ANTHROPOLOGIA HUNGARICA

HISTORICO-ANTHROPOLOGICAL STUDIES

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en collaboration avec la Section Anthropologique
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A SHORT ANTHROPOLOGICAL ANALYSIS OF THE FAMILY CEMETERY AT SOPRON-PRÉSHÁZTELEP IN THE IX C.A.D.

By

OLGA L. BOTTYÁN

The sporadic family burial was a rather common usage in the second half of the ninth century. A similar, small family cemetery was excavated by P. TOMKA, archeologist, Sopron, about 3 km east of the cemetery, comprising many hundreds of graves, at Sopronkőhida. According to TOMKA's opinion, the family cemetery seems to be rather closely connected, in regard of its archeological objects, with that at Sopronkőhida mentioned above. And by the kind oral communication of archeologist Dr.GY.TÖRÖK, the special burial usage observed in the Sopronkőhida cemetery was followed also here.

The family cemetery consists of merely eight graves, those of 3 males and 5 females; according to age: 2 infans, 1 juvenilis, 1 adultus, 4 maturus. From an anthropological point of view, the source value of the material is slight. The bones are rather fragmentary and incomplete; unfortunately, it was mainly the facial skeleton of the skulls which sustained injuries, so that only 4 of the 8 crania can be analysed, and that too only sketchily. The skeletal bones are also partly fragmentary; however, the stature of 6 out of the 8 individuals may still be evaluated. The findings are deposited in the Museum at Sopron.

Sex and age identifications were made according to the principles of the classical method, with due regard to all morphological characteristics.

The determinations were corroborated also by Dr. I. LENGYEL's biochemical examinations.[1] With respect to the determination of sex, the two methods gave completely identical results, whereas in that of age some differences were found in both positive and negative directions. In dubious cases, I accepted the classical anthropological age determinations.

General anthropological analysis

The skeletons of merely 4 adult individuals proved to be suitable for any detailed metrico-morphological examination. In my analysis of the absolute measurements and indices, I used P.ALEXEIEV - G.F.DEBETZ's (1964) categories;for the evaluation of the long bones I applied R.MARTIN's (1928) method. Stature was determined by N.WOLANSZKI's (1953) nomogram.

The characterization of the evaluable skulls is as follows:

Grave 2. Female, aged 30-40 years. Norma verticalis: ovoid, greatest cranial length: long; width: medium. Index: dolichocranial. Frontal profile: straight; occipital region: bathrocranial, lambdoid region: flat. Stature: high. Since the character complex necessary for type analysis is missing, the taxonomical assessment had to be dispensed with.

Grave 7. Female, aged 50-60 years. Skull: birsoid; long, wide, index: mesocranial. Temporal profile: straight, occipital region: plancoccipital. Nasal root flat, wide; orbita medium high, narrow, hypsiconch. Stature: medium. Owing to the missing facial data, also difficult to evaluate taxonomically; though planooccipitaly is one of the main characteristics of the Dinarid type within the Europoide great race, the medium stature and mesocrany contradicts this relegation.

Grave 9. Male, aged 50-60 years. Skull birsoid, long, wide,mesocranial, but at upper limit of dolichocrany. Temporal profile: retrogressive. A batrachocranial, flat lambdoid region. Orbita angular. Nasal root medium wide,nasal ridge straight. Small medium stature. The elongate skull (batrachocrany) and the straight nasal ridge are among the characteristics of the Protoeuropoids; the small medium stature precludes any nearer determination of type.

Grave 10. Female, aged 40-50 years. Skull ovoid, long, medium wide, dolichocranial. Temporal profile straight. Bathrocranial. Very low upper face, angular orbita, narrow but medium high orbita, hypsiconch. Nasal root flat and wide. Great medium stature. Taxonomically exhibiting a mixture of northern and Cromagnoid B types within the Europoide great race.

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[1] I am indepted to Dr. I.LENGYEL, physician, for the cession of the data of his biochemical investigations.

Type analysis. By the primary taxonomic features, the individuals of the family cemetery are Europoids. Although no analysis of the facial profile could be made owing to the fragmentary and incomplete facial bones, I found no data characteristic of the Mongoloide morphological features. As to the secondary characteristics, the material is rather mixed. In the majority of cases, long but medium wide crania prevail, and they are mostly dolichocranial. Bathrocrany is also characteristic of the skulls. The eyes are hypsiconch, the stature vary from small medium to high. In any case, the presence of northern and CroMagnoid B elements in the skeletal material of the family cemetery is a safe assumption. Incidentally, the comparative gracility of the entire osteological material is also observable.

Anatomical variations, pathological deformations. There are 8 ossa wormiana in the sutura lambdoidea of the individual in Grave 2. On the skulls found in Graves 7 and 10, a transverse depression occurs above the sutura coronalis at the level of the porion-porion; in my opinion it cannot unequivocally brought in connection with artificial deformations. A medium intense exostosis is discernible on the right and left femora of Grave 9.

Evaluation of the skeletal bones. Since also the skeletal bones are fragmentary, the determination of stature by the long bones is based on a single datum in two of the cases, on two data in three cases, and on three data in one case. All other measurement data could be taken only incompletely. The index of femoral platymery could be calculated in four skeletons. Sexual dimorphism is rather expressed there, insofar as the femur of Grave 2 is platymerous (79.8), that of Grave 4 eurymerous (89.4), that of Grave 10 platymerous (72.9). On the other hand, the male individual of Grave 9 had a very weak musculature, being platymerous with the value 81.8. The humeral and tibial indices could not be established owing to the incomplete data.

On the possibility of family relationships. Though, according to archeologist P. TOMKA, the findings originate from a family cemetery, the anthropological proof of relationship connections is highly doubtful. Still, some morphological characteristics reveal certain similarities. The skeleton of Grave 9 may, for example, be considered the remains of the "head of the family", since some features of the mature individual appear on the skeletons of the younger generation, e.g. the narrow and medium wide crania as well as bathrocrany. The mature female of Grave 7 might have been the „wife" of the male buried in Grave 9; some of her characteristic features reappear on their offspring: the hypsiconch eyes and the flat and wide nasal root. According to also the cemetery map, Graves 7 and 9 were lying alongside one another. (Oral communication of the excavating archeologist.) In the opinion of also the physician conducting the biochemical investigation, the mature individuals may have been the parents and the others their direct descendants.

The problem of ethnics

If the ethnic composition of the population in the Western Transdanubia of the ninth century be examined, the following constituting elements may be found to have survived in the Avar Period: Germanic, Bolgarian-Turkish, and Slavic. The ethnic elements participating in the composition of the anthropological picture, with respect to the small family cemetery deriving from the ninth century, also remain to be clarified.

If the problem is approached from a linguistic point of view,the names of localities and natural bodies of water imply that the Slavs formed a narrower layer in Upper Pannonia in the ninth century than in Lower Pannonia. It is also established that prior to the Hungarian Conquest, there lived Franks and Bavarians, aside of the few Slavs, in the neighbourhood of Sopron (KNIEZSA, 1938).

Historical investigations evince that the Transdanubian region west of the River Rába had had nearer connections with the Frankish Empire than with the Great Moravian one. The weapons found in the cemetery at Sopronkőhida from the ninth century emphasize the Frankonian strategic role of the settlement, while the rest of the archeological material refers to a mixed Avar - Slav - Frank population.The settlement had therefore probably belonged to the so-called Avar Province established by Charles the Great; also, the constituting population had to give military service (SÓS, 1967).

On the basis of the related archeological objects, the archeological and historical statements referring to the cemetery at Sopronkőhida can, in the present case, be applied also to the small family cemetery at Sopron.

Dr.J.NEMESKÉRI worked up anthropologically the cemetery at Sopronkőhida and has kindly allowed for publication the outlines of his anthropological evaluation. His findings can be summarized as follows. Three taxonomically delimited groups can be distinguished within the examined population: group A, representing 38 per cent of the population, broup B (40 per cent), resembling group A and differing only in the rate of gracility from group C.

„Groups A and B can, collectively, be regarded as varieties of the Mongoloide great race; they have, as a result of an isolating process, preserved the taxonomically characterizing features in a special form. The interrelationship of groups A and B is supported also by the comparative examination of the anatomical variations. Eight anatomical variations can be established within the groups A and B, corroborating genetical connections. The third group of the population may be assigned taxonomically to the variant CroMagnoid C within the Europoide great race... This group is characterized by different anatomical variations." According therefore to Dr. NEMESKÉRI's interpretation, 78 per cent of the great cemetery can be considered to represent a variety of the Mongoloide great race.

The features of the Mongoloide great race cannot be observed on the

Individual Data (Measurements and indices)

Martin No	Grave Number / Sex, Age	1 Female 20-30	2 Female 30-40	4 Male 18-20	6 Male 0-5	7 Female 50-60	8 Female 0-5	9 Male 50-60	10 Female 40-50
1.	(G-Op)	-	181	180	182	179	172	186	180
8.	(Eu-Eu)	-	136	120	130	140	125	148	138
45.	(Zy-Zy)	-	-	-	-	-	-	-	124
48.	(N-PR)	-	-	-	-	-	-	-	49
51.	(MF-EK)	-	-	-	-	38	-	-	38
52.	Orbital height	-	-	-	-	34	-	32	34
8:1	Lenght-breadth	-	75,4	66,7	71,4	78,2	72,7	79,6	76,1
48:45	Upper facial	-	-	-	-	-	-	-	39,5
52:51	Orbital	-	-	-	-	89,7	-	-	89,7
	Stature (cm)	154,6	161,8	152,5	-	153,2	-	163,6	156,8
Morphoscopic Data									
Norma verticalis		-	ovoid	ovoid	-	Birsoid	Birsoid	Birsoid	ovoid
Occipital region		-	Bathrocran	-	-	Planoocc.	Curvoocc.	Bathrocran	Bathrocran
Flattening in lambda region		-	Plain	-	-	-	-	Plain	Plain
Frontal profile		-	Straight	-	-	Straight	-	Retroflec.	Straight
Orbita		-	-	-	-	Rounded	-	Angular	Angular
Nasal aperture		-	-	-	-	-	-	Anthropin	-
Root of Nasal		-	-	-	-	Broad Plain	-	N. ridge Straight	Broad
Fossa canina		-	-	-	-	-	-	-	Shallow
Abrasio		1	3	-	-	3	-	3	3

skeletal remains of the small family cemetery analysed herein, hence the anthropological picture differs from that of the material in the cemetery at Sopronkőhida. On the primary taxonomical basis they are Europoids, by the secondary characteristics an assimilation of northern and CroMagnoid B elements can be inferred. The presence of the Nordic type may indicate the traces of a German ethnicum, while the CroMagnoid B type might be connected as well with the surviving authochthonous ethnicum of the Avar Period as with the western Slavic groups.

Though the present, rather small, anthropological material is in itself insufficient for an exact ethnic relegation, it might serve as a further datum to the findings and conclusions heretofore made by linguistics and archeology.

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ANTHROPOLOGICAL STUDIES ON A TENTH CENTURY POPULATION AT KÁL, HUNGARY

By

K. K. ÉRY

General data

The cemetery of the population studied was exposed at the outskirts called „Legelő" of the village Kál, Com. Heves, in 1966-67, by J.SZABÓ and B.KOVÁCS, of the István Dobó Museum, Eger (SZABÓ, 1967; SZABÓ et KOVÁCS, 1968). The eastern confines of the cemetery, about 60 m long in the N-S, and about 20 m wide in the E-W directions, had been destroyed, parallel with the longitudinal axis, by sand-pit works prior to the excavations. The number of annihilated graves, as estimated by J.SZABÓ,may have been no more than 25 in all. Besides some Prescythian and Sarmatian graves, the skeletal remains of 68 individuals have been observed, and the bones of 63 individuals collected, in the cemetery originating from the tenth century A.D. By this material, coupled with the destroyed portion, the cemetery may be considered completely excavated. The archeological and anthropological finds are deposited in the collections of the István Dobó Museum, Eger.

I am indebted to J.SZABÓ for all archeological informations facilitating the clarification of problems arisen during the working up of the osteological material,and to Dr.I.LENGYEL, who had very kindly made available his chemico-analytical, serological and histological examinations of the skeletal remains (LENGYEL-NEMESKÉRI, 1963; LENGYEL, 1964) as well as the results of his calculations.

The measurements of the osteological material were taken according to

MARTIN (1928). In classifying the measurements and indices, I followed ALEKSEYEV-DEBETZ (1964).Stature was calculated according to PEARSON (1899), by the use of WOLANSKI's (1953) nomogram.

Age was estimated for the adult findings (23 - x years) according to NEMESKÉRI-HARSÁNYI-ACSÁDI (1960), and, using ACSÁDI-NEMESKÉRI's corrections (in print), on the basis of four age indicators: the ossification of the endocranial sutures (O), the spongiosa and upper shaft of the humeral (H) and femoral (F) proximal epiphyses, 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 state of 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 - applying 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 adult skeleton.On the basis of chemical analysis, Dr. LENGYEL had also identified the sex of the various individuals; his results - with respect to those aged 15 - x years, - completely agree with my identifications, but, as a significant plus, he was also able to determine by his method the sex of also those aged merely 0-14 years.

Table 1 submits the representation values of the skeletal remains of the excavated individuals, as well as the individual data of the sex and age determinations.

The state of preservation of the excavated osteological material is comparatively good. The quantitative representation value of the adults (15 - x years) is 0.67 (ÉRY-KRALOVÁNSZKY-NEMESKÉRI, 1963), hence about 70 per cent of the skeletal bones survived. Their qualitative representation value is 0,49, that is, about half the amount of the surviving bones remained in a measurable condition.

Demographical characters

Table 2 contains the distribution per age group and sex of the excavated individuals, while the mortality characteristics of the population are given in the abridged life-table (Table 3).

For a more real evaluation of the age group distribution of the population at Kál,I have compared their per cent frequencies (Table 4) with the data of the model life table calculated from a great number of mortality age data referring to home series from the X-XII centuries (ACSÁDI, 1965). Despite the fact that about 25 per cent of the individuals buried in the cemetery had been annihilated during earthworks,- hence rendering it uncertain that the age group distribution of the surviving findings reflect

factual conditions - I still think that the prevailing circumstances,namely the exposed 75 per cent of the material, justifiably allow the evaluation of the available data - subject to some reservations.

The two columns of numbers of Table 4 call attention to the following characteristics.As well at Kál as at other cemeteries in Hungary,the number of age group Infans I. is low; however, this is not to be ascribed to any favourable mortality conditions, but to special burial customs. It is a frequent phenomenon in historical populations that unviable infants or a certain per cent of small children had not been buried in the cemetery of the community (SCHWIEDETZKY, 1965; ACSÁDI, 1965; ÉRY, 1967,1968). The per cent frequency of Infans II and Juvenile dead stands near the nationwide mean in the tenth-twelfth centuries, but, with respect to the Adultus age group, the situation is rather less favourable at Kál, even though the difference is not too expressed. However, the number of individuals belonging to the Maturus age group far exceeds the nationwide mean, with the concomitantly much lower number of those having reached the Senilis age group.

If the data of the last column in the life table, that is, the life-expectancy values in diverse ages,are now compared with the respective data referring to the corresponding ages in regard of the nationwide means; further inferences can be drawn (Table 5).

Owing to the significant amount of dead missing from the age group 0-4 years, the 34.9 years life-expectancy at birth cannot be considered real in the case of Kál. Since, according to the two columns of numbers of Table 5, mortality conditions at Kál could not have been more favourable than the means of the tenth-twelfth centuries, the life-expectancy at birth in Kál could probably not have been higher than the average 28.7 years for the Árpádian Age. If, as a test, a further amount of 16 children is added to the age group 0-4 years,the life-expectancy at birth would be 28.7 years therefore as much as the average in centuries X-XII.

By the inclusion of this further 16, mainly infant dead - not buried in the cemetery but presumably having belonged to the community - the 40-60 per cent infant-adult ratio, to be expected by the patterns of centuries X-XII, might become more real also at Kál,instead of the present unreal 26-74 per cent ratio (ACSÁDI, 1965).

A study of the two columns of numbers of Table 5 also reveals that at Kál the mortality conditions about 25 years of age begin to deteriorate as related to the model data. According to the numerical data, life-expectancies per age of the adult population at Kál was lower by an average 2.5 years than the nationwide means.

As far as the mortality conditions of the two sexes are concerned, the population at Kál again shows a peculiar picture. Whilst, namely, the mortality of women in historical populations is generally more unfavourable than that of the men (ACSÁDI-NEMESKÉRI, 1957; ACSÁDI-NEMESKÉRI-HARSÁNYI, 1959; ACSÁDI-HARSÁNYI-NEMESKÉRI, 1962; ACSÁDI, 1965) - mainly owing to the

high frequency of deaths occurring during maternity - a reverse phenomenon can be ovserved at Kál. Twenty years old men had a life-expectancy of a further 25.1 years, whereas women of the same age had 29.1 years. The unusual in the case of Kál is that the life-expectancies of the females are more favourable in the very years most influenced by reproduction, namely between 15 and 35 years of age. If, however, the nationwide life-expectancy mean falling between 15-35 years of age,though containing the combined data of both sexes, is compared with the male and female life-expectancy data of the same age group at Kál,the favourable female life-expectancy is at least as conspicuous as the unfavourable one of the young males, primarily those 20-30 years old. Although the annihilated 25 per cent of the buried individuals in the cemetery decreases the demographic value of the respective data, it were not justified to ascribe the observed mortality conditions entirely to the partial exposition of the actual population since the sex ratio of the adult age group in the excavated section is nearly even and proportionate. The example of Kál reappears in also another population of the tenth century, namely at Sárbogárd (ÉRY, 1967-68). From the cemetery at Sárbogárd, containing 100 individuals, the skeletal remains of all who had been buried there have in all probability been exposed. A life-expectancy, even more favourable than at Kál,was found here in the case of the females, whilst the less favourable mortality conditions of the males appeared only between 15-20 years of age. While, therefore, Sárbogárd is mainly characterized by the very favourable life-expectancy of the females, it is the unfavourable mortality of the males which holds true for Kál.

The characteristics of sexual expressedness

The sexuality of the osteological remains of the population can best be assessed from the rate of the mean sexual expressedness of the 22 characteristics examined during the determination of sex. In the grading into five groups of the characters, +2 and +1 denote masculinity, -2 and -1 indicate femininity, whereas the grade 0 means femininity in the case of men and masculinity in that of women (ÉRY-KRALOVÁNSZKY-NEMESKÉRI, 1963). The respective data of Kál are summarized in Table 6. For a better interpretation of the mean values, Table 7 contains, besides those of Kál, the mean data of also three further series.

In general, the population at Kál is characterized by a weak sexual expressedness of the males, and a definite one of the females.

The male values of the characteristics reveal in Table 6 that on the skull it is primarily the developed processus mastoideus, the facies malaris, the mentum, the glabellar region and the tubera of the brain case which display a rather expressed masculine character - in other words, merely 5

of the examined 12 features. Among the 10 characteristics studied on the post-cranial bones, only the caput femoris indicates, as compared to other series, a medium rate masculine character. Therefore the sexual character of especially the post-cranial bones of the males at Kál is the one which is weakly expressed - well illustrated by the mean value 0.50.

The weak masculine character of the male post-cranial bones is expressed not only by the morphological features, but also by two indices of sex determination measured on the pelvic bones. When compared with the values of the three other series in Table 8, it becomes apparent that the values of both the ischio-pubis index and the cotylo-ischiatic index approach the most the female values in the case of Kál.

The sexual character of the female skeletons is well expressed in both the cranial and the post-cranial bones, as is to be seen in Table 6.

Variability and morphological characteristics

The calculated parameters of the examined skeletal material are contained in Table 9.

The rates of the standard deviations of the examined cranial measurements and indices have been calculated, for both the males and the females, as related to the mean sigma values of ALEKSEYEV-DEBETZ (1964)(Table 10).

The mean sigma ratio is higher than the mean sigma for the measurements and indices of the brain case, but very much lower for those of the facial skeleton and the jaw. An extremely high variability appears in the value of the nasalspine angle for both sexes.

Significantly high standard deviations have been found in merely 4 (10.3 per cent) of the 39 examined measurements and indices of the males, namely in the biasterionic breadth (12), the orbital height (52), the nasalspine angle (75/1), and the breadth-height index (17:8).

In the case of the females, significantly high standard deviations were found also in 4 characteristics: the maximum cranial breadth (8), the maxillo-alveolar length (60), the nasalspine angle (75/1), and the length-breadth index (8:1). At the same time, significantly low standard deviations have been found in three (7.7 per cent) values: the basion-bregma height (17), the bicondylar breadth (65), and the chin height (69).

In general, therefore, the population at Kál appears to be less mixed, especially the females, and the occurrence of relatively higher variabilities is delimited chiefly to the characteristics of the brain case. The high standard deviations of the values of the nasalspine angle indicates the presence of the Europoid and Mongoloid great races in the material.

Now, if the distribution of these same measurements and indices within

the class categories of ALEKSEYEV-DEBETZ is examined, further data can be obtained in regard of partly the rate and direction of the variability present in the Kál population, and partly the general morphological picture of the population itself. Table 11 renders superfluous a detailed descriptive characterization, thus merely the general characters will be referred to.

