	-	-	107,0	116,9	-	-	-	-	-	-	-
63:62	-	-	-	95,5	-	-	-	-	-	-	-

Morphological Table[+]:

1.	O.	O.	R.	R.	O.	R.	R.	R.	O.	Sphn.	R.
2.	I.	II.	III.	I.	I.	II.	I.	I.	II.	I.	I.
3.	Curv.	Curv.	Plan.	Plan.	Bath.	Curv.	Curv.	Plan.	Bath.	Curv.	Plan.
4.	3	4	2	1	-	2	1	3	4	2	0
5.	1	2	3	3	-	4	3	1	3	2	1
6.	2	-	3	-	-	-	3	-	3	-	3
7.	P	U	U	U	-	U	U	U	E	U	U
8.	2	3	3	-	3	2	-	2	2	0	0

[+] 1. Norma verticalis (Sergi): O. = ovoid, R. = romboid, Sphr. = sphaeroid, Sphn. = sphenoid
2. Glabella (Broca): I. - II. - III. - IV. - V.
3. Norma occipitalis: Curvoccipital, - Planoccipital, - Bathrocran
4. Fossa canina: 1 - 2 - 3 - 4 - 5
5. Apertura piriformis (Hovorka): infantil: 1, fossa praenasalis: 2, sulcus praenasalis: 3, anthropin: 4
6. Spina nasalis anterior (Broca): 1 - 2 - 3 - 4 - 5
7. Alveolare (Olivier): E = ellipsoid, P = paraboid, U = Uform
8. Abrasio (Körber): 0 - 1 - 2 - 3 - 4 - 5.

Table XI.

Skeletal Measurements: Males

Inv.Nr.		Humerus			Radius	Ulna	Femur						Tibia		
		1	2	7	1	1	1	2	6	7	9	10	1	8/a	9/a
4751	R	–	–	–	–	–	428	421	30	25	33	27	–	–	–
	L	–	–	–	–	–	433	428	30	28	33	26	353	34	27
4752	R	–	–	–	–	–	497	495	33	28	38	28	417	35	27
	L	–	–	–	–	–	504	500	30	30	38	29	411	34	23
4754	R	–	–	–	–	282	478	475	27	28	31	27	345	29	24
	L	–	–	–	257	282	478	475	27	27	32	28	342	29	23
4757	R	–	–	–	256	275	495	493	28	29	37	26	–	–	–
	L	357	346	67	251	268	492	485	27	28	35	26	–	–	–
4758	R	–	–	–	247	–	461	460	27	25	32	29	372	30	23
	L	–	–	–	243	264	459	455	29	26	36	30	372	31	33
4760	R	341	332	63	–	–	–	–	–	–	–	–	–	–	–
	L	–	–	–	–	278	–	–	–	–	–	–	–	–	–
4764	R	–	–	–	–	–	–	–	–	–	–	–	350	30	22
	L	–	–	–	234	–	448	440	26	28	35	24	–	–	–
4766	R	–	–	–	–	–	448	446	27	26	30	28	–	–	–
	L	–	–	–	–	–	449	447	25	25	28	26	–	–	–
4767	R	300	295	53	–	–	420	413	25	23	29	24	–	–	–
	L	–	–	–	220	–	420	413	25	23	34	25	–	–	–
4768	R	–	–	–	–	–	413	410	26	24	30	24	338	30	25
	L	295	290	55	–	–	–	–	–	–	–	–	–	–	–
4769	R	285	282	61	–	–	–	–	–	–	–	–	–	–	–
	L	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4770	R	292	288	58	220	240	415	410	23	28	30	24	353	29	19
	L	290	282	57	–	–	410	405	24	28	30	30	355	30	20
4771	R	344	337	70	–	–	–	–	–	–	–	–	395	37	26
	L	–	–	–	–	–	–	–	–	–	–	–	397	35	23
4773	R	320	315	63	–	271	458	450	27	29	29	24	–	–	–
	L	322	318	64	247	268	–	–	–	–	–	–	–	–	–
4774	R	–	–	–	–	–	475	472	25	30	34	30	372	34	25
	L	–	–	–	–	–	472	470	27	30	32	26	372	34	24
4775	R	–	–	–	260	–	–	–	–	–	–	–	390	33	25
	L	336	330	67	–	–	–	–	–	–	–	–	–	–	–
5080	R	340	338	67	270	–	490	485	29	31	36	29	–	–	–
	L	343	340	68	275	–	490	483	28	32	37	27	–	–	–
5759	R	332	325	70	258	–	–	–	–	–	–	–	–	–	–
	L	337	332	71	259	280	450	448	25	32	39	26	–	–	–
5761	R	291	284	64	232	255	424	422	25	26	30	25	335	31	25
	L	300	293	65	238	255	428	425	27	25	29	27	330	30	24
5762	R	–	–	–	232	–	460	457	29	28	32	30	–	–	–
	L	–	–	–	–	253	462	–	31	34	34	31	–	–	–
5763	R	–	–	–	204	223	372	370	26	30	31	23	305	29	20
	L	285	280	57	–	–	380	378	24	28	30	24	–	–	–
5764	R	290	285	56	210	230	408	406	24	26	31	24	310	26	19
	L	295	293	55	205	229	401	400	23	26	32	24	312	27	20
5766	R	–	–	–	–	–	414	412	28	29	34	31	–	–	–
	L	323	318	65	–	257	–	–	–	–	–	–	348	38	25
5767	R	348	342	64	–	–	–	–	–	–	–	–	–	–	–
	L	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5768	R	332	328	73	264	292	490	488	32	30	37	29	400	38	27
	L	335	327	75	269	291	488	487	33	29	34	28	395	35	27

Table XI.