Studying the distributional differences of the male and female data, it seems that the variation of the females is slightly less than that of the males,and thus the general morphological picture of the females appears in a clearer light. Beyond this, however, - as evinced also by the modal groups of the class categories - the general morphological picture of the male and female skulls is essentially similar; in other words, there is no essential difference between them. Hence the morphological habit of the Kál population may in the followings be characterized collectively.

Cranial capacity and circumference are medium and large. The majority of cranial length measurements refer to a medium and long form. The cranial index indicates mesocrany (♂♂ 76.6, ♀♀ 77.9/, approaching dolichocrany. The breadth measurements refer in most cases to a medium and broad form, the height ones to a medium and low form. The latter statement characterizes primarily the facial skeleton.

The quintuple class categories of the measurements and indices refer in two cases to a morphological differentiation within the material. In regard of the male biasterionic breadth (12),groups of a narrower and wider nape can be observed. Concerning stature data, the presence of a group of low and another one of tall individuals in both sexes, but primarily in the males, is observable.

The special characteristic of the population at Kál is its great orbital width (♂♂ 43.1 mm, ♀♀ 41.8 mm), accompanied in the males by an exceedingly varying height measurement; however, in the majority of both sexes it is medium or low, its index value expressing chamaeconchy.

The examined morphological features are summarized in Table 12. The view of the skull in norma verticalis is very variable. In the males, the frequency of the ovoid and spheno-birsoid form is uniformly rather high, whereas the ovoid shape is the most frequent in the females. The occiput is mostly curvoccipital,and in some cases a lambdoid flatness can be observed. The orbita are subrectangular or rectangular, the nasal profile convex or straight in the males, and rather straight in the females. The fossa canina is generally medium or deep.

In some examined anatomical variations also sexual differences appeared (Table 12). Sutura metopica occurs slightly more frequently in the males; a generally weaker degree of torus palatinus is observable more frequently in the females, and the variations of the pterion area show divers frequencies between the two sexes. However, the small number of cases of the males and females considerably decreases the trustworthiness of the observed differences.

Taxonomic characteristics

Interpreting the calculated, classified, and estimated data, the characteristics of the type-patterns (based on LIPTÁK's method; 1962a,b) of the population at Kál can be outlined, with reference to the main features of the individuals, as follows (Plates I-V).

Of the 20 males allowing study, 19 belong to the Europoid great race. The 19 Europoid males can be separated into two subgroups: the larger one comprises dolichocranial individuals, the smaller one brachycranial ones.

The group comprising dolichomorphous crania can be further subdivided into one consisting of diverse Mediterranoid elements of a low stature, and another one of probably Nordoid elements of a high stature.

The brachycranial subgroup contains miscellaneous elements among which the probable presence of 3 Dinaroid, 1 Pamirian, 1 Alpinoid individuals can be shown, while the nearer taxonomic place of two individuals, of a high stature, gracile bones, very narrow and extremely short brain case (incidentally, the skulls are rather defective), is uncertain.

Mongoloid characteristics, besides Europoid features could be recognized on one adult individual (Plate I,1). The Mongoloid character of the male skull deriving from Grave 30 appears chiefly in the extremely slight nasal-spine angle (14^{o}), the very large anterior interorbital breadth (25 mm), the low vault of the brain case, the relatively low sutura squamalis and the steeply reclinate and temporally narrower frontal region. This male had the highest status among the individuals buried in the exposed part of the cemetery.

Among the 21 female skulls permitting study, 19 belongs to the Europoid great race, while 2 show a mixed Europo-Mongoloid, more precisely a Turanoid, character (Graves 3,11). The distribution as to type of the females is largely similar to that of the males with the exception that, whereas the Cromagnoid characteristics appear only secondarily on the male skulls, these are definitely separable in two cases in the females (one CrA and one CrB), and they could be observed, as a secondary trait, in also some further cases. Some differences appear yet in the composition of the Mediterranoids, since the gracile-Mediterranoid variety comes to the fore in four or five cases among the females, but in merely one cases among the males.

The distribution of the estimated types of the Kál population is shown on Table 13.

The type distribution of the adults is instructively complemented by the picture of the younger individuals. Five of the six individuals (four of them comprising age group Infans II, and two young men from the very beginning of the Juvenile age group) are Europoids; within this group, three show dolichocranial and two brachycranial characters. On one young male (Grave 9), who died just as he entered the Juvenile age group, the presence of mixed Europo-Mongoloid features can be recognized (Plate I,2). The grave

of the youngster, buried with a significant amount of material objects despite his young age, was immediately beside Grave 30, containing the single Europo-mongolid adult male discussed above, apparently the most dignified individual of the known population.The problem immediately arises therefore whether there were not some relationship between the two individuals, namely, the possibility of the youngster having been the son of the older man.

The comparative examination of the two skulls elevates this assumption to the level of probability. The similarity is remarkable in mainly the nasal region. The hardly impressed nasion point lies in both cases very high, near the glabellar region,and the peculiarly broken arch of the nasal profile, the shape of the nasal bones, and the great interorbital breadth are also highly similar. Also, foramina of a corresponding position and the decurrence on the processus frontalis of the maxilla are observable in both cases. The entire morphological picture of the temporal region of both individuals is characteristically similar, as well as the features of the shape of the foramen occipitale magnum and its rim. Morphological similarities appear, among others, also on the processus coronoideus of the mandible.

The differences between the two individuals appear in the cranial vault;the brain case of the young man is characterized namely by the highly developed frontal and parietal tubera, completely missing from that of the older man. The presence of these tubera is probably concomitant not only with the paedomorphic character, but possibly the result of form inherited from the maternal side.

Pathological changes

It was only partially possible to observe, and to establish the frequency of,pathological changes visible to the naked eye on the osteological material of the population at Kál,since the rather well preserved vertebrae of the spinal column, the ribs, the bones of the hands and feet, had in most cases not been collected during the excavations.

F r a c t u r e s, i n j u r i e s. Status post fracturam was observable on the left ulna of merely one female (Grave 75). Two female skulls reveal the healed traces of slight damages,in one case on the left parietal bone, in another on the left side of the forehead (Graves 10, 72).

I n f l a m m a t o r y p r o c e s s e s. Traces of osteitis or osteomyelitis (?) appear on both pelvic bones of an adult female (Grave 40), together with an extreme constriction of the medullary cavity and a very dense structure of the spongiosa in the femoral shafts: At the same time, a pathological formation of cavities can be seen on the outer and inner sur-

faces of the caput femoris. - A slight degree of periostitis on the tibia of a mature male (Grave 74) can also be observed.

D e v e l o p m e n t a l a n o m a l i e s. Several kinds of anomalies are collectively discussed here. - The left caput femoris and the left pelvic acetabulum of an adult female (Grave 75) are deformed, probably owing to a congenital dysplasia of the hip. The shaft of the left femur is accordingly thinner than that of the right one. - Plagiocrany could be observed in two males and two females. - Phenomena referring to disorders in ossification were observed in the following cases: on the left side of the pars basilaris of the os occipitale in two adult females (Graves 11,31) an incomplete transversal fissure could be observed, an anomaly seldom occurring in adults (AUGIER, 1931, p.188); - on the os occipitale of an adult male (Grave 55), sutural traces were observable on the right side, at the meeting of the pars lateralis and the squama occipitalis; - traces of a sutura mendosa were visible on the os occipitale of another adult male (Grave 2).

D e n t i t i o n. The frequency of caries and teeth lost ante-mortem, as well as the chronic abscess cavities, were investigated only in individuals between 20-60 years of age. The frequency of caries (regardless of the number of caries per tooth) occurs in 4.8 per cent of all surviving teeth in the males and in 6.2 per cent in those of the females. (No caries on the deciduous teeth have been observed in the material of the Infans age groups.) The frequency of teeth lost ante-mortem was 19.8 per cent in the males and 33.2 per cent in the females, the percentages related to the number of present teeth-places. The occurrence of chronic abscess cavities was observable in 21.1 per cent of the males and 33.3 per cent of the females.

Teeth standing more sparsely than normal were found in three females (Graves 3, 11, 37), and denser than normal in one female (Grave 24). - Treme between the two upper incisors was observable in one male (Grave 55). - Abnormal teeth position appeared in two females (Graves 21, 23); in one case the right upper canine, in the other one the left lower canine, was in an oblique position. - Aplasia occurred in one female (Grave 66); in this case the left upper incisor was missing, replaced by the canine. The right upper second incisor was rudimentary in the same individual. - I found the sockets of two deciduous teeth roots, beside the left upper canine of a male (Grave 64) and the right upper canine of a female (Grave 66).

T r e p h i n a t i o n s. All three types of trephining found on the skulls of materials originating from the tenth century in the Central Danubian Basin occur in the Kál population.

Symbolic trephination, a usually small-sized, circular and shallow depression, not penetrating the endocranial surface of the skull, was observable on the skull of a male individual, about 46 years old (Grave 17). This skulls show the traces of three symbolic trephinations. Two of them are placed oppositely, on the right and left side of the parietals, between

the bregma and vertex points near the sutura sagittalis, whilst the third one occurs in the middle of the left parietal. Two of the three trephinings belongs to the gamma grade,according to the grading given by NEMESKÉRI-ÉRY-KRALOVÁNSZKY (1960), that is, they had been made long before death, while the third one is of the beta grade, that is, somewhat more recent. This latter trephining is of very good execution, nearly circular, a 12x13 mm depression, while the two others show a more irregular surface and shape. The difference between the quality of the trephinations may be due to the work of two different medical men. The individual displaying the smybolic trephining belongs taxonomically to the low stature group of the dolichomorphous males, its facial skeleton revealing also Cromagnoid characters.

Another type of trephination the so-called surgical one, which serves the opening of the cranial cavity, occurs on the skull of a Turanoid type female, about 40 years old (Grave 11) (Plate VI,1). The trephining begins slightly before the bregma point, extending along the sutura sagittalis slightly to the right parietal bone. The maximum length of the trephined surface is 75 mm, its width 37 mm. The opened cranial cavity is of an irregularly elongated shape, the size of the opened portion being about 41x45 mm. The process of healing is indicated along the margin by traces of ossification, and by the ossified surface on the inward slanting side of the trephining. No signs of trauma or other significant pathological changes, as the immediate cause of trephination, can be discovered on the skull.

This latter example of trephination resembles, in regard of its shape and execution, certain other ones published from Hungary (NEMESKÉRI-KRALOVÁNSZKY-HARSÁNYI,1965). It stands nearest to the trephinings of the individual from Rétközberencs and the one in Grave 6 at Karos; in these cases namely the trephined surface is elongated and of a considerable extense, while the opened part of the cranial cavity is comparatively small, its rim indicated by the irregular line of the natural process of healing. The trephination at Kál is to a certain extent similar also to that found on the male skull from the tenth century at Szakony, but there we are confronted probably by the surgical correction of an injury suffered from a sword-cut (ÉRY, in print).

While the usage of symbolic trephination had been widely spread in the entire area of Hungary of the tenth and eleventh centuries, surgical trephinings derive only from tenth century cemeteries,chiefly from the northern zone of the country, according to the map published by NEMESKÉRI-KRALOVÁNSZKY-HARSÁNYI. The locality Kál lies well within this zone.

The third type of trephining is the trephination or artificial widening of the foramen occipitale magnum. It occurred in three individuals at Kál: in a Nordoid-type male, about 34 years old (Grave 15), a gracile-Mediterranoid type female, about 55 years of age (Grave 18), and in a brachycranial female about 60 years old (Grave 75)(Plate VI,2-4). In all three cases, the widening of the foramen occipitale magnum is observable on the rim between

the two condyles occipitales and its portion towards the pars occipitalis. It is well discernible that the process had been made by some fine, file-like object. In two of the three cases one can also see that the widening was not done symmetrically but that it had asymmetrically shifted towards the right side in one case and towards the left in the other. The fact that the enlargement had in both cases irregularly widened at one point and penetrated more deeply into the occipital surface suggests that the primary purpose of the trephining was not the widening of the foramen occipitale magnum for some cause, but the excision of a piece of bone. Owing to a recent damage suffered by a part of the rim in the third case found at Kál, this element of the pehomenon cannot be studied. There are no traces of osseous proliferation along the trephined margin in either one of the cases, hence the act could have been executed only after death.

The artificial widening of the foramen occipitale magnum was found to occur on our home osteological material deriving from the tenth century only in recent years. The first four cases have been published by F.KATONA and I.KISZELY (1969) from the material of three cemeteries. Concerning the purpose of trephining, both authors suggest a healing intervention in the first line, remarking, however, that in none of the cases examined by them had they found any indication of a vital reaction. At the same time, they also put forward ritual considerations as the motivating factor in the execution of the operation. They refer to one of MAXIA's papers (1963) in which that author records recent data from Sardinia according to which popular therapeutics believe to cure epileptic symptoms of living individuals by the application of the pulverized bone, obtained by the artificial widening of the foramen occipitale magnum.

The simultaneous presence of the three types of trephinings at Kál implies, beyond its significance in medical history, that this area may have been in the centre of activity of medicine men executing trepanations in the Central Danubian Basin in the tenth century.

Distance investigations

In attempting to establish parallels with the cranial appearance of the Kál population, I made several calculations with reference to the distance of divers series from Kál. In selecting the series for examination, the following principles have been taken in consideration.

According to J.SZABÓ's archeological informations, the cemetery was used in the tenth century, and in the excavated material one can recognize the characteristic object types of the Conquerors arriving around 896 A.D. from the east, the present area of the Soviet Union. Into the comparison there were drawn therefore series deriving from that territory, from the

beginning of the Sarmatian Age (IV.c.B.C.) until the Mongolian invasion (XII.c.A.D.),in their majority originating from the copsy and grassy steppe zone. Of the series from the Central Danubian Basin, I drew in for comparison those contemporaneous with or slightly younger than the Kál population, therefore those deriving from the X-XII centuries (the Árpádian Age); in addition, I also examined series from the Avar Period (VI-IX centuries) in order to obtain some basis for the eventual similarity of the Kál population with the peoples found there or who had previously lived there. Beyond all this, I investigated only those series in which the number of individuals per sex have in the average been at least 10 (excepting the female series of Sárbogárd, contemporaneous with Kál, whose average individual number is only 9).

The following series have been drawn into the comparison:from the area of the Soviet Union: 1. Staruye Kiiski, Sarmatians, III-II.c.B.C. (AKIMOVA, 1968); 2. Kamuslu-Tamak, Pianobor Culture, II.c.B.C. - I.c.A.D. (AKIMOVA, 1968); 3. Kalinovka, Sarmatians, IV.c.B.C. - IV.c.A.D.(GINSBURG, 1959); 4. Sarmatians around Bukovo, III.c.B.C. - III.c.A.D. (GLASKOVA-CHTETSOV, 1960); 5. Ukraine, Sarmatians, III.c.B.C. - III.c.A.D. (KONDUKTOROVA, 1956); 6. Saratov, Sarmatians, III.c.B.C. - III.c.A.D. (DEBETZ, 1948); 7. West Kazahstan, Sarmatians, V.c.B.C. - II.c.A.D. (GINSBURG-FIRSHTEIN, 1958); 8. Birsk, III-VII.c.A.D. (AKIMOVA, 1968); 9. Muransk, VII-XI.c.A.D. (ALEXEYEV, 1959); 10. Verhnye Saltovo, VIII-IX.c.A.D. (ALEXEYEV, 1959); 11. Zlivka, VIII-IX. c.A.D. (NADZHIMOV,1955); 12. Bolshe Tarkhan, VIII-IX.c.A.D. (AKIMOVA,1964); 13. Tok-Kala, ossarium, VII-VIII.c.A.D. (RUSNASAROV, 1965); 14. Tok-Kala, cista, IX-XI.c.A.D. (RUSNASAROV, 1965); 15. Sarkel, small kurgans, IX-XI.c. A.D. (VUICH, 1963); 16. Sarkel, cemetery at SW wall, X-XII.c.A.D.(VUICH, GINSBURG-FIRSHTEIN, 1963); 17. Sarkel, mound 17/10, X-XII.c.A.D. (GINSBURG, 1951); 18. Sarkel, mound 19/1, X-XII.c.A.D. (FIRSHTEIN, 1963); 19. Sarkel, mound 24/6, X-XII.c.A.D. (FIRSHTEIN, 1963); 20. Kamenka, X-XII.c.A.D. (KONDUKTOROVA, 1957).

Of the series in the Central Danubian Basin in the VI-IX centuries: 21. Adorján-Országut (BARTUCZ-FARKAS,1957); 22. Adorján-Tanya (BARTUCZ-FARKAS, 1957); 23. Alattyán (WENGER, 1957, LIPTÁK, 1963); 24. Ártánd (ÉRY, 1966, 1967); 25. Csákberény (TÓTH,1962). 26. Homokmégy-Halom (LIPTÁK,1957b); 27. Jánoshida (WENGER, 1953). 28. Kecel (LIPTÁK, 1954a); 29. Nové Zámky (HANÁKOVÁ-STLOUKAL, 1965; STLOUKAL-HANÁKOVÁ,1966); 30. Szebény (TÓTH,1961); 31. Szeged-Kundomb (LIPTÁK-MARCSIK, 1966); 32. Szentes-Kaján (WENGER,1955); 33. Tiszaderzs (LEBZELTER, 1957); 34. Tiszavárkony (LIPTÁK, 1957a); 35. Üllő I. (LIPTÁK, 1955); 36. Üllő II. (LIPTÁK, 1955).

Of the series in the Central Danubian Basin in the X-XII centuries: 37.Bešeňov (SZŐKE-NEMESKÉRI,1954); 38.Békés-Povádzug (LIPTÁK-FARKAS,1967b); 39. Cegléd (LIPTÁK, 1957a); 40. Csongrád-Felgyő (BARTUCZ-FARKAS, 1956); 41. Csátalja (LIPTÁK, 1957a); 42. Devin (FRANKENBERGER, 1935); 43. Dolny Jatov (FRANKENBERGER,1935); 44. Jászdózsa (LIPTÁK, 1957a); 45. Kérpuszta (LIPTÁK,

1953); 46. Kiskunfélegyháza-Alpári ut (LIPTÁK, 1953); 47. Orosháza-Rákóczi-telep (LIPTÁK-FARKAS, 1962); 48. PTUJ (IVANIČEK, 1951); 49. Sárbogárd (ÉRY, 1967-68); 50. Szatymaz (LIPTÁK-FARKAS,1967a); 51. Székesfehérvár-Bikasziget (ACSÁDI-NEMESKÉRI, 1959); 52. Székesfehérvár-Szárazrét (ACSÁDI-NEMESKÉRI, 1959); 53. Veszprém-Kálváriadomb (ACSÁDI-NEMESKÉRI, 1957).

Of the 53 series, I declined to examine the following series with respect to the females,owing to the small number of individuals: 5,6,11,13,14, 15,18,21,25,27,30,34,37.

Examinations were made with PENROSE's generalized distance calculation (1954). The mean values of the given series were standardized by ALEKSEYEV-DEBETZ's (1964) mean sigmas. The calculations were based on the following 10 cranial measurements: maximum cranial length (1), basion-nasion length (5), maximum cranial breadth (8), minimum frontal breadth (9), basion-bregma height (17), basion-prosthion length (40), bizygomatic breadth (45), upper facial height (48), orbital height (52), nasal breadth (54). In the case of all series, however, in which the distance from Kál appeared to be comparatively slight ($D_p^2 < 2.00$), two further measurements have also been drawn into the investigation for the sake of greater reliability,namely the orbital breadth (51),and the nasal height (55).As a result of the calculations, the following picture is obtained in regard of the parallels of the Kál population.

In the case of the males, of the 53 examined series merely two Sarmatian ones deriving from the area of the Soviet Union (Ukraine and Kalinovka, near Volgograd) and three only of the home material (Ártánd, IX c., Kérpuszta, and Székesfehérvár-Szárazrét, XI.c.) were found to stand near ($D_p^2 < 1.50$), on the basis of 10 characters, to the population at Kál.

The distance appeared to be especially slight between Kál and Kérpuszta, explainable probably by the presence in the two populations of the rather great number of Mediterranoid elements. If, however, the distance from Kál of the series was further checked by two other (therefore now 12) measurements, four of the five series remain in unaltered nearness (on the basis of $D_p^2 < 2.00$), but Kérpuszta recedes, owing primarily to the considerable deviation of its orbital breadth from Kál (Tables 14,15).This might be explained by the significant proportion of Cromagnoid elements at Kérpuszta and their subordinate role at Kál.

The distance between Kál and the four close series is, however, not so slight as to warrant the inference of any direct connection or even identity. If the generalized PENROSE distance of Kál and each of the other four series is calculated between one another and the results plotted on a dendrogram (Figure 1), two instructive deductions can be made. It becomes readily apparent that Kál is not too closely connected with the other four series, especially not with Ártánd and the Sarmatians from Ukraine; its apparent parallels approach rather Székesfehérvár-Szárazrét and Kalinovka. Furthermore, not only Kál but also Ártánd and Székesfehérvár-Szárazrét have

their connections with series from the Sarmatian Period.And this means that the effect of the earlier populations of the Sarmatian Period must have been considerable in the evolvement of the anthropological picture of the Avar Period and the Árpádian Age in the Central Danubian Basin. This was pointed out in my analysis of the Avar Period population at Ártánd (ÉRY, 1967), and also by T.TÓTH, in a number of papers submitting the analysis of the osteological materials deriving partly from the Avar Period (TÓTH,1958) partly from the period of the Hungarian Conquest (TÓTH,1958,1965,1966,1968, 1969a, b, c).

In regard of the females, none of the examined 40 series, either from the area of the Soviet Union or from the osteological remains from the Central Danubian Basin in the VI-IX centuries, showed similarities to Kál. Of the series from the X-XII centuries, however, Sárbogárd, Kérpuszta, Ptuj, and Kiskunfélegyháza-Alpári ut proved to be similar, but these, too (aside of Sárbogárd from the X century), recede from Kál when the two further measurements beyond the applied ten are also drawn into the examination. The appearing parallels, even if they are not too near, indubitably reveal that the character-complex of the female population at Kál is not foreign in the anthropological picture of the Central Danubian Basin in the X-XII centuries.

General conclusions

Collating the findings of the taxonomical analysis and the examination of distance, concerning the population at Kál, with the results of other home investigations conducted on the osteological material deriving from the period under discussion, the following statements might be made on the place of the population.

On the basis of the characteristic dolichomorphous features, the Kál population of the tenth century fits into the anthropological picture of the - in its majority also dolichomorphous - population of the Central Danubian Basin in the X-XII centuries (LIPTÁK, 1957,1967; ÉRY, 1970).

P.LIPTÁK, in his doctoral thesis written in 1967, made the following statements on the taxonomic composition of the three social strata of the Hungarians in the tenth century: The Turanid, Uralian, Pamirian, and other brachycranial elements are the most characteristical ones of the leading class of the conquesting Magyars. The middle stratum has no Turanid and Uralian components,but the presence of Mediterranean and Nordic elements is considerable. And the common people are characterized by the high frequency of Mediterranean and Nordic elements, with a considerable proportion of also Cromagnoid components.

With due attention to the above composition, the population at Kál

might be regarded as representing type-elements characterizing chiefly the middle stratum even though the presence, if only in a subordinate role, of the Europo-Mongoloid and other brachymorphous type-elements in the population indicate rather the leading class, while the higher Mediterranoid frequency may possibly point to a certain extent towards the type-pattern of the common people.

All in all, it seems to be justified to regard the Kál population, on the combined basis of the type-pattern of the entirety of the population, the parallels of the male and female series, and the cranial trephinations observed in the material,as a part of the population arriving from the east at the time of the Hungarian Conquest.

Further possibilities of research

The inferences concerning the general anthropological picture of the community at Kál in the thenth century, and its place occupied within the population of the period, were shortly stated in the preceding chapters. By the assistance, however, of the cemetery map, some archeological data, as well as serological, chemico-analytical and histological investigations, supplementing them with further anthropological observations, it was also possible to reveal some interesting phenomena in regard of the inner structure of the population at Kál.

It is known that in a certain group of our home cemeteries from the tenth century there appears to be a difference in rank or wealth between the right and left wings of the cemetery, and in the observed cases it is always the left, wing which served for the burial place of the richer and distinguished individuals (LÁSZLÓ, 1944).

In cognizance of this fact, I drew, as an experiment, a perpendicuar line at right angles to, and in the centre of, the longitudinal axis of the cemetery at Kál on the map, the line thus decurrent between Graves 2 and 3, as well as 9 and 30. By this artificial division,the cemetery was separated into two nearly equal parts:into a northern or left,and a southern or right, wing. In the northern wing 31 graves have been excavated,and 33 (or possibly 35) in the southern one. Examining separately the material of the two sections, I found a number of differences, apparent not only anthropologically but also chemico-analytically.

However, before discussing the observed differences, I should like o emphasize that the respective phenomena should be interpreted most circumspectly and with due reservations, partly owing to the about 25 per cent annihilated state of the cemetery and partly because the significancy of the apparent differences could not be corroborated mathematically in any one of the cases. Which means that the role of chance in the evolvement of

these phenomena cannot be excluded. In this knowledge, and despite these considerations, I still think that the exposition of the several differences may be instructive. If, namely, differences are observed both by anthropology and the medical sciences independently of one another, even if not at a significant level, they are worthy of some reflection, and the more so if they shall, at some future time, be eventually supported by also the factual material of archeology.

I cannot, of course, discuss archeological statements; these are within the scope of J. SZABÓ's investigative work. It could be established, however, from the data made available to me that among the graves of the left, that is, the northern wing of the cemetery at Kál those containing archeological object materials are, as was to be expected, numerically more than those of the right wing, and that the distinguished state of the left wing is expressed not only in this frequency of percentage but also the character of the material.

According to the anthropological investigations, the difference between the two groups lies primarily in the distribution of types. 71.4 per cent of all individuals belonging to the Mediterranoid type are to be found in the southern wing; accordingly, if the average stature of the two groups are calculated, those buried in the southern wing will be found to be lower than those reposing in the northern one. There is a difference in also the composition of the brachycranial elements. All individuals displaying Dinaroid elements occur in the southern wing, those showing Alpinoid racial features lie in the southern one. Individuals exhibiting more expressed Cromagnoid characters are to be found also in the western wing.

In view of the fact that, according to the investigations, the differences between the two wings of the cemetery are more manifest in the males, I have calculated, for all adult males reposing in the northern and southern wings, the more important means of cranial measurements and indices, as well as their stature data and the average age at death data, and submit them in Table 16.

A collation of the two columns of numbers of Table 16 illustrates rather satisfactorily that the cranial measurements of the males interred in the northern wing are in the average longer, wider, and higher than of those buried in the southern one. The difference is in certain cases rather considerable, thus, for instance, that between the values of the bizygomatic, the nasal, and orbital breadths. Owing to the small number of cases in the two samples, the material is unsuitable for significance calculations, but as the differences between the means of the two groups display a deviation of identical direction in every measurement, this fact also corroborates the assumption of actual differences between the male individuals of the two sections of the cemetery.

There are, however, also other differences between the two wings. All individuals exhibiting cranial trephinations (Graves 11, 15, 17, 18, 75) are

to be found in the southern wing. The three individuals showing rather severe pathological changes (Graves 40, 74, 75) had also been interred in this latter section. As shown in Table 16, the average age at death of the two groups also differs in the case of males by four, in the case of females by nine, years against that prevailing in the southern wing. (This considerable difference in the average ages at death of the females might also be ascribable to the fact that there were found 15 females in the southern but only 9 in the northern wing. The proportion of the males between the two wings of the cemetery is even.) It is not impossible, however, that the somewhat lower average age at death of the individuals interred in the southern wing is a direct consequence of their possibly more disfavourable social conditions, and probably this is also the cause wha there appear the pathological anomalies and trephinations among the dead of this wing. The circumstance of object material having been buried in fewer cases with the dead in the southern wing might also refer to eventually less favourable social conditions.

Let us see now the evidence of serological and chemico-analytical investigations with respect to the differences between the two groups.

The blood group frequencies of the two groups were tabulated in Table 17 by I.LENGYEL. As is to be seen, the occurrence of blood group AB is exclusive, and that of blood group A is higher, in the southern wing; blood group O on the other hand is higher in the northern wing. However, the differences are mathematically not significant.

According to the chemico-analytical investigations, there occur more pathological cases (osteoporosis, osteomalatia) among the dead of the western wing, but the difference (4.12 : 1.00) is again not significant. However, this datum well complements the observations made macroscopically on the pathological anomalies and trephinations, as well as the data of average age at death.

If it be answered now in how far the differences appearing between the two groups could be interpreted in regard of the entirely of the population, we can rely merely on inferences.

One might assume an ethnic difference between the two groups. In this case the respective phenomena may be explained by the more distinguished conquerors arriving from the east having been buried mainly in the northern wing of the cemetery, whereas the southern one was reserved preponderantly to the surrendered local population. However, this assumption is contradicted on the one hand by the fact that the entirety of the population at Kál appears to be comparatively homogeneous, that is, nor overly intermixed, and on the other by the finding that trepanation, a custom whose appearance in the area of Hungary at the beginning of the tenth century is in all probability (at least according to archeological data) referable to the conquerors, occurs only in the dead of the southern wing. Finally, the entire burial usage and order, namely the existence of a separate right and left

wing, is characteristic of the very conquerors.

A more probable cause of the difference between the southern and northern wings of the cemetery may derive from the circumstance that the two groups are representatives of ethnically identical (belonging to an identical ethnic group), but in regard of direct descent of two different bodies, probably of two joint families, among whom there might have existed a difference in social rand in favour of those reposing in the northern wing.

Some further results of the chemico-analytical investigations submit certain rather interesting data to this subject. According to Dr.LENGYEL's opinion, namely, if soil conditions are largely identical in the whole area of the cemetery - and this is so at Kál - then the differences prevailing in the chemical structure of the anatomically and histologically identical bone samples of the several graves should be attributed to individual or temporal factors. Individual factors could largely be filtered out by chemico-analytical methods (influences of age, feeding, pathological, etc. factors), and thus certain prudent inferences might be drawn concerning the relative chronology of the cemetera.

Accordingly, Dr.LENGYEL considers the period of use of the cemetery slightly less than a hundred years, that is, it had been in use during three generations. He believes that the earliest individuals interred in the cemetery are those reposing in Graves 2, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, and 23, and the latest ones those buried in Graves 1, 5, 31, 33, 37, 41, 42, 81, 82, and 83.

If these data are now plotted on the map of the cemetery, we have the striking picture that those buried in the earliest times all lie in the southern wing of the cemetery, while those interred during the later period all repose in its northern section.

Based on the chronological differences obtained by the chemical analysis, provided that they do represent factual conditions, the following hypothesis might be proposed, from the point of view of anthropology, on the population of the cemetery.

Sometime at the beginning of the tenth century there settled in the neighbourhood of the recent village Kál a smaller community, probably a joint family, which began to bury its dead in the southern side of the area set apart as a cemetery. Of the 13 dead, interred at the earliest time, 6 are of a Mediterranoid, 4 Nordoid, 1 brachycranial (not identifiable any nearer), 1 Cromagnoid B, and 1 Turanoid type. Among the earliest buried individuals are 4 of the 5 trephined the population at Kál. The fact that trephinations occur among the earliest dead, furthermore the presence of the Turanoid female, justifies the assumption that this group arrived with the conquerors to the area of Hungary.

It happened slightly later that another, more distinguished, group, possibly another joint family also arrived here, commencing to bury its dead in the northern wing of the cemetery. For a time the two groups used the ce-

metery mutually, namely for about 20 years (according to Dr.LENGYEL's analysis who had determined that the individuals buried during the common use of the cemetery had been those lying in Graves 25, 26, 74, 75 in the southern wing and those reposing in Graves 7, 52, 55, 58, 63 in the northern wing). Since the grave of the fifth individual exhibiting a trephined skull, a senile female presumably belonging to the first generation of the Kál population, is also in the southern wing (Grave 75), one may infer that even during the common use of the cemetery the two groups might have adhered to burying their dead in their own section of the cemetery.

The fact, finally, that the latest graves occur only in the northern wing of the cemetery probably implies that the third generation of the earlier community, namely the one of the southern wing, declined, for some cause, to use the cemetery any more. The factors causing the assumed later settling of the northern group and the later departure of the southern group could be enlightened or clarified by historical and archeological analyses.

I should like to stress repeatedly and emphatically again that all possibilities derived above from the internal analysis of the cemetery are hypothetical inferences. And even if the archeological analysis will be found to support these theories, it would still fail to elevate them above the level of probable eventualities, partly owing to the incompleteness of the available subject material, partly because the feasibility of drawing valid conclusions - despite the comparatively advanced methods of anthropology, medicine and archeology - is still considerably delimited.

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Table 1

Individual Representation Values, Age and Sex Data
(⁑ = Sex determination by I.LENGYEL)

No	Grave No	Repr.val. Quant.	Repr.val. Qual.	Sex	Sexual expressedness	Sex. repr. value	Estim. age	Criterions of age estim. O	H	F	S
1	2	3		4			5	6			
1	1	0.2	0.25	♀	- 0.88	0.5	61-67	-	II	III	IV
2	2	0.7	0.75	♂	+ 0.50	1.0	27-31	I	I-II	I	II
3	3	0.6	0.50	♀	- 0.73	0.9	52-56	IV	II	III	III
4	5	0.2	0.25	♂	(♀) ⁑	-	1.5-2.5	dentitio			
5	7	0.6	0.50	♂	+ 0.28	0.7	31-37	I	II	II-III	-
6	8	0.7	0.25	♂	+ 0.21	0.9	53-57	IV	III	III	III
7	9	0.7	0.75	♂	- 0.50	0.7	14-16	ossif.of the skeleton			
8	10	0.6	0.50	♀	- 0.31	1.0	21-25	I	I	I	I
9	11	0.7	0.75	♀	- 0.59	1.0	38-42	II	II	III	III
10	12	0.5	0.25	♀	- 0.94	0.9	63-67	IV	IV	III	IV
11	13	0.7	0.75	♂	(♂) ⁑	-	5-6	dentitio			
12	15	0.6	0.50	♂	+ 0.95	1.0	32-36	I	II	II	II
13	16	0.7	0.50	♀	0.00	0.8	61-67	IV	III	-	III-IV
14	17	0.7	0.50	♂	+ 0.25	1.0	44-48	I	II	III	III
15	18	0.7	0.50	♀	- 0.77	1.0	53-57	II	IV	IV	IV
16	19	0.7	0.50	♂	+ 0.19	1.0	42-46	I	II	II	III
17	20	0.7	0.75	♀	- 0.63	1.0	18-22	ossif.of the skeleton			
18	21	0.7	0.50	♀	- 0.36	0.9	47-51	I	III	III	III-IV
19	22	0.6	0.50	♀	- 0.70	0.9	48-52	II	II	III	III
20	23	0.7	0.50	♀	- 0.33	1.0	39-43	III	III	II	II
21	23/a	0.2	0.25	♂	(♀) ⁑	-	newborn	ossif.of the skeleton			
22	24	0.7	0.50	♀	- 1.00	0.8	41-45	I	II	II-III	III
23	25	0.7	0.75	♂	+ 0.59	1.0	50-54	IV	II	II	III
24	26	0.5	0.25	♂	+ 0.18	0.8	49-53	III	II	II-III	III
25	27	0.0	0.00	?	-	-	15-x	observation during excav.			
26	28	0.7	0.75	♂	(♀) ⁑	-	12-13	dentitio			
27	29	0.5	0.25	♀	- 1.40	0.7	33-37	I	II-III	II-III	-
28	30	0.8	0.50	♂	+ 0.77	0.9	36-42	II	II-III	II-III	-
29	31	0.7	0.25	♀	- 0.35	0.9	54-58	I	II-III	III	III-IV
30	32	0.7	0.25	♂	+ 0.31	1.0	41-45	IV	I-II	I-II	II-III

1	2	3		4		5	6			
31	33	0.7	0.25	♀ - 0.58	0.9	47-51	I	III	III-IV	III
32	34	0.1	0.00	⚥ -	-	40-60	-	-	III	-
33	35	0.7	0.50	⚥ - 0.95	1.0	48-52	I	III	IV	III
34	37	0.7	0.50	⚥ - 0.40	0.8	47-53	II	II-III	III	-
35	38	0.7	0.50	⚥ - 0.61	1.0	46-50	I	II-III	III-IV	III
36	39	0.3	0.25	♂ + 0.16	0.7	23-32	-	I-II	I	-
37	40	0.5	0.25	♀ 0.00	0.5	34-40	III	I-II	II	-
38	41	0.7	0.25	♂ + 0.50	1.0	33-37	II	II	II	I-II
39	42	0.5	0.50	o (♂)	-	9.5-10.5	dentitio			
40	46	0.5	0.50	o (♀)	-	1-1.5	dentitio			
41	51	0.7	0.75	o (♂)	-	0-1	dentitio			
42	52	0.5	0.25	♂ + 1.07	0.7	53-57	V	II-III	III	III
43	53	0.0	0.00	(♂) -	-	15-x	observation during excav.			
44	54	0.7	0.75	♂ + 0.59	1.0	54-58	IV	II-III	II-III	IV
45	55	1.0	0.75	♂ + 0.31	1.0	36-40	II	II	II-III	II
46	56	0.0	0.00	o -	-	newborn	observation during excav.			
47	58	0.9	0.75	♂ + 0.72	1.0	36-40	IV	I-II	I-II	II
48	59	0.7	0.50	♂ - 0.15	0.9	63-69	IV	IV	IV	-
49	63	0.7	0.50	♂ + 0.45	1.0	48-52	II	II-III	II-III	III
50	64	0.7	0.75	♂ + 0.50	1.0	50-54	IV	II	II	III
51	65	0.7	0.50	♂ + 0.45	1.0	61-65	V	II-III	II-III	IV
52	66	1.0	0.75	♀ - 0.86	1.0	33-37	I	II-III	II	II
53	67	1.0	1.00	o (♀)	-	9.5-10.5	dentitio			
54	68	1.0	1.00	o (♂)	-	4.5-5.5	dentitio			
55	70	1.0	1.00	o (♀)	-	4.5-5.5	dentitio			
56	72	0.8	0.50	♀ + 0.10	0.9	65-69	IV	IV	IV	IV
57	73	1.0	1.00	o (♂)	-	1.5-2.5	dentitio			
58	74	0.8	0.75	♂ + 0.90	1.0	41-45	III	I-II	II	II-III
59	75	0.8	0.50	♀ - 0.71	1.0	56-62	I	III	III	IV
60	78	0.7	0.75	o (♀)	-	5.5-6.5	dentitio			
61	79	1.0	1.00	♀ - 0.93	0.8	16-18	ossif.of the skeleton			
62	80	1.0	1.00	o (♀)	-	9.5-10.5	dentitio			
63	81	0.2	0.25	o (♂)	-	1.5-2.5	dentitio			
64	82	0.5	0.50	o (♀)	-	4-5	dentitio			
65	83	0.5	0.50	o (♂)	-	4-5	dentitio			
66	I.	0.5	0.25	♂ 0.00	0.5	23-40	I	-	-	-
67	X	0.0	0.00	? -	-	15-x	observation during excav.			
68	CS	0.0	0.00	o -	-	newborn	observation during excav.			