(Continuation): Females

Inv.Nr.		Humerus			Radius	Ulna	Femur						Tibia		
		1	2	7	1	1	1	2	6	7	9	10	1	8/a	9/a
4750/a	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	L	322	320	62	–	–	–	–	–	–	–	–	–	–	–
4755	R	–	–	–	–	–	396	392	25	22	26	22	–	–	–
	L	–	–	–	–	–	397	393	25	24	29	23	340	28	19
4759	R	282	278	60	–	–	405	402	26	26	35	24	340	30	23
	L	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4763	R	335	330	65	257	–	–	–	–	–	–	–	–	–	–
	L	333	330	65	–	–	–	–	–	–	–	–	–	–	–
4772	R	–	–	–	–	–	–	–	–	–	–	–	342	27	19
	L	–	–	–	–	–	–	–	–	–	–	–	343	25	20
4780	R	–	–	–	–	–	–	–	–	–	–	–	320	30	25
	L	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5079	R	–	–	–	204	–	–	–	–	–	–	–	–	–	–
	L	–	–	–	–	–	–	–	–	–	–	–	305	27	19
5760	R	285	280	53	225	243	425	422	25	25	31	22	–	–	–
	L	291	286	54	220	238	423	418	25	24	30	21	–	–	–

Table XII.

Skeletal indices - Stature: Males

Inv.Nr.		7:1	Radio humeral	6:7	10:9	9/a:8/a	Stature
4751	R	-	-	120,0	81,8	-	162,7
	L	-	-	107,0	75,8	79,4	
4752	R	-	-	117,0	73,6	77,1	175,8
	L	-	-	100,0	76,3	67,6	
4754	R	-	-	99,9	87,0	82,8	166,2
	L	-	-	99,9	87,5	79,3	
4757	R	-	-	96,5	70,3	-	173,5
	L	18,7	72,2	99,9	74,2	-	
4758	R	-	-	108,0	90,6	76,6	167,0
	L	-	-	111,4	83,3	74,2	
4760	R	18,5	-	-	-	-	169,0
	L	-	-	-	-	-	
4764	R	-	-	-	-	73,3	163,6
	L	-	-	92,8	68,8	-	
4766	R	-	-	103,8	93,3	-	165,5
	L	-	-	100,0	89,5	-	
4767	R	17,7	-	108,5	85,8	-	158,0
	L	-	-	105,5	73,5	-	
4768	R	-	-	108,4	80,0	83,3	158,1
	L	18,9	-	-	-	-	
4769	R	21	-	-	-	-	153,0
	L	-	-	-	-	-	
4770	R	20,6	76,3	82,2	80,0	65,5	159,2
	L	19,7	-	85,6	100,0	66,6	
4771	R	20,4	-	-	-	70,2	171,6
	L	-	-	-	-	65,7	
4773	R	19,6	-	93,1	82,8	-	164,2
	L	19,7	78,0	-	-	-	
4774	R	-	-	83,3	88,2	73,5	169,3
	L	-	-	90,0	81,2	70,5	
4775	R	-	-	-	-	75,7	169,6
	L	19,9	-	-	-	-	
5080	R	19,7	79,6	93,5	80,5	-	172,6
	L	19,8	80,9	87,5	72,9	-	
5759	R	21,0	79,0	-	-	-	168,3
	L	21,0	78,0	78,0	66,6	-	
5761	R	21,9	81,6	96,2	83,3	80,6	159,5
	L	21,6	81,2	108,0	93,1	80,0	
5762	R	-	-	103,6	93,8	-	161,0
	L	-	-	91,2	91,2	-	
5763	R	-	86,7	74,2	69,0	-	153,0
	L	20,0	85,7	80,0	-	-	
5764	R	19,4	73,6	92,3	77,4	73,1	154,6
	L	18,6	69,9	88,5	75,0	74,1	
5766	R	-	-	96,6	91,2	-	161,6
	L	20,1	-	-	-	65,8	
5767	R	15,5	-	-	-	-	171,0
	L	-	-	-	-	-	
5768	R	21,9	80,5	106,7	78,4	71,7	170,2
	L	22,4	82,2	113,7	80,8	77,2	

Table XII.

(Continuation): Females

Inv.Nr.		7:1	Radio humeral	6:7	10:9	9/a:8/a	Stature
4750/a	R	-	-	-	-	-	160,0
	L	19,2	-	-	-	-	
4759	R	21,0?	-	100,0	68,5	76,6	151,3
	L	-	-	-	-	-	
4763	R	19,4?	77,9	-	-	-	163,0
	L	19,5	-	-	-	-	
4772	R	-	-	-	-	70,3	155,2
	L	-	-	-	-	80,0	
4755	R	-	-	113,5	84,5	-	153,0
	L	-	-	104,1	82,4	-	
4780	R	-	-	-	-	83,3	153,0
	L	-	-	-	-		
5079	R	-	-	-	-	-	146,2
	L	-	-	-	-	70,3	
5760	R	15,0	80,3	100,0	70,9	-	153,5
	L	15,1	73,4	96,0	70,0	-	

Sommaire:

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