Table 2

Distribution of the Population According to Age and Sex

Age groups		Number of cases	
Infans I.	(0-7)	14	
Infans II.	(8-14)	4	
		Males	Females
Juvenis	(15-22)	1	2
Adultus	(23-39)	8	4
Maturus	(40-59)	12	14
Senilis	(60- x)	2	4
	15- x	3	
	Total: 68		

Table 3

Abridged Life-Table

Age groups	Dead		Number of survivors	Probability of death	Expectation of life
	number (D_x)	percentage (d_x)	(l_x)	(q_x)	(e^o_x)
			Both sexes		
0- 4	9.6	14.12	100.00	0.141	34.87
5- 9	5.3	7.79	85.88	0.090	35.20
10-14	3.6	5.29	78.09	0.067	33.46
15-19	2.1	3.09	72.80	0.042	30.71
20-24	1.9	2.79	69.71	0.040	26.96
25-29	1.9	2.79	66.92	0.041	22.98
30-34	3.7	5.44	64.13	0.084	18.87
35-39	6.8	10.00	58.69	0.170	15.39
40-44	6.1	8.97	48.69	0.184	13.04
45-49	6.3	9.27	39.72	0.233	10.42
50-54	9.0	13.24	30.45	0.434	7.83
55-59	4.8	7.06	17.21	0.410	6.94
60-64	3.4	5.00	10.15	0.492	5.03
65-69	3.5	5.15	5.15	1.000	2.49
Total:	68.0				
			Males		
15-19	1.0	4.35	100.00	0.043	28.87
20-24	0.3	1.30	95.65	0.135	25.07
25-29	1.4	6.09	94.35	0.645	20.38
30-34	2.5	10.87	88.26	0.123	16.61
35-39	3.9	16.96	77.39	0.219	13.59
40-44	3.3	14.35	60.43	0.237	11.71
45-49	2.3	10.00	46.08	0.217	9.57
50-54	4.5	19.56	36.08	0.542	6.54
55-59	1.8	7.83	16.52	0.473	6.31
60-64	1.1	4.78	8.69	0.550	4.75
65-69	0.9	3.91	3.91	1.000	2.50
Total:	23.0				
			Females		
15-19	1.4	5.83	100.00	0.058	32.21
20-24	1.4	5.83	94.17	0.619	29.05
25-29	0.2	0.83	88.34	0.009	25.80
30-34	0.9	3.75	87.51	0.428	21.02
35-39	2.6	10.83	83.76	0.129	16.85
40-44	2.5	10.42	72.93	0.142	13.98
45-49	3.7	15.42	62.51	0.246	10.90
50-54	4.2	17.51	47.09	0.371	8.65
55-59	2.7	11.25	29.58	0.380	7.29
60-64	2.0	8.33	18.33	0.454	5.23
65-69	2.4	10.00	10.00	1.000	2.50
Total:	24.0				

Table 4

Age Group Distribution of the Arpadian Age Model and the Population at Kál

Age groups	Arpadian Age X-XII c. (ACSÁDI, 1965) %	Kál X c. %
Infans I.	33.7	21.5
Infans II.	5.7	6.2
Juvenis	6.3	4.6
Adultus	16.9	18.5
Maturus	25.3	40.0
Senilis	12.1	9.2

Table 5

Life Expectancy in Diverse Ages of the Arpadian Age Model and the Population at Kál

Age	Arpadian Age X-XII c. (ACSÁDI, 1965) e^o_x	Kál X c. e^o_x
0	28.7	34.9
5	36.0	35.2
10	33.4	33.5
15	30.4	30.7
20	27.5	27.0
25	24.1	23.0
30	21.1	18.9
35	18.4	15.4
40	15.8	13.0
45	13.3	10.4
50	10.7	7.8
55	9.1	6.9
60	7.4	5.0
65	5.8	2.5

Table 6

Mean Sexual Expression Values of 22 Characterics of the Skeleton (15-x years)

Characteristic	Males M	Females M
Tubera front. et par.	+ 0.45	- 1.00
Glabella	+ 0.66	- 0.75
Processus mastoideus	+ 0.90	- 0.19
Protub. occ. externa	+ 0.38	- 0.45
Squama occipitale	+ 0.19	- 0.45
Margo supraorbitale	+ 0.27	- 0.41
Arcus zygomaticus	- 0.23	- 1.00
Facies malaris	+ 0.78	- 0.50
Corpus mandibulae	+ 0.27	- 0.23
Mentum	+ 0.76	- 0.14
Gonion	+ 0.33	- 0.14
Condylus mandibulae	+ 0.17	- 0.52
Mean:	+ 0.41	- 0.48
Pelvis major	+ 0.33	- 0.70
Pelvis minor	+ 0.05	- 0.92
Angulus pubis	+ 0.62	- 0.81
Incisura isch. major	+ 0.40	- 1.04
Foramen obturatum	+ 0.38	- 0.53
Ischio-pubis index	+ 0.37	- 1.17
Cotylo-isch. index	+ 0.95	- 1.04
Sacrum	+ 0.42	- 0.84
Caput femoris	+ 1.23	- 0.69
Linea aspera	+ 0.23	- 0.00
Mean:	+ 0.50	- 0.77

Table 7

Mean Sexual Expression Values of Different Series
(15-x years)

Series	Cranium	Post-cranium	Combined	Cranium	Post-cranium	Combined
		Males M			Females M	
Majs. III-IV c. (ÉRY, 1968)	+0.36	+0.79	+0.53	-0.53	-1.08	-0.69
Ártánd, IX c. (ÉRY, 1966, 1967)	+0.64	+0.79	+0.72	-0.41	-0.85	-0.63
Sárbogárd, X c. (ÉRY, 1967-68)	+0.63	+0.81	+0.72	-0.24	-0.81	-0.53
Kál, X c.	+0.41	+0.50	+0.46	-0.48	-0.77	-0.63

Table 8

The Means of two Sex Determinative Indices in Diverse Series
(15-x years)

Series	Ischio-pubic index (GAILLARD, 1961)	Cotylo-ischiadic index (SAUTER, 1954-55)
	Males	
Majs	94.9	118.6
Ártánd	97.5	110.7
Sárbogárd	94.1	112.1
Kál	100.1	105.9
	Females	
Majs	115.0	75.4
Ártánd	115.3	85.5.
Sárbogárd	114.1	75.1
Kál	114.4	72.6

+ 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
38. Cranial capacity
40. Basi-alveolar length (ba-pr)
43. Upper facial breadth (fmt-fmt)
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)
50. Anterior interorbital breadth (mf-mf)
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 (ol-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 mall.)
	8/a.	Maximum antero-posterior diameter (at level of the nutrient foramen)
	9/a.	Projective transverse diameter (at level of the nutrient foramen)

Table 9

Parameters of the Male and Female Series (20-x years)

MARTIN No+	Cranium							
	Males				Females			
	N	M	Range	S.D.	N	M	Range	S.D.
1	17	185.1	169-193	6.73	15	177.4	170-187	5.88
5	14	101.4	93-105	3.61	13	96.5	90-104	3.71
8	17	142.7	133-155	6.06	18	138.1	128-151	6.76
9	17	97.9	88-108	5.22	17	96.0	88-104	3.72
12	17	112.2	104-123	6.11	15	108.3	102-119	4.77
17	16	135.1	126-147	5.11	13	130.1	124-134	3.01
23	16	523.7	502-540	11.71	13	501.1	479-522	12.39
38	11	1460.0	1330-1700	11.46	10	1300.0	1110-1480	11.89
40	13	96.0	90-105	4.26	13	94.2	84-101	4.51
43	15	105.7	96-110	3.49	14	102.0	96-107	2.99
43/1	17	98.0	91-103	3.20	14	94.5	88-101	3.63
45	12	134.8	126-139	4.14	10	126.3	121-136	4.90
46	14	95.3	89-100	3.47	12	93.4	86-99	4.05
47	9	117.6	108-125	5.79	9	106.9	102-113	4.05
48	14	68.4	61-76	4.11	11	63.0	59-68	3.16
50	15	19.8	17-25	2.08	13	18.8	15-20	1.64
51	16	43.1	39-47	1.94	14	41.8	39-45	1.48
52	16	32.8	29-40	2.79	14	32.1	30-36	1.88
54	16	24.9	21-28	2.00	15	24.3	22-29	1.76
55	14	50.7	46-55	2.53	14	48.4	44-53	2.68
60	14	53.1	49-58	2.74	10	51.9	44-57	3.84
61	11	63.1	58-67	2.30	6	62.0	60-65	1.79
62	12	46.4	41-52	2.58	9	46.0	40-50	2.94
63	11	40.9	36-47	3.08	9	40.2	38-43	1.86
65	12	121.6	114-131	5.14	17	117.7	113-127	3.20
66	16	103.6	95-114	5.11	19	94.7	82-106	5.16
68/1	13	109.0	98-115	4.30	19	101.2	94-108	4.10
69	18	30.3	26-36	2.68	14	27.2	24-30	1.72
72	13	84.5	79-89	3.62	7	82.6	79-89	3.76
75/1	11	30.7	14-42	8.34	5	27.0	19-38	9.21
8:1	14	76.6	71.9-84.8	4.32	15	77.9	70.1-88.2	5.31
17:1	14	72.3	67.0-76.8	2.43	11	72.7	69.5-75.6	2.33
17:8	14	95.1	86.5-108.9	5.89	13	95.7	84.8-104.7	5.34
9:8	15	68.3	64.3-73.1	2.68	15	69.4	62.0-76.2	3.91
47:45	9	87.0	81.5-91.1	3.57	8	84.0	77.9-91.1	3.85
48:45	12	50.8	46.9-56.7	2.80	10	50.0	45.8-54.9	3.40
52:51	16	75.9	63.0-85.1	4.90	14	77.1	68.9-85.4	4.88
54:55	14	49.6	43.8-53.9	3.28	14	50.4	46.2-52.3	3.30
61:60	10	119.2	107.4-130.6	6.66	6	106.8	108.9-122.6	4.92
63:62	7	86.1	78.3-93.5	6.23	7	86.0	79.2-93.5	4.86
68/1:65	12	89.8	84.5-96.5	3.67	17	86.1	79.7-92.1	3.86

Table 9 (continued)

MARTIN No++			Post-cranium					
Humerus	1	R	20	326.2	288-358	19.25	20 298.9	278-333	12.98
		L	20	320.4	286-353	19.67	20 295.0	274-328	14.49
	2	R	20	319.9	285-351	19.19	20 295.1	273-330	13.20
		L	19	314.7	283-345	18.79	21 291.6	270-323	14.37
	7	R	20	67.0	58-76	4.72	21 59.3	51-67	3.96
		L	21	64.4	55-73	4.85	22 57.3	51-64	3.36
	7:1	R	20	20.7	18.6-22.5	1.30	20 19.8	17.1-22.7	1.58
		L	20	20.2	18.1-22.2	1.40	20 19.3	17.1-22.0	1.38
Radius	1	R	17	245.5	224-281	16.45	18 225.6	204-260	14.92
		L	18	244.4	224-280	15.35	13 221.8	201-251	14.95
Ulna	1	R	15	269.6	248-304	16.36	12 247.3	228-266	12.19
		L	17	265.8	246-301	15.25	10 240.4	218-263	12.21
Femur	1	R	20	452.4	408-507	28.83	22 417.5	385-454	18.51
		L	21	455.1	413-506	27.84	21 420.7	394-457	17.70
	2	R	20	453.3	407-503	24.07	22 413.8	377-451	18.43
		L	21	451.0	411-501	28.00	21 416.8	391-453	17.08
	6	R	20	29.5	23-35	2.98	23 25.7	23-29	1.64
		L	20	29.3	24-35	2.76	22 25.7	23-28	1.58
	7	R	20	28.4	24-32	2.19	23 25.7	22-30	1.94
		L	20	28.3	24-32	2.20	22 26.3	23-29	1.64
	9	R	20	35.6	30-40	2.71	23 31.0	27-36	2.35
		L	21	34.8	30-41	2.84	22 31.9	26-36	2.45
	10	R	20	26.7	20-32	3.37	23 23.7	20-27	1.86
		L	21	27.3	22-31	2.78	22 24.0	21-27	1.77
	6:7	R	20	103.7	89.7-121.4	7.61	23 100.2	80.0-117.4	8.80
		L	20	103.7	92.9-119.2	8.31	22 99.8	88.9-121.7	8.25
	10:9	R	20	78.3	61.1-91.2	6.63	23 77.0	65.6-92.9	6.93
		L	21	78.5	62.9-90.6	5.50	22 76.0	63.6-93.1	7.33
Tibia	1	R	18	369.1	333-418	23.65	18 341.9	314-375	19.58
		L	16	373.3	336-418	25.41	22 341.4	318-376	18.47
	1/b	R	18	368.3	333-419	23.48	19 342.9	316-378	19.21
		L	17	370.6	330-421	24.50	22 340.7	316-377	18.57
	8/a	R	19	34.9	28-39	2.42	21 31.0	25-35	2.65
		L	18	34.0	27-40	3.38	23 30.2	25-33	2.04
	9/a	R	19	24.3	21-29	2.03	21 21.4	18-25	2.06
		L	18	23.7	19-29	2.40	23 21.3	17-27	2.30
	9/a:8/a	R	19	69.7	63.6-80.6	4.23	21 69.3	61.3-75.9	3.94
		L	18	69.8	63.3-78.4	5.18	23 70.3	60.0-81.8	5.35
Radio-Humeral index		R	17	77.7	71.3-82.1	3.10	17 75.9	72.3-79.8	2.32
		L	16	78.2	72.4-82.2	2.55	13 76.3	72.8-79.7	2.25
Tibio-Femoral index		R	18	82.4	77.3-85.5	2.00	19 82.6	78.2-87.3	2.24
		L	17	81.9	79.4-84.5	1.62	20 82.2	78.6-85.6	1.82
Pubis length			16	98.1	86-113	7.39	17 98.0	78-117	9.01
Ischium length			16	98.8	87-108	5.94	17 85.7	78-97	4.77
Index			16	100.1	90.5-111.1	5.25	17 114.4	95.1-125.3	5.83
„Cotylo" breadth			20	39.2	32-48	3.94	21 34.5	30-40	3.10
Inc.isc.m.breadth			20	37.7	25-56	5.75	21 48.3	37-59	5.73
Index			20	105.9	66.1-146.7	20.23	21 72.6	50.9-97.3	11.28
Stature			21	166.3	158-177	5.30	23 154.7	149-163	3.88

Table 10

Variability of the Cranial Measurements and Indices

	MARTIN No	♂♂ N	♂♂ S.D.	♂♂ Mean Sigma	♂♂ Sigma Ratio	♀♀ N	♀♀ S.D.	♀♀ Mean Sigma	♀♀ Sigma Ratio
Brain case	1	17	6.73	6.1	100.3	15	5.88	5.8	101.4
	5	14	3.61	4.1	88.0	13	3.71	3.9	95.1
	8	17	6.06	5.0	121.2	18	6.76	4.8	140.8+
	9	17	5.22	4.4	118.6	17	3.72	4.3	86.5
	12	17	6.11	4.5	135.8+	15	4.77	4.3	110.9
	17	16	5.11	4.9	104.3	13	3.01	4.7	64.0++
	23	16	11.71	14.3	81.9	13	12.39	13.7	90.4
	38	11	11.46	11.2	102.3	10	11.89	10.05	118.3
	8:1	14	4.32	3.2	135.0	15	5.31	3.2	165.9+
	17:1	14	2.43	3.1	127.6	11	2.33	3.1	75.2
	17:8	14	5.89	4.4	133.9+	13	5.34	4.4	121.4
	9:8	15	2.68	3.3	81.2	15	3.91	3.3	118.5
	Mean:				110.8				107.4
Facial skeleton	40	13	4.26	4.9	86.9	13	4.51	4.7	96.0
	43	15	3.49	3.85	90.6	14	2.99	3.65	81.9
	43/1	17	3.20	3.8	84.2	14	3.63	3.6	100.8
	45	12	4.14	5.1	81.2	10	4.90	4.8	102.1
	46	14	3.47	4.7	73.8	12	4.05	4.45	91.0
	47	9	5.79	7.0	82.7	9	4.05	6.5	62.3
	48	14	4.11	4.1	100.2	11	3.16	3.8	83.2
	51	16	1.94	1.8	107.8	14	1.48	1.7	87.1
	52	16	2.79	1.9	146.8+	14	1.88	1.9	98.9
	54	16	2.00	1.8	111.1	15	1.76	1.7	103.5
	55	14	2.53	2.9	87.2	14	2.68	2.7	99.3
	60	14	2.74	2.8	97.9	10	3.84	2.7	142.2+
	61	11	2.30	3.2	71.9	6	1.79	3.0	59.7
	62	12	2.58	2.8	108.5	9	2.94	2.65	110.9
	63	11	3.08	2.65	116.2	9	1.86	2.55	72.9
	47:45	9	3.57	5.3	67.4	8	3.85	5.3	72.6
	48:45	12	2.80	3.15	88.9	10	3.40	3.15	92.6
	52:51	16	4.90	5.0	98.0	14	4.88	5.0	97.6
	54:55	14	3.28	4.1	80.0	14	3.30	4.1	80.5
	61:60	10	6.66	7.1	93.8	6	4.92	7.1	69.3
	63:62	7	6.23	7.0	89.0	7	4.86	7.0	69.4
	Mean:				93.5				89.2
Mandible	65	12	5.14	5.7	90.2	17	3.20	5.4	59.3++
	66	16	5.11	6.3	81.1	19	5.16	5.8	89.0
	68/1	13	4.30	5.2	82.7	19	4.10	5.0	82.0
	69	18	2.68	2.85	94.0	14	1.72	2.55	67.5++
	Mean:				87.0				74.5
Angles of face	72	13	3.62	2.9	124.8	7	3.76	2.9	129.7
	75/1	11	8.34	4.6	181.3+	5	9.21	4.6	200.2+
	Mean:				153.1				165.0

\+ Significantly high S.R.
++ Significantly low S.R.

Table 11

Distribution of Measurements and Indices According to ALEXEYEV - DEBETZ
(20-x years)

MARTIN No	Classification ♂♂	Classification ♀♀		♂♂ N	♀♀ N
	161-171	153-163	very short	1	-
	172-177	164-169	short	2	-
1	178-184	170-175	medium	3	5
	185-190	176-181	long	8	5
	191-201	182-191	very long	3	5
	88-95	84-90	very short	2	1
	96-99	91-94	short	2	3
5	100-103	95-98	medium	5	5
	104-107	99-102	long	5	3
	108-115	103-109	very long	-	1
	125-133	120-128	very narrow	1	1
	134-138	129-133	narrow	2	4
8	139-144	134-139	medium	9	4
	145-149	140-144	breadth	2	7
	150-158	145-153	very breadth	3	2
	82-89	79-86	very narrow	1	-
	90-93	87-90	narrow	2	1
9	94-98	91-95	medium	8	6
	99-102	96-99	breadth	2	7
	103-110	100-107	very breadth	4	3
	94-101	90-97	very narrow	1	-
	102-106	98-102	narrow	5	2
12	107-111	103-107	medium	3	5
	112-116	108-112	breadth	4	5
	117-124	113-120	very breadth	4	3
	118-126	113-120	very low	2	-
	127-131	121-125	low	1	1
17	132-136	126-130	medium	8	6
	137-141	131-135	high	4	6
	142-150	136-143	very high	1	-
	471-495	452-475	very small	-	-
	496-509	476-488	small	3	2
23	510-525	489-504	medium	3	4
	526-539	505-517	large	9	6
	540-564	518-541	very large	1	1
	1030-1227	921-1096	very small	-	-
	1228-1337	1097-1195	small	1	2
38	1338-1462	1196-1307	medium	4	3
	1463-1572	1308-1406	large	5	3
	1573-1770	1407-1582	very large	1	2
	83-91	80-87	very short	1	1
	92-96	88-92	short	9	3
40	97-101	93-97	medium	1	5
	102-106	98-102	long	2	4
	107-115	103-110	very long	-	-

Table 11 (continued)

	92-98	88-94	very narrow	1	-
	99-102	95-98	narrow	-	2
43	103-106	99-102	medium	6	6
	107-110	103-106	breadth	8	5
	111-117	107-113	very breadth	-	1
	86-92	82-88	very narrow	2	1
	93-96	89-92	narrow	2	2
43/1	97-100	93-96	medium	11	7
	101-104	97-100	breadth	2	3
	105-111	101-107	very breadth	-	1
	117-125	109-116	very narrow	-	-
	126-130	117-121	narrow	2	1
45	131-136	122-127	medium	5	6
	137-141	128-132	breadth	5	2
	142-150	133-140	very breadth	-	1
	82-89	78-84	very narrow	1	-
	90-94	85-89	narrow	4	2
46	95-99	90-94	medium	8	4
	100-104	95-99	breadth	1	6
	105-112	100-106	very breadth	-	-
	96-107	89-99	very low	-	-
	108-114	100-106	low	3	5
47	115-122	107-113	medium	3	4
	123-129	114-120	high	3	-
	130-141	121-131	very high	-	-
	58-64	54-59	very low	3	1
	65-68	60-63	low	3	6
48	69-73	64-68	medium	7	4
	74-77	69-72	high	1	-
	78-84	73-78	very high	-	-
	36.0-39.1	34.6-37.6	very narrow	-	-
	39.2-40.9	37.7-39.3	narrow	1	-
51	41.0-42.9	39.4-41.2	medium	4	3
	43.0-44.7	41.3-42.9	breadth	7	7
	44.8-47.9	43.0-46.0	very breadth	4	4
	27.9-31.2	27.7-31.0	very low	4	2
	31.3-33.1	31.1-32.9	low	3	8
52	33.2-35.2	33.0-35.0	medium	6	2
	35.3-37.1	35.1-36.9	high	2	2
	37.2-40.5	37.0-40.3	very high	1	-
	19.5-22.6	18.7-21.7	very narrow	2	-
	22.7-24.4	21.8-23.4	narrow	4	5
54	24.5-26.4	23.5-25.4	medium	6	8
	26.5-28.2	25.5-27.1	breadth	4	-
	28.3-31.4	27.2-30.2	very breadth	-	2
	43-47	40-44	very low	1	1
	48-50	45-47	low	7	6
55	51-53	48-50	medium	4	4
	54-56	51-53	high	2	3
	57-61	54-58	very high	-	-
	44.8-49.6	42.8-47.3	very short	2	1
	49.7-52.4	47.4-50.0	short	3	1
60	52.5-55.5	50.1-53.0	medium	7	2
	55.6-58.3	53.1-55.7	long	2	4
	58.4-63.2	55.8-60.3	very long	-	2

Table 11 (continued)

	52.5-58.0	49.8-55.0	very narrow	-	-
	58.1-61.2	55.1-58.0	narrow	2	-
61	61.3-64.7	58.1-61.4	medium	7	3
	64.8-67.9	61.5-64.4	breadth	2	2
	68.0-73.5	64.5-69.7	very breadth	-	1
	36.8-41.6	35.0-39.7	very short	1	-
	41.7-44.4	39.8-42.3	short	-	1
62	44.5-47.5	42.4-45.1	medium	8	2
	47.6-50.3	45.2-47.7	long	2	3
	50.4-55.2	47.8-52.9	very long	1	3
	30.9-35.5	29.4-33.8	very narrow	-	-
	35.6-38.2	33.9-36.4	narrow	1	5
63	38.3-41.3	36.5-39.3	medium	4	2
	41.4-44.0	39.4-41.9	breadth	5	3
	44.1-48.7	42.0-46.4	very breadth	1	-
	101-110	94-104	very narrow	-	-
	111-116	105-109	narrow	3	-
65	117-122	110-115	medium	3	5
	123-128	116-120	breadth	5	11
	129-138	121-131	very breadth	1	1
	79-90	74-85	very narrow	-	1
	91-96	86-90	narrow	3	2
66	97-103	91-97	medium	5	11
	104-109	98-102	breadth	7	3
	110-121	103-114	very breadth	1	1
	89-97	85-92	very short	-	-
	98-102	93-97	short	1	3
68/1	103-108	98-103	medium	6	9
	109-113	104-108	long	5	6
	114-122	109-116	very long	1	-
	23.6-28.6	21.3-25.8	very low	4	3
	28.7-31.4	25.9-28.3	low	9	6
69	31.5-34.5	28.4-31.2	medium	3	5
	34.6-37.3	31.3-33.7	high	2	-
	37.4-42.4	33.8-38.3	very high	-	-
	73-77	73-77	very small	-	-
	78-80	78-80	small	1	2
72	81-83	81-83	medium	5	3
	84-86	84-86	large	4	1
	87-91	87-91	very large	3	1
	11-18	7-14	very small	1	-
	19-23	15-19	small	1	1
75/1	24-28	20-24	medium	1	2
	29-33	25-29	large	3	-
	34-41	30-37	very large	5	2
	150-159	140-148	short	3	-
Stature (classif. acc. to MARTIN)	160-163	149-152	medium short	5	10
	164-166	153-155	medium	3	6
	167-169	156-158	medium tall	4	3
	170-179	159-167	tall	6	4
	67.7-73.2	68.5-74.1	very long	3	4
	73.3-76.4	74.2-77.3	long	6	4
8:1	76.5-79.9	77.4-80.8	medium	2	3
	80.0-83.1	80.9-84.0	short	1	2
	83.2-88.7	84.1-89.7	very short	2	2

Table 11 (continued)

	63.8-69.2	63.9-69.4	very low	1	-
	69.3-72.3	69.5-72.5	low	5	4
17:1	72.4-75.6	72.6-75.8	medium	7	7
	75.7-78.7	75.9-78.9	high	1	-
	78.8-84.2	79.0-84.5	very high	-	-
	80.2-87.9	79.4-87.1	very low	1	1
	88.0-92.3	87.2-91.4	low	4	1
17:8	92.4-97.0	91.5-96.1	medium	4	5
	97.1-101.4	96.2-100.4	high	3	4
	101.5-109.2	100.5-108.2	very high	2	2
	57.0-62.7	57.3-63.0	very narrow	-	1
	62.8-66.0	63.1-66.3	narrow	3	2
9:8	66.1-69.6	66.4-69.9	medium	9	5
	69.7-72.9	70.0-73.2	breadth	2	4
	73.0-78.7	73.3-79.0	very breadth	1	3
	71.3-80.5	71.0-80.1	very breadth	-	1
	80.6-85.8	80.2-85.4	breadth	4	4
47:45	85.9-91.6	85.5-91.1	medium	5	3
	91.7-96.9	91.2-96.4	narrow	-	-
	97.0-106.2	96.5-105.6	very narrow	-	-
	42.8-48.3	42.6-48.1	very breadth	2	4
	48.4-51.4	48.2-51.2	breadth	6	3
48:45	51.5-54.9	51.3-54.7	medium	3	1
	55.0-58.0	54.8-57.8	narrow	1	2
	58.1-63.6	57.9-63.4	very narrow	-	-
	65.1-73.8	67.4-76.4	very low	5	7
	73.9-78.7	76.5-81.5	low	5	4
52:51	78.8-84.3	81.6-87.3	medium	5	3
	84.4-89.2	87.4-92.4	high	1	-
	89.3-98.0	92.5-101.5	very high	-	-
	35.4-42.5	36.1-43.3	very narrow	-	-
	42.6-46.6	43.4-47.5	narrow	3	2
54:55	46.7-51.1	47.6-52.1	medium	5	8
	51.2-55.2	52.2-56.3	breadth	6	4
	55.3-62.4	56.4-63.6	very breadth	-	-
	93.2-105.4	92.6-104.7	very long	-	-
	105.5-112.7	104.8-112.0	long	1	1
61:60	112.8-120.5	112.1-119.7	medium	6	3
	120.6-127.8	119.8-127.0	short	1	2
	127.9-140.1	127.1-139.2	very short	2	-
	63.4-75.7	63.5-75.8	very narrow	-	-
	75.8-82.6	75.9-82.7	narrow	2	2
63:62	82.7-90.3	82.8-90.5	medium	2	4
	90.4-97.2	90.6-97.4	breadth	3	1
	97.3-109.6	97.5-109.8	very breadth	-	-

Table 12

Distribution of Morphological Features (20-x years)

Characteristics	Males N	Males %	Females N	Females %
Plagiocrania	2	10.5	2	10.5
Sutura metopica	3	15.0	1	5.6
Ossa wormiana	13	65.0	10	52.6
Os praeinterpariet.	2	10.0	2	10.0
Pterion: normal H	12	75.0	6	42.9
narrow H	1	6.3	3	21.4
os epipteric.	3	18.7	5	35.7
Cribra orbitalia	1	6.2	-	-
Torus palatinus	4	26.6	7	41.2
Norma vert.: ellipsoidal	2	10.0	-	-
ovoid	7	35.0	8	42.1
spheroidal	1	5.0	4	21.0
rhombo-pent.	3	15.0	3	15.8
spheno-birs.	7	35.0	4	21.0
Occiput: curvoccip.	21	100.0	19	95.0
planoccip.	-	-	1	5.0
Flatt. in lamb. reg.	4	26.7	3	15.8
Orbita: rounded	-	-	3	20.0
subrectang.	8	47.0	6	40.0
rectang.	9	53.0	6	40.0
Nasal ridge: straight	5	33.3	4	44.4
concave	1	6.7	1	11.1
convex	6	40.0	2	22.2
conc.-conv.	3	20.0	2	22.2
Spina nasalis anterior: 1	1	6.7	4	28.5
2	5	33.3	5	35.7
3	8	53.3	3	21.4
4	-	-	2	14.3
5	1	6.7	-	-
Nasal aperture: infantile	2	11.7	3	16.7
anthropine	11	64.7	14	77.8
fossa pr. n.	4	23.5	1	5.5
Fossa canina: shallow	4	23.5	5	29.4
medium	6	35.3	6	35.3
deep	7	41.1	6	35.3

Table 13

Distribution of the Estimated Types of the Population (20-x years)

Types	Males N	Males %	Females N	Females %	Total N	Total %
Mediterranoids	7	35.0	7	33.3	14	34.1
Nordoids	5	25.0	5	23.8	10	24.4
Cromagnoids	-	-	2	9.6	2	4.9
Brachycranials	7	35.0	5	23.8	12	29.3
Europo-Mongoloids	1	5.0	2	9.6	3	7.3
Total:	20		21		41	

Table 14

Size, Shape and Generalized PENROSE-Distance of Different Series from Kál

Series	Size	Shape	Generalized PENROSE-Distance (D_p^2)
Males:			
Kál - Székesfehérvár-Szárazrét	0.10	0.08	1.59
Kál - Ártánd	0.04	0.10	1.73
Kál - Sarmatians from Ukraine	0.01	0.11	1.66
Kál - Sarmatians from Kalinovka	0.00	0.11	1.73
Females:			
Kál - Sárbogárd	0.01	0.10	1.59

Table 15

Sample Sizes and Means of Series Close to Kál

MARTIN No	Males										Females			
	Kál, X c.		Székesfehérvár-Szárazrét, XI c.		Ártánd, IX c.		Sarmatians from the Ukraine region, III c.B.C. - III c.A.D.		Sarmatians from Kalinovka IV c. B.C. - IV c. A.D.		Kál, X c.		Sárbogárd, X c.	
	N	M	N	M	N	M	N	M	N	M	N	M	N	M
1	17	185.1	22	184.7	14	186.2	18	183.8	38	183.1	15	177.4	13	175.4
5	14	101.4	22	103.9	16	103.3	10	100.8	25	103.1	13	96.5	9	96.6
8	16	142.4	22	144.8	17	146.2	18	146.3	39	142.2	18	138.1	14	138.9
9	17	97.9	22	99.0	34	98.1	19	97.1	37	96.0	17	96.0	12	95.3
17	15	135.1	22	136.5	14	134.4	10	134.1	26	135.0	13	130.1	10	130.3
40	13	96.0	21	99.5	15	97.5	10	96.5	24	97.4	13	94.2	6	90.5
45	12	134.8	19	134.3	10	137.8	16	137.0	38	134.7	10	126.3	6	125.5
48	14	68.4	21	70.9	35	70.1	16	70.8	39	71.4	11	63.0	7	63.7
51	16	43.1	21	42.9	29	43.0	14	42.9	35	42.5	14	41.8	9	40.8
52	16	32.8	22	33.8	29	33.3	17	32.9	37	33.2	14	32.1	9	32.0
54	16	24.9	21	26.2	54	24.1	11	25.3	39	24.6	15	24.3	7	24.9
55	14	50.7	22	52.7	37	52.1	16	51.4	39	52.6	14	48.4	8	48.6
8:1	15	76.7	22	78.4	11	79.1	18	79.7	38	77.8	15	77.9	12	79.7
17:1	14	72.3	22	73.9	11	72.2	10	74.2	26	73.8	11	72.7	9	74.6
17:8	13	95.3	22	93.3	10	90.2	10	91.0	26	94.6	13	95.7	10	92.8
9:8	15	68.3	22	68.4	16	67.6	18	66.1	37	67.5	15	69.4	11	68.5
48:45	12	50.7	18	52.5	10	50.7	13	51.6	38	53.1	10	50.0	4	50.8
52:51	15	76.9	22	79.3	30	77.3	-	-	35	78.1	14	77.1	8	77.4
54:55	14	49.6	21	50.5	35	47.4	16	49.5	39	46.9	15	50.3	6	53.8
Stature	21	166.3	18	167.5	42	165.8	18	164.1		-	23	154.6	15	154.7
Mean S.R.	105.3		106.6		100.7		114.0			-	96.4		94.1	

+ Correction by 2 mm of the distance 40.9 mm as measured from the dacrion.

Table 16

The Important Means of the Male Population in the Southern and Northern Wings of the Cemetery

MARTIN No	Southern wing N	Southern wing M	Northern wing N	Northern wing M
1	8	183.5	8	186.1
5	6	100.5	7	101.9
8	5	140.2	11	143.8
9	7	97.1	9	98.2
12	6	111.0	9	114.0
17	6	134.0	9	135.4
23	7	519.7	8	526.4
40	5	95.2	7	96.6
43/1	7	96.4	9	99.6
45	4	130.8	7	137.3
46	5	93.6	8	95.8
48	6	66.5	7	68.9
51	7	42.3	8	44.1
52	7	32.1	8	33.5
54	7	23.4	8	26.5
55	6	48.8	7	51.7
75/1	4	34.7	6	28.3
8:1	5	76.0	8	77.1
17:1	6	72.3	7	72.2
17:8	4	95.6	9	94.8
9:8	5	68.4	9	68.1
48:45	4	50.4	7	50.2
52:51	7	76.0	8	75.9
54:55	6	48.5	7	51.1
Stature	10	164.6	11	167.7
Aver. age at death	10	43.6	11	47.2

Table 17

Blood Group Distribution in the Southern and Northern Wings of the Cemetery According to LENGYEL

Blood groups	Southern wing N	Northern wing N
A	13	5
B	8	9
AB	3	-
O	5	14
Non-secretor	2	4
Total:	31	32

Table 18

Individual Cranial and Post-Cranial Measurements and Indices (20-x years)

Grave No. / MARTIN No.	Males								
	2.	7.	8.	15.	17.	19.	25.	26.	30.
1	185	173	-	181	190	188	193	-	182
5	-	93	-	99	104	95	102	-	102
8	134	141	135	139	135?	140?	145	-	144
9	88	101	-	96	105	95	97	-	97
12	108	116	106	106	108	109?	115	-	106
17	-	126	147	135	137	126	134	-	129
23	505	502	-	508	532	526	536	-	518
38	-	1330	-	1360	-	-	1470	-	1350
40	-	90	-	95	-	93	98	-	93
43	96	107	-	108	-	103	107	-	106
43/1	91	99	-	97	100	96	99	-	100
45	126	133	-	135	-	130	132	-	139
46	95	92	-	95	-	89	94	-	98
47	108	118	-	123	-	-	119	-	125
48	62	68	-	72	-	61	69	-	73
50	19	19	-	19	22	17	17	-	25
51	41	43	-	43	43	41	45	-	44
52	30	34	-	32	36	30	33	-	34
54	23	24	-	23	26?	24	25	-	28
55	49	50	-	50	55?	46	51	-	55
60	54	52	-	54	-	-	54	-	53
61	63	-	-	58	-	-	-	-	62
62	46	46	-	46	-	41	47	-	47
63	43	-	-	36	-	-	-	-	39
65	114	123	-	115	-	-	128	-	124
66	95	103	-	108	97	95	107	-	105
68/1	106	111	-	111	-	-	111	-	106
69	28	30	-	34	27	26	29	29	36
72	82	82	-	82	-	86	83	-	89
75/1	40	26	-	30	-	32	-	-	14
8:1	72.4	81.5	-	76.8	71.1?	74.5?	74.4	-	79.1
17:1	-	72.8	-	74.6	72.1	67.0	69.4	-	70.9
17:8	-	89.4	108.9	97.1	101.5?	90.0?	92.4	-	89.6
9:8	65.7	71.6	-	69.1	77.8?	67.9?	66.9	-	67.4
47:45	85.7	88.7	-	91.1	-	-	90.2	-	89.9
48:45	49.2	51.1	-	53.3	-	46.9	52.3	-	52.5
52:51	73.2	79.1	-	74.4	83.7	73.2	73.3	-	77.3
54:55	46.9	48.0	-	46.0	47.3?	52.2	49.0	-	50.9
61:60	116.7	-	-	107.4	-	-	-	-	117.0
63:62	93.5	-	-	78.3	-	-	-	-	83.0
68/1:65	93.0	90.2	-	96.5	-	-	86.7	-	85.5

Table 18 (continued 1)

Grave No. / MARTIN No.	Males								
	32.	39.	41.	52.	54.	55.	58.	59.	63.
1	169	-	-	-	192	188	184	190	192
5	-	-	-	-	104	103	102	104	109?
8	-	-	152	148	140	143	155	141	141
9	-	-	98	-	95	92	104	98	103
12	-	-	-	121	104	116	123	116	118
17	-	-	141?	136	139	135	134	135	146?
23	-	-	-	-	528	530	540	530	537
38	-	-	-	-	1550	1550	1500	1420	-
40	-	-	-	-	105	95	96	93	93?
43	-	-	104	-	105	108	109	109	110
43/1	-	-	97	-	98	100	100	103	102
45	-	-	-	-	138	139	139	138	132?
46	-	-	-	-	99	90	96	99	93
47	-	-	-	-	113	119	123	111?	126?
48	-	-	-	-	70	69	70	68	77?
50	-	-	-	-	18	20	22	20	-
51	R 41?	-	-	-	46	43	42	46	47
52	R 32?	-	-	-	29	34	32	36	40
54	22	-	-	-	26	25	28	28	27
55	52?	-	-	-	50	52	52	53	60?
60	-	-	49	-	58	50	55	49	51
61	63	-	64	-	-	64	65	-	61
62	-	-	-	-	52	45	46	47	-
63	43	-	43	-	-	42	39	-	38
65	-	-	-	-	124	124?	122	121	131
66	-	-	114	95	105	102	99	107	108
68/1	-	-	-	-	112	108	108	107	113
69	35	-	30	-	30	30	31	28	32
72	-	-	-	-	82	84	87	88	-
75/1			-	-	42	34	34	20	-
8:1	-	-	-	-	72.9	76.1	84.2	74.2	73.4
17:1	-	-	-	-	72.4	71.8	72.8	71.1	76.0?
17:8	-	-	92.8?	91.9	99.3	94.4	86.5	95.7	103.6?
9:8	-	-	64.5	-	67.9	64.3	67.1	69.5	73.1
47:45	-	-	-	-	81.9	85.6	88.5	80.4?	95.5?
48:45	-	-	-	-	50.7	49.6	50.4	49.3	58.3?
52:51	78.1?	-	-	-	63.0	79.1	76.2	78.3	85.1
54:55	42.3?	-	-	-	52.0	48.1	53.9	52.8	45.0?
61:60	-	-	130.6	-	-	128.0	118.2	-	119.6
63:62	-	-	-	-	-	93.3	84.8	-	-
68/1:65	-	-	-	-	90.3	87.1?	88.5	88.4	86.3

Table 18 (continued 2)

Grave No. / MARTIN No.	Males				Females				
	64.	65.	74.	I.	1.	3.	10.	11.	12.
1	188	177	185	190	-	177	183	176	-
5	105	104	99	103	-	96	99	98	-
8	142	150	133	144	-	143	134	143	128
9	96	108	91	100	-	98	95	104	-
12	106	119	110	109	-	111	110	107	104
17	138	136	136	139	-	130	133	-	134
23	526	518	513	530	-	510	505	506	-
38	1490	-	1340	1700	-	1370	1340	1250	-
40	104	96	94	96	-	91	97	99	-
43	103	107	-	104	-	102	102	107	-
43/1	97	100	92	95	-	94	96	101	-
45	135	138?	-	134	-	131	124	136	-
46	99	95	99?	100	-	95	86	99	-
47	110	107?	-	-	-	112	113	110	-
48	64	66	69	76	-	61	68	67	-
50	19	20	19	21	-	20	18	20	-
51	42	44	39	43	-	40	43	43	-
52	29	33	31	34	-	31	32	36	-
54	26	21	26	25	-	23	22	24	-
55	50	48	49	55	-	47	47	52	-
60	57	-	53	55	-	48	53	54	-
61	67	-	64	63	-	-	61	62	-
62	50?	-	48	49	-	44	48	-	-
63	47	-	41	39	-	38	38	42	-
65	123	116	118	-	112?	115	115	120	-
66	104	-	103	-	100?	93	97	102	88
68/1	115	98	108	-	88?	104	100	105	-
69	29	29	32	-	-	27	28	27	-
72	79	86	-	89	-	89	82	81	-
75/1	-	37	-	29	-	-	36	19	-
8:1	75.5	84.8	71.9	75.8	-	80.8	73.2	81.3	-
17:1	73.4	76.8	73.5	73.2	-	73.5	72.7	-	-
17:8	97.2	90.7	102.3	96.5	-	90.9	99.3	-	104.7
9:8	67.6	72.0	68.4	69.4	-	68.5	70.9	72.7	-
47:45	81.5	78.3?	-	-	-	85.5	91.1	80.9	-
48:45	47.4	47.8?	-	56.7	-	46.6	54.8	49.3	-
52:51	69.1	75.0	79.5	79.1	-	77.5	74.4	83.7	-
54:55	52.0	43.8	53.1	45.5	-	48.9	46.8	46.2	-
61:60	117.5	-	120.8	114.6	-	-	115.1	114.8	-
63:62	94.0?	-	91.1	79.6	-	86.4	79.2	-	-
68/1:65	93.5	84.5	91.5	-	78.6?	90.4	87.0	87.5	-

Table 18 (continued 3)

Grave No. / MARTIN No.	Females								
	16.	18.	20.	21.	22.	23.	24.	29.	31.
1	176	176	172	187	183	170	173	-	179?
5	96	99	94	104	-	96	-	-	-
8	137	130	151	131	137	136	142	141	158?
9	93	95	100	96	92	88	96	-	96
12	110	106	119	-	113	102	105	-	-
17	133	132	128	131	-	126	-	-	-
23	499	491	507	-	-	480	509	-	-
38	-	1260	1410	-	-	1220	-	-	-
40	94	94	94	101	-	93	-	-	-
43	104?	101	103	105	104	96	97	-	-
43/1	96?	93	95	97	98	88	89	-	-
45	127	121	131	-	-	125	126?	-	147?
46	96	87	99	95	-	91	-	-	-
47	106	-	102	106	-	104	-	-	-
48	60	61	60	62	-	59	-	-	69?
50	19	16	20	20	-	15	-	-	-
51	42	41	41	45	-	39	-	-	R 42?
52	31	31	32	31	-	30	-	-	R 33?
54	27	23	23	29	24?	24	-	-	24?
55	48	46	44	52	48?	47	-	-	52?
60	51	-	53	53	-	50	-	-	-
61	-	-	65	63	-	60	-	-	-
62	44	47	46	-	-	47	-	-	-
63	39	40	43	41	-	42	-	-	-
65	120	118	119	119	127	113	118	-	-
66	97	92	98	93	98	106	93	82	-
68/1	108	102	96	106	103	103	94	-	99
69	28	28	28	24?	30	25	21?	24	29
72	-	83	83?	-	-	80	-	-	-
75/1	-	-	-	-	-	38	-	-	-
8:1	77.8	73.9	87.8	70.1	74.9	80.0	82.1	-	88.3?
17:1	75.6	75.0	74.4	70.1	-	74.1	-	-	-
17:8	97.1	101.5	84.8	100.0	-	92.7	-	-	-
9:8	67.9	73.1	66.2	73.3	67.2	64.7	67.6	-	60.8?
47:45	83.5	-	77.9	-	-	83.2	-	-	-
48:45	47.2	50.4	45.8	-	-	47.2	-	-	46.9?
52:51	73.8	75.6	78.1	68.9	-	76.9	-	-	78.6?
54:55	56.3	50.0	52.3	55.8	50.0?	51.1	-	-	46.2?
61:60	-	-	122.6	118.9	-	120.0	-	-	-
63:62	88.6	85.1	93.5	-	-	89.4	-	-	-
68/1:65	90.0	86.4	80.7	89.1	81.1	91.2	79.7	-	-

Table 18 (continued 4)

Grave No. / MARTIN No.	Females								
	33.	34.	35.	37.	38.	40.	66.	72.	75.
1	-	-	-	171	177	-	183	187	170
5	-	-	-	93	96	-	93	101	90
8	141	-	-	129	130	-	140	142	150
9	-	-	98	96	99	-	93	100	93
12	109	-	-	102	103	-	110	113	107?
17	133	-	-	128	124	-	129	130	117?
23	-	-	-	479	493	-	510	522	503
38	-	-	-	1160	1110	-	1480	1400	-
40	98	-	-	84	90	-	92	98	89?
43	-	-	-	101	102	-	100	105	103
43/1	-	-	-	95	95	-	94	98	90
45	-	-	-	122	122	-	124	130?	131?
46	-	-	-	91	92	-	93	97	111?
47	-	-	-	102	100?	-	107	-	-
48	-	-	-	62	67	-	66	62?	58?
50	-	-	-	20	18	-	19	20	19
51	-	-	41	42	42	-	41	43	42
52	-	-	35	34	32	-	34	30	31
54	24	-	24	24	25	-	23	25	25
55	-	-	51	47	53	-	48	49	46
60	57	-	-	44	-	-	56	-	-
61	-	-	-	57?	-	-	61	-	-
62	50	-	-	40	-	-	48	-	-
63	36?	-	-	[illegible]	-	-	39	-	-
65	118	-	118	114	118	-	114	117	117
66	94	-	92	90	97	97	97	-	94
68/1	106	-	100	94	99	103	105	98	98
69	29	-	-	25	26	-	27	-	-
72	-	-	-	86	84?	-	79	-	-
75/1	-	-	-	20	-	-	22	-	-
8:1	-	-	-	75.4	73.5	-	76.5	75.9	88.2
17:1	-	-	-	74.9	70.1	-	70.5	69.5	68.8?
17:8	94.3	-	-	99.2	95.4	-	92.1	91.6	78.0?
9:8	-	-	-	74.4	76.2	-	66.4	70.4	62.0
47:45	-	-	-	[illegible]	82.0?	-	86.3	-	-
48:45	-	-	-	[illegible]	54.9	-	53.2	47.7?	44.3?
52:51	-	-	85.4	81.0	76.2	-	82.9	69.8	73.8
54:55	-	-	47.1	51.1	47.2	-	47.9	51.0	54.4
61:60	-	-	-	129.6?	-	-	108.9	-	-
63:62	72.0?	-	-	97.5?	-	-	81.3	-	-
68/1:65	89.8	-	84.8	82.5	83.9	-	92.1	83.8	83.8

Table 18 (continued 5)

			Males							
			2.	7.	8.	15.	17.	19.	25.	26.
Humerus	1	R	305	324	-	355	324	288	316	325
		L	302	310	328	348	320	286	304	-
	2	R	302	321	-	348	320	285	313	321
		L	301	307	-	341	315	283	301	-
	7	R	67	61	-	76	62	62	69	64
		L	67	60	62	73	59	62	57	60
	7:1	R	22.0	18.8	-	21.4	19.1	21.5	21.8	19.7
		L	22.2	19.4	18.9	21.0	18.4	21.7	18.8	-
Radius	1	R	237	229	-	281	248	234	243	252
		L	236	232	245	280	248	231	241	252
Ulna	1	R	259	251	-	304	272	258	267	271
		L	257	248	273	301	267	257	264	271
Femur	1	R	422	443	471	507	448	408	439	440
		L	423	443	478	506	453	413	444	438
	2	R	417	438	469	503	445	407	438	437
		L	421	437	474	501	451	411	443	434
	6	R	26	26	30	35	28	27	34	23
		L	27	26	31	35	28	27	34	24
	7	R	28	29	27	32	27	28	28	24
		L	27	28	26	31	25	29	29	24
	9	R	33	36	32	39	34	32	33	30
		L	32	35	31	41	35	32	35	30
	10	R	25	22	25	32	25	24	26	20
		L	25	22	25	31	26	25	26	22
	6:7	R	92.9	89.7	111.1	109.4	103.7	96.4	121.4	95.8
		L	100.0	92.9	119.2	112.9	112.0	93.1	117.2	100.0
	10:9	R	75.8	61.1	78.1	82.1	73.5	75.0	78.8	66.7
		L	78.1	62.9	80.7	75.6	74.3	78.1	74.3	73.3
Tibia	1	R	342	351	384	418	370	333	369	363
		L	342	347	390	418	370	336	371	362
	1/b	R	338	349	383	419	373	333	368	365
		L	338	347	390	421	370	330	370	362
	8/a	R	35	32	35	36	33	34	36	28
		L	36	30	34	37	31	34	34	27
	9/a	R	25	22	25	29	23	22	25	21
		L	24	21	25	29	20	23	25	21
	9/a:8/a	R	71.4	68.8	71.4	80.6	69.7	64.7	69.4	75.0
		L	66.7	70.0	73.5	78.4	64.5	67.7	73.5	77.8
Radio-Humeral index		R	78.5	71.3	-	80.8	77.5	82.1	77.6	78.5
		L	78.4	75.6	-	82.1	78.7	81.6	80.1	-
Tibio-Femoral index		R	81.1	79.7	81.7	83.3	83.8	81.8	84.0	83.5
		L	80.3	79.4	82.3	84.0	82.0	80.3	83.5	83.4
Pubis length			91	-	96	113	95	86	86	94
Ischium length			90	-	100	108	94	87	95	94
Index			111.1	-	96.0	104.6	101.6	98.9	90.5	100.0
„Cotylo" breadth			36	-	42	43	38	41	44	32
Inc.isc.m.breadth			25	-	43	38	37	36	30	37
Index			144.0	-	97.6	113.2	102.7	113.9	146.7	86.5
Stature			161.0	162.8	169.5	176.5	166.0	158.0	165.0	166.0

Table 18 (continued 6)

			Males							
			30.	32.	39.	41.	52.	54.	55.	58.
Humerus	1	R	341	339	305	340	356	325	329	343
		L	334	328	304	335	350	318	324	347
	2	R	336	330	300	336	349	319	323	333
		L	330	322	300	332	344	314	317	337
	7	R	69	63	58	69	74	72	72	72
		L	67	62	55	67	72	68	70	70
	7:1	R	20.2	18.6	19.0	20.3	20.8	22.2	21.9	21.6
		L	20.1	18.9	18.1	20.0	20.6	21.4	21.6	20.2
Radius	1	R	-	256	243	-	-	261	252	252
		L	-	-	240	258	249	258	249	-
Ulna	1	R	-	280	266	-	271	285	264	-
		L	-	-	262	-	272	281	259	273
Femur	1	R	483	481	452	467	-	464	457	488
		L	485	479	448	465	473	471	454	489
	2	R	476	478	448	466	-	462	452	478
		L	480	472	445	464	470	466	450	483
	6	R	33	30	27	30	-	32	31	30
		L	32	31	26	31	-	29	31	30
	7	R	31	27	27	32	-	32	30	27
		L	31	27	27	30	-	31	31	28
	9	R	40	33	31	34	-	37	39	36
		L	39	36	31	37	35	38	38	36
	10	R	29	28	24	31	-	32	29	31
		L	31	29	24	31	30	30	29	28
	6:7	R	106.5	111.1	100.0	93.8	-	100.0	103.3	111.1
		L	103.2	114.8	96.3	103.3	-	93.6	100.0	107.1
	10:9	R	72.5	84.9	77.4	91.2	-	86.5	74.4	86.1
		L	79.5	80.6	77.4	83.8	85.7	79.0	76.3	77.8
Tibia	1	R	368	-	360	381	-	380	378	395
		L	-	383	361	384	-	377	376	395
	1/b	R	368	-	361	383	-	381	376	390
		L	-	383	362	383	-	372	374	391
	8/a	R	37	35	33	39	-	36	37	35
		L	-	32	30	40	-	37	37	36
	9/a	R	27	25	21	26	-	25	24	26
		L	-	25	19	26	-	24	24	25
	9/a:8/a	R	73.0	71.4	63.6	66.7	-	69.4	64.9	74.3
		L	-	78.1	63.3	65.0	-	64.9	64.9	69.4
Radio-Humeral index		R	-	77.6	81.0	-	-	81.8	78.0	75.7
		L	-	-	80.0	77.7	72.4	82.2	78.6	-
Tibio-Femoral index		R	77.3	-	80.6	82.2	-	82.5	83.2	81.6
		L	-	81.1	81.4	82.5	-	79.8	83.1	81.0
Pubis length			-	103	-	94	-	104	106	98
Ischium length			-	106	-	97	-	103	99	103
Index			-	97.2	-	96.9	-	101.0	108.1	95.2
„Cotylo" breadth			40	37	34	39	45	39	35	36
Inc.isc.m.breadth			36	37	38	38	38	42	45	37
Index			111.1	110.0	89.5	102.6	107.9	92.9	77.8	97.3
Stature			170.0	170.0	163.5	169.0	170.0	168.3	167.5	171.5

Table 18 (continued 7)

			Males						Females	
			59.	63.	64.	65.	74.	I.	1.	3.
Humerus	1	R	307	358	313	318	293	-	311	311
		L	301	353	310	313	294	-	298	311
	2	R	301	351	308	315	287	-	308	307
		L	296	345	305	308	291	-	297	307
	7	R	65	68	65	65	66	-	57	67
		L	65	66	65	61	64	-	57	64
	7:1	R	21.2	19.1	20.8	20.4	22.5	-	18.3	21.5
		L	21.6	18.7	21.0	19.5	21.8	-	19.1	20.6
Radius	1	R	224	274	230	230	227	-	-	237
		L	224	268	230	227	226	-	-	235
Ulna	1	R	248	297	-	-	251	-	-	264
		L	246	290	248	-	250	-	-	-
Femur	1	R	417	494	426	424	417	-	426	431
		L	418	498	430	422	418	-	424	428
	2	R	412	491	423	421	415	-	421	423
		L	413	497	426	418	416	-	420	420
	6	R	28	32	30	30	27	-	26	28
		L	28	30	30	29	27	-	24	27
	7	R	27	30	29	27	26	-	23	26
		L	26	32	28	28	28	-	24	28
	9	R	34	34	34	33	33	-	28	30
		L	32	35	35	34	34	-	30	33
	10	R	28	28	27	27	25	-	21	25
		L	29	29	28	27	27	-	21	26
	6:7	R	103.7	106.7	103.5	111.1	103.9	-	113.0	107.7
		L	107.7	93.8	107.1	103.6	96.4	-	100.0	96.4
	10:9	R	82.4	82.4	79.4	81.8	75.8	-	75.0	83.3
		L	90.6	82.9	80.0	79.4	79.4	-	70.0	78.8
Tibia	1	R	352	410	355	-	334	-	-	353
		L	-	411	349	-	-	-	327	347
	1/b	R	350	405	352	-	335	-	-	351
		L	349	410	348	-	-	-	330	346
	8/a	R	33	37	37	-	35	-	-	34
		L	31	36	38	-	34	-	29	33
	9/a	R	23	24	24	-	25	-	-	25
		L	22	23	25	-	25	-	20	25
	9/a:8/a	R	69.7	64.9	64.9	-	71.4	-	-	73.5
		L	71.0	63.9	65.8	-	73.5	-	69.0	75.8
Radio-Humeral index		R	74.4	78.1	74.7	73.0	79.1	-	-	77.2
		L	75.7	77.7	75.4	73.7	77.7	-	-	76.6
Tibio-Femoral index		R	85.0	82.5	83.2	-	85.5	-	-	83.0
		L	84.5	82.5	81.7	-	-	-	78.6	82.4
Pubis length			-	107	99	100	97	-	94	108
Ischium length			-	105	94	102	102	-	78	88
Index			-	101.9	105.3	98.0	95.1	-	120.5	122.7
„Cotylo" breadth			37	48	40	39	42	-	34	37
Inc.isc.m.breadth			56	36	35	31	41	-	48	50
Index			66.1	133.3	114.3	125.8	102.1	-	70.8	74.0
Stature			159.5	174.5	162.0	161.3	158.3	-	155.3	157.6

Table 18 (continued 8)

			Females							
			10.	11.	12.	16.	18.	20.	21.	22.
Humerus	1	R	308	290	-	301	288	306	333	-
		L	305	288	285	303	287	300	328	318
	2	R	305	286	-	297	284	301	330	-
		L	301	284	280	297	274	295	323	315
	7	R	60	58	56	64	55	60	57	-
		L	58	58	55	61	54	57	56	55
	7:1	R	19.5	20.0	-	21.3	19.1	19.6	17.1	-
		L	19.0	20.1	19.3	20.1	18.8	19.0	17.1	17.3
Radius	1	R	227	216	-	220	226	-	248	260
		L	-	212	-	220	225	224	246	251
Ulna	1	R	250	234	234?	-	-	-	266	-
		L	-	232	-	241	-	-	263	-
Femur	1	R	419	389	404	434	423	419	444	434
		L	422	395	404	434	428	421	441	443
	2	R	411	388	401	430	420	416	438	433
		L	416	394	400	426	425	419	436	442
	6	R	28	25	25	29	25	24	26	24
		L	27	25	25	28	27	25	26	24
	7	R	26	27	25	27	26	26	28	30
		L	25	27	26	27	27	27	28	27
	9	R	29	30	30	34	32	33	34	36
		L	29	30	32	36	32	34	35	35
	10	R	24	24	25	27	25	23	23	24
		L	24	23	26	27	24	23	23	25
	6:7	R	107.7	92.6	100.0	107.4	96.2	92.3	92.9	80.0
		L	108.0	92.6	96.2	103.7	100.0	92.6	92.9	88.9
	10:9	R	82.8	80.0	83.3	79.4	78.1	69.7	67.7	66.7
		L	82.8	76.7	81.3	75.0	75.0	67.7	65.7	71.4
Tibia	1	R	353	322	332	-	347	344	374	375
		L	352	318	334	348	351	348	376	376
	1/b	R	355	317	333	348	350	344	373	378
		L	354	316	334	346	351	348	373	377
	8/a	R	31	29	32	35	28	29	31	31
		L	30	28	31	33	29	29	32	31
	9/a	R	21	21	24	25	19	22	20	20
		L	21	22	23	27	19	21	20	21
	9/a:8/a	R	67.7	72.4	75.0	71.4	67.9	75.9	64.5	64.5
		L	70.0	78.6	74.2	81.8	65.5	72.4	62.5	67.7
Radio-Humeral index		R	74.4	75.5	-	74.1	79.6	-	75.2	-
		L	-	74.7	-	74.1	79.2	75.9	76.2	79.7
Tibio-Femoral index		R	86.4	81.7	83.0	80.9	83.3	82.7	85.2	87.3
		L	85.1	80.2	83.5	81.2	82.6	83.1	85.6	85.3
Pubis length			100	91	92	-	97	98	108	109
Ischium length			87	79	78	-	87	86	90	87
Index			114.9	115.2	118.0	-	111.5	114.0	120.0	125.3
„Cotylo" breadth			36	36	40	39	34	30	34	39
Inc.isc.m.breadth			37	47	50	48	51	51	47	51
Index			97.3	76.6	80.0	81.3	66.7	58.8	72.3	76.5
Stature			156.0	153.0	151.7	155.7	154.8	155.5	162.3	162.5

Table 18 (continued 9)

			Females							
			23.	24.	29.	31.	33.	34.	35.	37.
Humerus	1	R	278	286	296	306	316	-	302	294
		L	274	278	286	-	313	-	296	289
	2	R	273	282	291	303	312	-	298	291
		L	270	275	280	305	307	-	294	285
	7	R	58	56	51	60	63	-	55	60
		L	55	54	51	60	59	-	54	58
	7:1	R	20.9	19.9	17.2	19.6	19.9	-	18.5	20.4
		L	20.1	19.4	17.8	-	18.9	-	18.4	20.1
Radius	1	R	206	204	219	235	249	-	216	220
		L	204	201	-	-	-	-	214	-
Ulna	1	R	228	-	-	251	262	-	237	-
		L	226	218	-	-	-	-	239	-
Femur	1	R	393	401	406	454	438	-	424	414
		L	394	399	409	457	446	-	421	416
	2	R	391	398	401	451	435	-	422	413
		L	391	396	404	453	441	-	419	413
	6	R	27	23	23	25	26	25	27	25
		L	28	23	24	26	26	24	28	24
	7	R	24	25	22	26	26	27	26	27
		L	26	25	23	29	26	27	27	27
	9	R	30	30	27	32	32	32	30	32
		L	31	31	26	35	32	33	31	32
	10	R	24	20	21	24	25	21	25	23
		L	24	21	23	25	23	21	26	23
	6:7	R	112.5	92.0	104.6	96.2	100.0	92.6	103.8	92.6
		L	107.7	92.0	104.4	89.7	100.0	88.9	103.7	88.9
	10:9	R	80.0	66.7	77.8	75.0	78.1	65.6	83.3	71.9
		L	77.4	67.7	88.5	71.4	71.9	63.6	83.9	71.9
Tibia	1	R	314	317	-	367	363	-	341	321
		L	319	320	324	370	364	325	342	-
	1/b	R	316	319	-	365	365	-	340	323
		L	316	320	326	365	365	321	340	-
	8/a	R	30	25	26	31	32	-	35	31
		L	29	25	26	30	32	30	33	30
	9/a	R	22	18	18	22	21	-	23	19
		L	21	17	19	22	20	18	23	19
	9/a:8/a	R	73.3	72.0	69.2	71.0	65.6	-	65.7	61.3
		L	72.4	68.0	73.1	73.3	62.5	60.8	69.7	63.3
Radio-Humeral index		R	75.5	72.3	75.3	77.6	79.8	-	72.5	75.6
		L	75.6	73.1	-	-	-	-	72.8	-
Tibio-Femoral index		R	80.8	80.2	-	80.9	83.9	-	80.6	78.2
		L	80.8	80.8	80.7	80.6	82.8	-	81.1	-
Pubis length			78	-	-	117	94	-	95	-
Ischium length			82	-	-	97	86	-	90	-
Index			95.1	-	-	120.6	109.3	-	105.6	-
„Cotylo" breadth			31	30	31	40	33	-	32	34
Inc.isc.m.breadth			46	59	56	54	38	-	53	44
Index			67.1	50.9	55.4	74.1	86.8	-	60.4	77.3
Stature			149.0	150.0	152.0	160.0	159.5	151.0	154.3	152.5

Table 18 (continued 10)

			Females				
			38.	40.	66.	72.	75.
Humerus	1	R	293	291	295	286	287
		L	-	287	295	282	276
	2	R	290	286	289	284	284
		L	-	285	289	280	271
	7	R	60	65	56	65	58
		L	60	63	54	62	56
	7:1	R	20.5	22.3	19.4	22.7	20.2
		L	-	22.0	18.3	22.0	20.3
Radius	1	R	218	-	224	217	218
		L	-	-	224	213	214
Ulna	1	R	239	-	249	246	241
		L	235	240	248	-	234
Femur	1	R	394	408	431	415	385
		L	398	410	432	413	-
	2	R	393	405	427	409	377
		L	396	407	426	409	-
	6	R	27	24	25	28	25
		L	28	25	25	27	-
	7	R	23	25	25	29	23
		L	23	26	25	29	-
	9	R	28	31	30	35	28
		L	29	32	30	34	-
	10	R	26	24	26	25	21
		L	27	24	25	24	-
	6:7	R	117.4	96.0	100.0	96.6	108.7
		L	121.7	96.2	100.0	93.1	-
	10:9	R	92.9	77.4	86.7	71.4	75.0
		L	93.1	75.0	83.3	70.6	-
Tibia	1	R	-	327	350	329	326
		L	325	330	353	332	329
	1/b	R	-	330	353	331	324
		L	326	329	356	331	326
	8/a	R	33	33	30	34	31
		L	32	31	31	31	30
	9/a	R	22	22	22	24	20
		L	23	22	22	24	20
	9/a:8/a	R	66.7	81.5	73.3	70.6	64.5
		L	71.9	80.8	71.0	77.4	66.7
Radio-Humeral index		R	75.2	-	78.4	76.4	76.8
		L	-	-	78.4	76.1	79.0
Tibio-Femoral index		R	-	81.5	82.7	80.9	85.9
		L	82.3	80.8	83.6	80.9	-
Pubis length			92	-	100	92	101
Ischium length			83	-	87	87	85
Index			110.8	-	114.9	105.8	118.8
„Cotylo" breadth			33	-	34	36	33
Inc.isc.m.breadth			41	-	55	42	47
Index			80.5	-	61.8	85.7	70.2
Stature			151.2	152.0	156.0	152.0	151.0

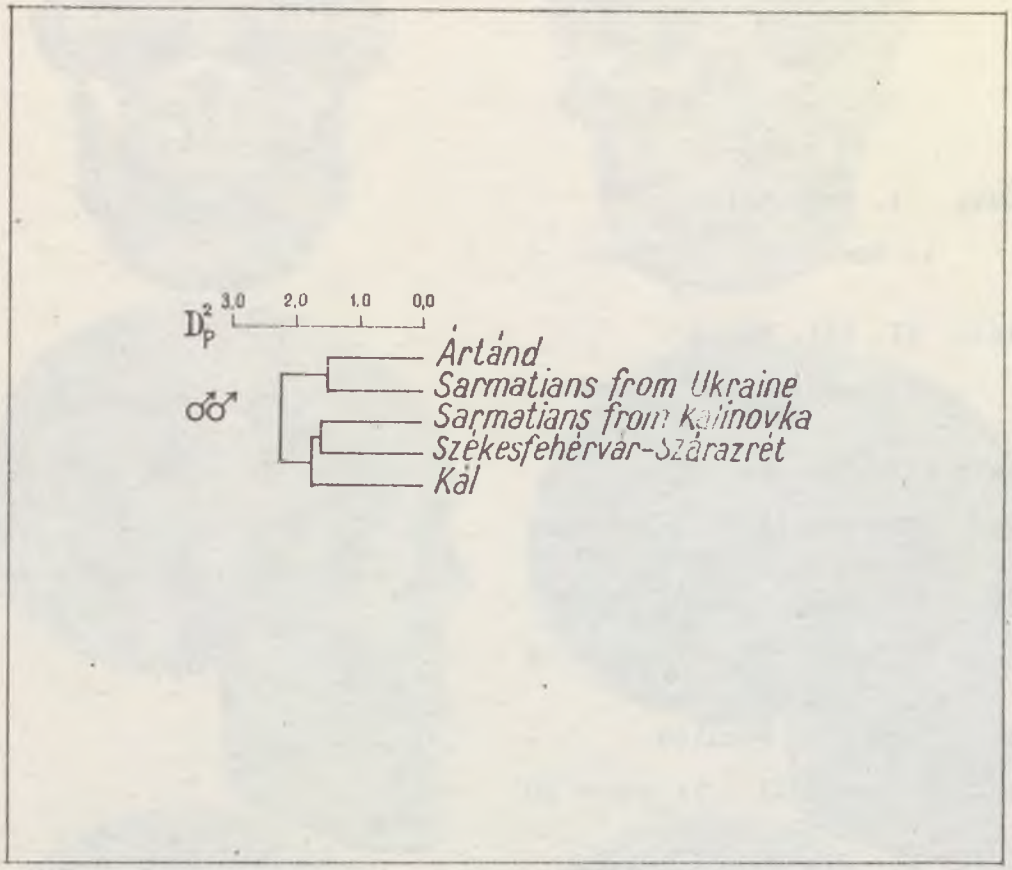

Figure 1.

Dendrogram of Kál and the Closest Series

Plate I. Kál. Males

1: Grave 30 2: Grave 9

Plate II. Kál. Males

1: Grave 2 2: Grave 54

Plate III. Kál. Males.

1: Grave 15 2: Grave 58

Plate IV. Kál. Females

1: Grave 10 2: Grave 18

Plate V. Kál. Females

1: Grave 11 2: Grave 20

Plate VI. Kál. Trepanations

1: Grave 11 2: Grave 15 3: Grave 18 4: Grave 75

Plate I.

Plate II.

Plate III.

Plate IV.

Plate V.

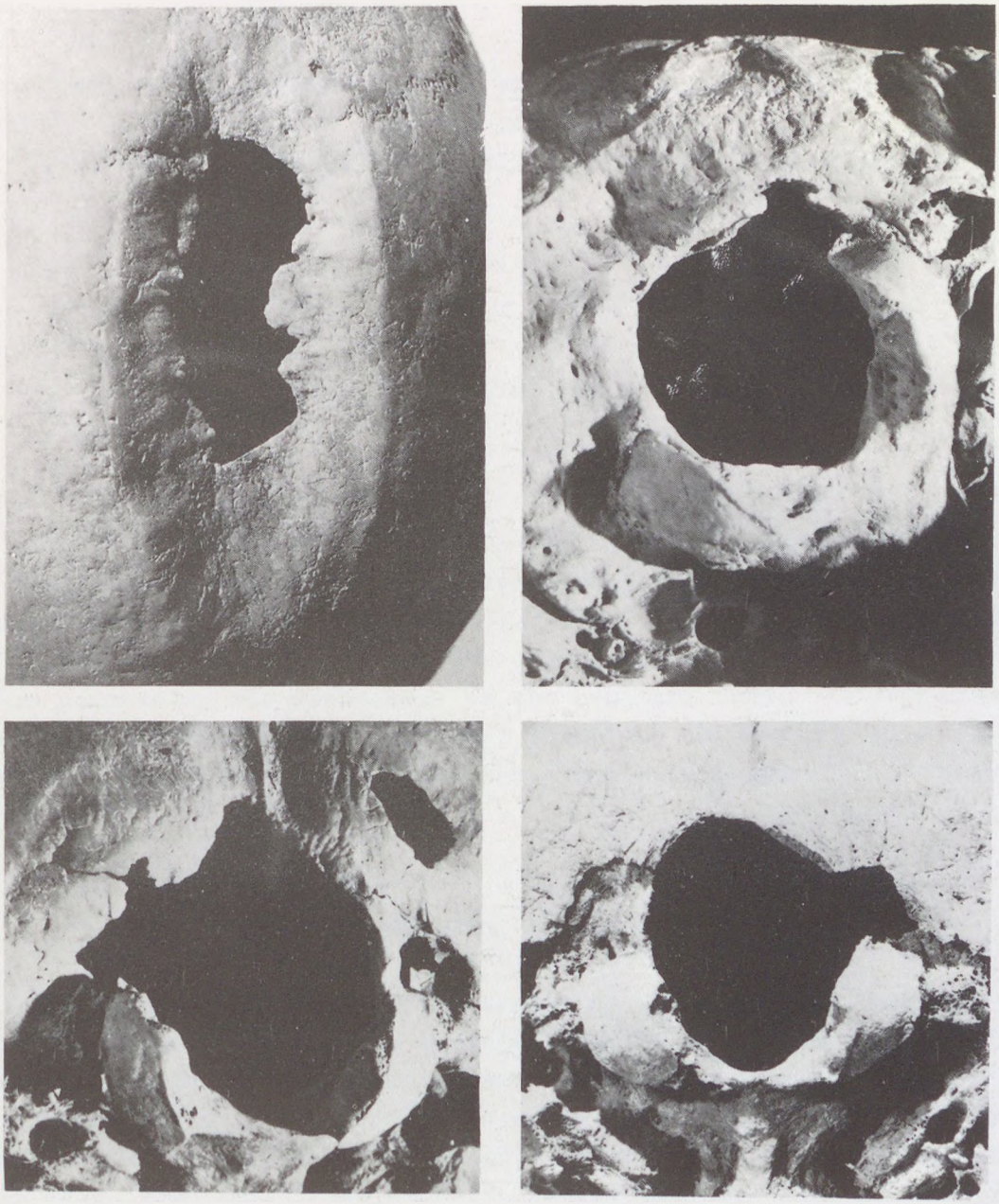

Plate VI.

ANTHROPOLOGIA HUNGARICA
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DATA TO THE ANTHROPOLOGY OF THE EARLY ÁRPÁDIAN AGE POPULATION OF THE BALATON AREA
(THE ANTHROPOLOGY OF THE XI-XII c. CEMETERY AT ZALAVÁR-KÁPOLNA)

By

S. Wenger

Together with AGNES CS.SOÓS, archeologist, the excavation of the cemetery at Zalavár-Kápolna was made in 1951. In view of the fact that AGNES CS.SOÓS has expounded in detail the circumstances of the excavation in her papers concerning the archeology of the cemetery (8), it were superfluous to submit them also here; I propose therefore to discuss only the results of my investigations conducted on the osteological material of the cemetery.

Material and method

The material consists of the crania of 49 males, 48 females, 5 juveniles, and 12 infants, and the skeletal remains of 73 individuals. Their distribution as to age and sex is given in Tbale I*. In taking the metric data, I used MARTIN's (7) craniological scheme. Applying his method, I measured, subject to the state of preservation, the relevant data of a maximum of 45 brain cases and facial skeletons. Cranial capacity was established by the use of glass beads. Twelve indices have been calculated from the measurements. In the morphological description, I again adhered to MARTIN's se-

* I am indebted to Dr. J. NEMESKÉRI for having made available the sex and age data of the material.

quence, and followed the BROCA's, HRDLICKA's and SERGI's tables to calculate the grade differences of the several characteristics. Stature was computed by applying WOLANSKI's (14) nomogram to the long bones. Variation statistical calculations were also made on the material, with respect to the means (M ± m), range (V min-max), distribution (σ) and variational coefficient (v). The measurements and indices of the males are given in Tables II-IV, those of the females in Tables V-VII, of the juveniles and infants in Tables VIII-X. The main measurements are submitted in Tables XI, XII, the mean values, range, distribution, and variational coefficients of the chief indices are summarized in Tables XIII and XIV. The group frequencies of the main measurements and indices are given in Tables XV, XVI, the distribution as to age of the morphological characters in Table XVII, while Tables XVIII and XIX contain the distribution of stature according to age and to morphological groups, respectively.

Metric, craniological and morphological description of the osteological material

Grave No.18. - Inventory No.6830. (Male, aged 23-40 years). Fragmentary skull, mandible, and fragmentary skeletal bones. Brachycranial, chamaecranial, tapeinocranial, orthocranial, tapeinocranial. Great medium stature (169.1 cm). Sphaeroid. Glabella: 2. Protuberantia occipitalis externa: 3. Arcus superciliaris strongly expressed on both sides. Long, narrow, much elongated mandible. Dental arc parabolic, alveolar margin atrophied.

Grave No.20. - Inv.No.6920 (Inf.II, aged 7-8 years). Fragmentary skull, fragmentary maxilla and mandible. Mesocranial, hypsicranial, metriocranial.

Grave No.21. - Inv.No.6832 (Male, aged 36-40 years). Fragmentary skull and skeletal bones. Mesocranial, hypsicranial, metriocranial, metriometopic. Medium stature (165.5 cm). Ovoid. Glabella: 1. Protuberantia occipitalis externa: 1. Forehead low, convex. Arcus superciliaris expressed. A 11 mm high, 10 mm wide, and 8 mm thick osseous protuberance at base of skull between foramen magnum and processus mastoideus (osteoma). An assumably very large processus retromastoideus.

Grave No.22. - Inv.No.6833 (Male, sen., aged 72-76 years). Fragmentary skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, metriometopic, mesen, mesoconch, euencephalic. Small medium stature (162.8 cm). Ovoid. Glabella: 3. Protuberantia occipitalis externa: 0. Orthognathous. Fossa canina medium deep. Spina nasalis anterior: 1. Arcus superciliaris very strong on both sides. Forehead high, obliquely retroclinate. Mandible low, narrow, alveolar

margin atrophied in almost its complete length.

Grave No.23. - Inv.No.6834 (Female, mat., aged 55-59 years). Skull with mandible and fragmentary skeletal bones. Brachycranial, orthocranial, tapeinocranial, hypsicranial, tapeinocranial, metriometopic, mesen, mesoconch, mesorrhinian, euencephalic, orthognathous. Small medium stature (149.7 cm). Sphaeroid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, convex. Fossa canina weak. Nasal root narrow, short concave; nasal ridge, flattened nasal wings. Spina nasalis anterior: 1. Mandible medium high, wide, dental arc divergent.

Grave Nr.24. - Inv.No.6835 (Female, mat., aged 44-48 years). Fragmentary skull with mandible and incomplete skeletal bones. Brachycranial, orthocranial, tapeinocranial, hypsicranial, metriocranial, metriometopic, mesen, hypsiconch, mesorrhinian, orthognathous. Low stature (142.7 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, convex. Arcus superciliaris obsolescent. Fossa canina filled. Nasal root high; nasal ridge flatly projecting, weakly concave. Mandible narrow, medium high; a strong genial process.

Grave No.25. - Inv.No.6836 (Male, mat., aged 46-50 years). Skull with mandible and skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, metriocranial, eurymetopic, mesoprosopic, lepten, hypsiconch, mesorrhinian, euencephalic, orthognathous. Small medium stature (162.4 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 1.Forehead high, retroclinate. Arcus superciliaris strong. Fossa canina very deep on right side. Spina nasalis anterior: 3. Fossa praenasalis. Alveolar prognathism. Nasal root high; nasal ridge medium projecting, weakly concave. Mandible high, wide, robust; genial process double.

Grave No.26. - Inv.No.6837 (Female, aged 23-40 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, metriocranial, eurymetopic, mesoprosopic, mesen, hypsiconch, mesorrhinian, euencephalic, prognathous. Small medium stature (151.9 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead very low, convex. Fossa canina filled. Nasal root very high, narrow; nasal ridge fragmentary. Alveolar prognathism. Mandible low, narrow. Left canine in retention.

Grave No.27. - Inv.No.6838 (Inf.II, aged 12-13 years). Skull with mandible and skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, eurymetopic, euryprosopic, euryen, hypsiconch, mesorrhinian, prognathous.

Grave No.28. - Inv.No.6839 (Juv., aged 15-22 years). Fragmentary and incomplete skeletal bones.

Grave No.30. - Inv.No.6840 (Male, ad., aged 30-40 years).Skull with mandible and fragmentary skeletal bones. Dolichocranial, orthocranial, metriocranial, orthocranial, metriocranial, eurymetopic, hypsiconch, mesorrhinian, euencephalic, mesognathous. Medium stature (164.5 cm). Dolichomor-

phous-ellypsoid. Skull of a decided parietal character. Glabella: 2. Protuberantia occipitalis externa: 1. Arcus superciliaris very strong. Fossa canina filled. Nasal root deep and wide; nasal ridge short, weakly projecting,concave. Mandible very wide and high. Dental arc parabolic. A straight, robust genial process.

Grave No.31. - Inv.No.6841 (Juv., aged 15-16 years). Fragmentary and incomplete skeletal bones.

Grave No.32. - Inv.No.6842 (Female, sen., aged 67-71 years). Fragmentary skull and incomplete, fragmentary skeletal bones. Mesocranial, orthocranial, tapeinocranial, hypsicranial, metriocranial, stenometopic, oligencephalic. Small medium stature (162.0 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Arcus superciliaris completely smoothened. Foramen magnum heavily asymmetrical and obliquely situated towards right side. Mandible very low, narrow, alveolar margin completely absorbed at place of lost molars.

Grave No.33. - Inv.No.6843 (Juv., aged 15-16 years). Fragmentary skull with mandible and incomplete, fragmentary skeletal bones. Dolichocranial, orthocranial, acrocranial, hypsicranial, acrocranial, metriometopic, hypsiconch. Much elongated ovoid. Skull of a parietal character. Glabella: 0. Protuberantia occipitalis externa: 0. Fossa canina very deep on both sides. Spina nasalis anterior: 1. Mandible low, narrow, with a moderate, double genial process.

Grave No.34. - Inv.No.6844 (Female, aged 59-63 years). Fragmentary skull with mandible and skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, stenometopic, leptoprosopic, lepten, hypsiconch, chamaerrhinian, aristencephalic, mesognathous. High stature (165.3 cm). Eury-ellipsoidal. Glabella: 0. Protuberantia occipitalis externa: 1. Forehead low, convex. Tubera parietalis et frontalis strong. Nasal root low, narrow; nasal ridge short, flatly projecting, concave. Fossa canina very deep on both sides.Spina nasalis anterior:4. Alveolar prognathism expressed. Mandible very high, narrow; a moderately straight genial process.

Grave No.35. - Inv.No.6845 (Female, mat., aged 45-49 years). Skull with mandible and skeletal bones. Dolichocranial, orthocranial, acrocranial, hypsicranial, acrocranial, eurymetopic, mesoprosopic, lepten, hypsiconch, chamaerrhinian, euencephalic, mesognathous. Medium stature (155.2 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 1. Arcus superciliaris weak. Nasal root very deep, low; nasal ridge flatly projecting, weakly concave. Fossa canina medium deep. Alveolar prognathism expressed. Forehead medium high, slightly retroclinate. Mandible narrow, medium high; genial process robust, straight. Flat and very wide torus palatinus sagittalis.

Grave No.36. - Inv.No.6846 (Female, mat., aged 55-59 years). Skull with mandible and incomplete, fragmentary skeletal bones. Mesocranial, hypsicranial, acrocranial, hypsicranial, metriocranial, eurymetopic, mesoconch,

leptorrhinian, aristencephalic, orthognathous. Great medium stature (157.0 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead steep and convex, proclinate. Tubera frontalis very strong. Sutura metopica. Os bregmaticum. Large ossa suturarum along lambda suture, especially on left side. Very deep and impressed nasal root. Flatly projecting, short and straight nasal ridge. Fossa canina very deep on right side. Moderate alveolar prognathism. Mandible low and medium wide, with a weak and rounded genial process.

Grave No.38. - Inv.No.6847 (Female, aged 23-40 years). Fragmentary skull with mandible. Mesocranial, hypsicranial, acrocranial, hypsicranial, acrocranial, metriometopic, mesen, hypsiconch, chamaerrhinian, aristencephalic, mesognathous. Pentagonoid. Glabella: 1. Protuberantia occipitalis externa: 0. Forehead medium high, convex, a very strong arcus superciliaris. Occiput conically projecting. Nasal root very narrow, deep. Spina nasalis anterior: 2. Fossa canina filled. Mandible very low; a strong, straight genial process. Alveolar margin absorbed in place of molars.

Grave No.39. - Inv.No.6848 (Inf.II., aged 9 years). Fragmentary skull, skeletal bones. Mesocranial, hypsicranial, acrocranial, hypsicranial, metriocranial, stenometopic, hypsiconch.

Grave No.40. - Inv.No.6849 (Inf.II., aged 9 years). Fragmentary skull with mandible and incomplete skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, metriocranial, stenometopic, mesoconch, chamaerrhinian, orthognathous.

Grave No.41. - Inv.No.6850 (Female, mat., aged 50-54 years). Fragmentary skull with mandible and skeletal bones. Mesocranial, chamaecranial, tapeinocranial, orthocranial, tapeinocranial, stenometopic, mesoprosopic, mesen, mesoconch, mesorrhinian, euencephalic, prognathous. Great medium (156.0 cm). Ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Very peculiar and medially labiately expanding linea nuchae superior. A 54 mm long sutural bone (os incae?) along lambda suture on left side. Arcus superciliaris smoothened. Nasal root very narrow, deep; nasal ridge very narrow, medium highly projecting, straight. Fossa canina filled. Right upper premolar vertically abraded (occupational phenomenon?). Mandible low and narrow; genial process straight.

Grave No.42. - Inv.No.6851 (Male, aged 56-60 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, acrocranial, hypsicranial, metriocranial, eurymetopic, euryprosopic, euryen, mesoconch, mesorrhinian, euencephalic, orthognathous. Low stature (154.9 cm). Dolichomorphous-ellipsoid. Glabella:0. Protuberantia occipitalis externa:1. Forehead high, weakly convex. Arcus superciliaris medium. Nasal root. Moderately, high, medium wide, flattened. Nasal ridge flatly projecting and expanded. Fossa canina shallow. A 25 mm large cysta of incisors on right side, extending far onto palate and margin of nasal cavity. Mandible high, narrow; genial process very robust, straight.

Grave No.43. - Inv.No.6852 (Inf.II, aged 9 years). Fragmentary skull and skeletal bones. Brachycranial, orthocranial, tapeinocranial, hypsicranial, metriocranial, stenometopic, mesoprosopic, mesen, hypsiconch, hyperchamaerrhinian, mesognathous.

Grave No.44. - Inv.No.6853 (Female, mat., aged 44-48 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, chamaecranial, tapeinocranial, orthocranial, metriocranial, metriometopic, leptoprosopic, mesen, hypsiconch, chamaerrhinian, euencephalic, orthognathous. Small medium stature (149.3 cm). Ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, weakly retroclinate. Nasal root low, wide, impressed; nasal ridge flatly projecting, concave. Fossa canina filled. Mandible medium wide, low; genial process definite, straight.

Grave No.45. - Inv.No.6854 (Male, aged 58-62 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, metriocranial, eurymetopic, hypereuryprosopic, euryen, mesoconch, chamaerrhinian, euencephalic, prognathous. Small medium stature (161.2 cm). Ellipsoid. Glabella: 1. Protuberancia occipitalis externa: 0. Forehead high, retroclinate. Bony superciliary arc medium. Strong, wide upper face. Fossa canina weak. Alveolar prognathism. Spina nasalis anterior: 1. Mandible very low, narrow; dental arc parabolic;genial process narrow, straight.

Grave No.46/a. - Inv.No.6855 (Female, ad., aged 27-31 years). Fragmentary skull with mandible. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, stenometopic, euryprosopic, mesen, hypsiconch, chamaerrhinian, euencephalic, orthognathous. Spheno-ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, convex. Nasal root deep, very narrow; nasal ridge flatly projecting, straight. Bony superciliary arc. Fossa canina filled. Spina nasalis anterior: 1. Mandible high, narrow, rounded; genial process weak, straight.

Grave No.46/a. - Inv.No.6856 (Female, aged 23-40 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, hypsicranial, acrocranial, hypsicranial, metriocranial, metriopetopic, lepten, hypsiconch, leptorrhinian, aristencephalic, orthognathous. Great medium stature (158.6 cm). Ovoid. Skull parietal in character. Glabella: 1. Protuberantia occipitalis externa: 0. Nasal root impressed, high. Nasal ridge impressed, concave, short. Fossa canina filled. Alveolar prognathism. Spina nasalis anterior: 1. Mandible atrophied, low, alveolar margin absorbed.

Grave No.49. - Inv.No.6857 (Male, aged 56-60 years). Fragmentary skull with mandible and skeletal bones. Skull dolichomorphous. Unsuitable for detailed analysis owing to its fragmentary state. Great medium stature (168.8 cm).

Grave No.50. - Inv.No.6858 (Male, mat., aged 50-54 years). Incomplete, fragmentary skeletal bones, unsuitable for analysis.

Grave No.51. - Inv.No.6859 (Female, mat., aged 40-44 years). Skull with

mandible and skeletal bones. Mesocranial, hypsicranial, acrocranial, hypsicranial, metriocranial, eurymetopic, leptoprosopic, mesen, mesoconch, mesorrhinian, aristencephalic, prognathous. Small medium stature (152.1 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Nasal root very deep, very narrow; nasal ridge low, flatly projecting, short, concave. Spina nasalis anterior: 1. Fossa canina shallow. Alveolar prognathism. Mandible medium high, narrow, genial process weak, straight.

Grave No.52. - Inv.No.6860 (Male, mat., aged 52-56 years). Fragmentary skull. Mesocranial, eurymetopic, euryen, mesoconch, mesorrhinian, eury-ellipsoid.Glabella: 3. Protuberantia occipitalis externa: 0. Nasal root deep, medium wide; nasal ridge flatly projecting, straight. Fossa canina weak. Fossa praenasalis sharply profiled. Spina nasalis anterior: 2.

Grave No.53. - Inv.No.6861 (?, ad., aged 42-46 years). Incomplete and fragmentary skeletal bones, unsuitable for analysis.

Grave No.54. - Inv.No.6862 (Male, ad., aged 35-39 years). Skull with mandible and incomplete skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, metriocranial, metriopetopic, mesoprosopic, mesen, mesoconch, leptorrhinian, oligencephalic, orthognathous. Small medium stature (160.0 cm). Ellipsoid. Skull parietal in character. Glabella: 1. Protuberantia occipitalis externa: 0. Forehead high, moderately retroclinate, temporal construction expressed. Nasal root high, deep, nasal ridge short, highly projecting, concave. Spina nasalis anterior: 2. Fossa canina filled. Mandible high, narrow; genial process straight, weakly developed.

Grave No.55. - Inv.No.6863 (Male, ad., aged 33-37 years). Skull with mandible and skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, eurymetopic, euryen, hypsiconch, chamaerrhinian, aristencephalic, orthognathous. Medium stature (164.5 cm). Eury-ellipsoid. Glabella: 3. Protuberantia occipitalis externa: 1. Forehead medium high, retroclinate, nasal root wide and high. Fossa canina medium deep. Fossa praenasalis medium. Mandible very high, strong, wide, genial process straight, high. Skull with three grave but healed injuries. - The first lies above the left orbita, 36 mm long and about 5 mm deep, decurrent obliquely from the glabella to the margo supraorbitalis, consisting of two sections. The first section is but a depression caused by a blow,the second section appears as a fragmentated break, so severe that a splinter of the margo supraorbitalis fused to the upper vault of the orbita 4 mm below its original place.On the right side of the calvarium, - chiefly on the frontal and partly on the parietal bones - there is a 70 mm long and 39 mm wide healed wound, caused by a sword cut (?). Inside of the damaged surface, there is a 38 mm long and 19 mm wide ossification which slid down laterally from the cut and then fused to the main bone. The cut reached the skull from the left side but failed to break through the dome and caused but a mechanical depression as the initial section of the wound; it tore down, that is, chopped off in the posterior third a bit (mentioned above) of the

calvarium; nor had this bit been completely separated, it slid to a lower position and there ossified again. There is no trace of this cut on the inner surface of the skull. The third injury is a 9 mm long and 9 mm wide, circular impression of about 2 mm depth on the left parietal bone, at the height of the foramen magnum and near the sutura sagittalis, originating from a blow. It may derive from a pointed weapon, but it may also represent the initial stages of trephining (this latter assumption is less probable).

Grave No.56. - Inv.No.6864 (Female, aged 30-60 years). Fragmentary skull with mandible. Stenometopic, mesoconch, leptorrhinian. Skull brachymorphous. Brain case wide, sphaeroid. Glabella: 0. Protuberantia occipitalis externa: 1. Nasal root high, deep, long; nasal ridge medium highly projecting, weakly concave. Fossa canina medium deep. Fossa praenasalis. Alveolar prognathism very strongly developed, jugae alveolaria. Base of skull with a hiatus and double tuber pharyngeum at anterior margin of foramen magnum. Mandible very low and narrow. Genial process straight, rather weakly developed as related to the robust skull.

Grave No.57. - Inv.No.6865 (Female, aged 38-42 years). Skull with mandible and skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, eurymetopic, lepten, hypsiconch, leptorrhinian, aristencephalic, orthognathous. Low stature (148.7 cm). Ellipsoid. Skull definitely parietal in character. Glabella: 0. Protuberancia occipitalis externa: 0. Forehead strongly convex, medium high. Tubera frontalis expressed, tubera parietalia obscure. Nasal root low, medium wide. Nasal ridge narrow, flat. Spina nasalis anterior: 2. Fossa canina filled. Mandible very low, narrow, an arcuate rod owing to complete absorption of alveolar margin.

Grave No.59. - Inv.No.6866 (Inf.II., aged 10 years). Skull with mandible. Brachycranial, hypsicranial, metriocranial, hypsicranial, metriocranial, stenometopic, hypsiconch, chamaerrhinian, mesognathous.

Grave No.60. - Inv.No.6867 (Female, ad., aged 24-28 years). Skull with mandible and incomplete skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, metriocranial, eurymetopic, mesoprosopic, lepten, mesoconch, leptorrhinian, euencephalic, prognathous. Small medium stature (149.0 cm). Ellipsoid, parietal skull. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, convex. Nasal root high, medium wide, nasal ridge flatly projecting, straight. Fossa canina filled. Fossa praenasalis. Alveolar prognathism. Mandible medium high, narrow, genial process weakly developed, straight.

Grave No.61. - Inv.No.6868 (Female, mat., aged 48-52 years). Fragmentary skull and incomplete skeletal bones. Tapeinocranial,tapeinocranial. Small medium stature (152.7 cm). Skull presumably of a mesomorphous character. Width of brain case very large.

Grave No.62. - Inv.No.6869 (Male, juv., aged 19-20 years). Fragmentary skull and mandible. Metriocranial. Skull extremely plagiocephalic,distorted

from right to left (by chance a warping ofter excavation).

Grave No.63. - Inv.No.6870 (Male, mat., aged 49-53 years). Skull with mandible and skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, metriocranial, eurymetopic, lepten, mesoconch, mesorrhinian, euencephalic, orthognathous. Great medium stature (169.4 cm). A regular ellipsoid form. Glabella: 2. Protuberantia occipitalis externa: 1. Forehead weakly retroclinate, medium high. Nasal root deep, very narrow; nasal ridge high, in its lower third convex. Fossa canina filled. Spina nasalis anterior: 2. Mandible originally high, wide, and robust; alveolar margin completely absorbed posteriorad from canines on both sides. Genial process robust, straight.

Grave No.64. - Inv.No.6871 (Female, mat., aged 44-48 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, tapeinocranial, hypsicranial, tapeinocranial, metriometopic, euryprosopic, mesen, hypsiconch, chamaerrhinian, euencephalic, orthognathous. Small medium stature (149.6 cm). Ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Tubera frontalia expressed. Nasal root deep, medium wide; nasal ridge flatly projecting, straight. Fossa canina shallow. Fossa praenasalis. Mandible very low, narrow; genial process straight, rounded.

Grave No.65. - Inv.No.6872 (Female, aged 23-40 years). Skull with mandible, badly preserved and fragmentary skeletal bones. Mesocranial, orthocranial, acrocranial, hypsicranial, acrocranial, eurymetopic, hyperleptoprosopic, lepten, hypsiconch, leptorrhinian, aristencephalic, prognathous. Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead high, weakly retroclinate. Arcus superciliaris weak. Nasal root deep, narrow; nasal ridge fragmentary, flatly projecting. Fossa canina shallow. Fossa praenasalis weak. Alveolar prognathism. Os epiptericum on left side. Mandible medium high, narrow; genial process straight, rounded, weak.

Grave No.66. - Inv.No.6873 (Mal., aged 45-75 years). Skull dolichocranial, orthocranial, metriocranial, orthocranial, metriocranial, metriometopic, euryen, mesoconch, leptorrhinian, euencephalic, orthognathous. Dolicho-ellipsoid. Glabella: 3. Protuberantia occipitalis externa: 1. Forehead medium high, considerably retroclinate. Arcus superciliaris very strong, expressed. Nasal root deep,narrow; nasal ridge fragmentary, highly projecting. Fossa canina shallow.

Grave No.67. - Inv.No.6874 (Female, juv., aged 15-16 years). Fragmentary skull with mandible. Mesocranial, chamaecranial, tapeinocranial, orthocranial, metriocranial, eurymetopic.

Grave No.68. - Inv.No.6875 (Male, ad., aged 28-32 years). Fragmentary skull and skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, tapeinocranial, eurymetopic, mesen, mesoconch, chamaerrhinian, aristencephalic. Medium stature (165.0 cm). Ellipsoid. Skull paricta1 in character. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead me-

dium high, weakly retroclinate. Nasal root medium high, wide nasal ridge moderately projecting, convex in its lower third. Fossa canina deep.

Grave No.69. - Inv.No.6876 (Male, ad., aged 31-35 years). Skull and incomplete skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, metriocranial, metriometopic, aristencephalic. Medium stature (165.6 cm). Elongated ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 0. Forehead weakly retroclinate. Arcus superciliaris moderate.

Grave No.70. - Inv.No.6877 (Male, aged 45-75 years). Fragmentary skull. Mesocranial, orthocranial, metriocranial, orthocranial, metriocranial, metriometopic. On left side of skull - partly on frontal partly on parietal bone - a pathological deformation causing an erosion on surface of cranial dome. To be interpreted in detail only after thin-section analysis.

Grave No.71. - Inv.No.6878 (Inf. II., aged 12-13 years). Fragmentary skull. Dolichocranial, orthocranial, metriocranial, orthocranial, metriocranial, eurymetopic.

Grave No.72. - Inv,No.6879 (Male, ad., aged 33-37 years). Skull with mandible. Dolichocranial, orthocranial, metriocranial, metriometopic, euryprosopic, mesen, mesoconch, mesorrhinian, aristencephalic, mesognathous. Dolicho-ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 3. Forehead high, weakly retroclinate. Arcus superciliaris medium developed,highly arched. Nasal root deep, narrow; nasal ridge medium projecting,aquiline. Spina nasalis anterior: 2. Fossa praenasalis weak. Fossa canina medium deep. Mandible medium high, narrow, genial process expressed, straight.

Grave No.73. - Inv.No.6880 (Female, aged 37-41 years). Skull with mandible and fragmentary skeletal bones. Brachycranial, hypsicranial, metriocranial, hypsicranial, metriocranial, stenometopic, mesoprosopic, mesen, hypsiconch, leptorrhinian, aristencephalic, orthognathous. Small medium stature (151.6 cm). Sphaeroid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Tubera frontalia weak. Nasal root medium high, wide; nasal ridge flatly projecting, long, weakly concave. Fossa canina filled. Spina nasalis anterior: 2. Single sutural bones on both sides of lambda suture. Mandible low, widely rounded; genial process robust, straight.

Grave No.74. - Inv.No.6881 (Inf.II., aged 11 years). Fragmentary skull with mandible and fragmentary skeletal bones. Brachycranial, orthocranial, tapeinocranial, orthocranial, tapeinocranial, stenometopic.

Grave No.75. - Inv.No.6882 (Male, sen., aged 67-71 years). Fragmentary skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, stenometopic, mesoprosopic, mesen, hypsiconch, mesorrhinian, orthognathous. Large medium stature (167.2 cm). Eury-ellipsoid. Glabella: 2. Protuberantia occipitalis externa: 1. Forehead high, convex, weakly retroclinate. Arcus superciliaris very robust, high. Fossa canina shallow. Fossa praenasalis expressed. Spina nasalis anterior: 1. Expressed alveolar prognathism. Mandible very narrow, ge-

nial process straight.

Grave No.76. - Inv.No.6883 (Male, mat., aged 47-51 years). Fragmentary skull with mandible and incomplete skeletal bones. Brachycranial, orthocranial, tapeinocranial, stenometopic. Small medium stature (163.1 cm). Sphaeroid. Glabella: 0. Protuberantia occipitalis externa: 2. Very sharply profiled linea nuhae superior. Fossa canina weak. Mandible very wide; its original height impossible to determine, since absorbed on both sides along molar teeth and thus bone transformed into a bacilliform rod.Genial process weak, straight.

Grave No.77/a. - Inv.No.6884 (? juv., aged 19-20 years). Skull with mandible and incomplete skeletal bones. Brachycranial, hypsicranial, tapeinocranial, hypsicranial, acrocranial, euryprosopic, euryen, hypsiconch, chamaerrhinian, orthognathous.

Grave No.78/a. - Inv.No.6885 (Male, mat., aged 42-46 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, metriometopic, mesoprosopic, mesen, hypsiconch, leptorrhinian, aristencephalic, mesognathous. Great medium stature (169.5 cm). Dolicho-ellipsoid. Occipital cone scalately delimited in arc of occipital squama and mediosagittal line of skull (Bathrocephaly). Glabella: 0. Protuberantia occipitalis externa: 0-1. Forehead medium high, weakly and convexely retroclinate. Arcus superciliaris very strong. Nasal root high, deep; nasal ridge medium long, slightly aquiline, arcuate in its terminal third. Fossa canina deep,especially on right side. Spina nasalis anterior: 2. Mandible very narrow, very short, high; genial process weak, straight.

Grave No.78/b. - Inv.No.6886 (Female, ad., aged 34-38 years). Fragmentary skeletal bones.

Grave No.79. - Inv.No.6887 (Male, ad., aged 31-35 years). Fragmentary skeletal bones.

Grave No.80. - Inv.No.6888 (Male, aged 38-42 years). Fragmentary skeletal bones.

Grave No.81. - Inv.No.6892 (Female, ad., aged 25-29 years). Fragmentary skeletal bones.

Grave No.82. - Inv.No.6890 (Male, ad., aged 38-42 years). Fragmentary skeletal bones.

Grave No.83. - Inv.No.6891 (Male, aged 30-60 years). Skull with mandible and skeletal bones. Dolichocranial, chamaecranial, tapeinocranial, hypsicranial, metriometopic, mesoprosopic, mesen, hypsiconch, mesorrhinian, aristencephalic, orthognathous. Small medium stature (163.7 cm). Eury-ellipsoid. Glabella: 2. Protuberantia occipitalis externa: 0. (It should be remarked that instead of a protuberance, this place is marked by a concavity!) Nasal root high, medium wide, nasal ridge medium projecting, straight. Fossa canina shallow. Fossa praenasalis moderate. Spina nasalis anterior:2. Arcus superciliaris robust. Mandible very high, very wide, long; genital

process rounded, robust, straight. Frontal bone and dome of skull with a flat crista sagittalis of wide base.

Grave No.84. - Inv.No.6889 (Female, ad., aged 35-39 years). Fragmentary skull with mandible and fragmentary skeletal bones. Brachycranial, hypsicranial, tapeinocranial, stenometopic, hypsiconch, leptorrhinian, orthognathous. Medium stature (153.0 cm). Brachy-ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Tubera frontalia and parietalia moderately developed, rounded. Nasal root high. Fossa canina filled. Spina nasalis anterior: 1. Mandible low, wide, short; genial process weak, rounded, straight.

Grave No.85. - Inv.No.6893 (Female, mat., aged 49-53 years). Skull with mandible and skeletal bones. Mesocranial, hypsicranial, acrocranial, hypsicranial, acrocranial, stenometopic, mesoprosopic, mesen, hypsiconch, leptorrhinian, oligencephalic, mesognathous. High stature (159.7 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead very high, weakly retroclinate. Arcus superciliaris completely absorbed. Nasal root high, very narrow. Bony nasal ridge flat,weakly aquiline. Fossa canina filled, Alveolar prognathism weak. Spina nasalis anterior: 2. Mandible medium high, narrow; genial process weak, straight.

Grave No.86. - Inv.No.6895 (Female, aged 23-40 years). Skull with mandible and skeletal bones. Brachycranial, orthocranial, tapeinocranial, orthocranial, tapeinocranial, metriometopic, euryprosopic, euryen, mesoconch, chamaerrhinian, euencephalic, mesognathous. High stature (160.9 cm)..Sphaeroid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, weakly convex. Tubera frontalia et parietalia on wide base. In asterion, sutural bones (ossa interparietalia), separated on both sides. Small os epiptericum on both sides. Nasal root deep, wide. Fossa canina filled. Spina nasalis anterior: 1. Mandible very low, short, wide, straight.

Grave No.87. - Inv.No.6896 (Female, mat., aged 46-50 years). Fragmentary skull with mandible and fragmentary skeletal bones. Hyperbrachycranial, orthocranial, tapeinocranial, hypsicranial, tapeinocranial, stenometopic, hypsiconch. Great medium stature (157.5 cm). Sphaeroid. Glabella: 0. Protuberantia occipitalis externa: 0. Nasal root wide, deep; nasal ridge aquiline, short. Mandible very low, narrow; genial process straight, alveolar margin completely absorbed in place of molar teeth.

Grave No.88. - Inv.No.6897 (Male, mat., aged 51-55 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, tapeinocranial, stenometopic, leptoprosopic, lepten, hypsiconch, leptorrhinian, aristencephalic, mesognathous. High stature (173.3 cm). Dolicho-ovoid. Glabella: 1. Protuberantia occipitalis externa: 1. Nasal root medium high, narrow; nasal ridge highly projecting, long, straight. Fossa canina deep,especially on right side. Alveolar prognathism. Fossa praenasalis weak. Spina nasalis anterior: 4. Mandible medium high, wide, short; genial process straight, weak.

Grave No.89. - Inv.No.6898 (Male, ad., aged 30-34 years).Skull with

mandible and skeletal bones. Dolichocranial, chamaecranial, metriocranial, chamaecranial, tapeinocranial, stenometopic, mesoprosopic, mesen, mesoconch, mesorrhinian, euencephalic, prognathous. Small medium stature (163.2 cm). Dolicho-ellipsoid. Skull expressedly parietal in character. Glabella: 3. Protuberantia occipitalis externa: 1. Forehead very high, strongly retroclinate. Nasal root deep, medium wide; nasal ridge moderately projecting, short, straight. Arcus superciliaris strikingly robust. Fossa canina weak. Fossa praenasalis expressed. Spina nasalis anterior: 2. Mandible medium high, very narrow; genial process medium, double.

Grave No.90. - Inv.No.6899 (Male, aged 30-60 years). Fragmentary skull. Mesocranial, orthocranial, metriocranial, orthocranial, tapeinocranial, stenometopic, oligencephalic. Eury-ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 1. Forehead high, retroclinate. Parallel with sutura sagittalis, a strong, lip-shaped convexity decurrent on parietal bone on both sides. Traces of a 15 mm large healed blow observable near obelion, on right parietal bone. Sutural bones along sutura lamboidea.

Grave No.93. - Inv.No.6900 (Female, sen., aged 69-73 years). Skull and skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, aristencephalic, orthognathous. High stature (161.5 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, moderately convex. Nasal root very high, wide. Fossa canina very deep on both sides. Bean-sized osteoma along lambda suture on left side.Mandible very narrow, low, pointed; genial process projecting, straight.

Grave No.94. - Inv.No.6901 (Male, aged 23-40 years). Fragmentary skull with mandible. Mesocranial, chamaecranial, tapeinocranial, orthocranial, tapeinocranial. Eury-ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Weak bathrocephaly. Forehead low, moderately convex. Fossa canina medium deep. Spina nasalis anterior: 3.

Grave No.95. - Inv.No.6902 (Female, aged 23-40 years). Fragmentary skull with mandible and incomplete skeletal bones. Acrocranial,acrocranial.

Grave No.96. - Inv.No.6903 (Female, mat., aged 44-48 years).Skull with mandible and incomplete skeletal bones. Mesocranial, hypsicranial, metriocranial, hypsicranial, metriocranial, eurymetopic, mesoprosopic, lepten, hypsiconch, leptorrhinian, aristencephalic, mesognathous. Small medium stature (151.1 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0-1. Forehead very high,convex. Tubera frontalia et parietalia.obsolescent, rounded. Nasal root deep, wide; nasal ridge medium high, straight, long. Fossa canina medium deep. Spina nasalis anterior: 2. Alveolar prognathism. Mandible medium high, narrow; genial process weak, double.

Grave No.97. - Inv.No.6904 (Female, ad., aged 23-27 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, chamaecranial, tapeinocranial, orthocranial, tapeinocranial, metriometopic, mesoprosopic, lepten, hypsiconch, leptorrhinian, aristencephalic, mesognathous. Medium stature (155.2 cm). Ellipsoid, a weak plagiocephaly. Glabella: 0. Protuberantia

occipitalis externa: 0. Forehead medium high, definitely convex. Tubera frontalia expressed. Tubera parietalia obsolescent. Nasal root very high, narrow; nasal ridge moderately projecting, short, straight. Fossa canina deep. Fossa praenasalis. Spina nasalis anterior: 3. Alveolar prognathism. Os epiptericum on both sides. Mandible low, narrow; genial process rounded, straight.

Grave No.98. - Inv.No.6905 (Male, mat., aged 52-56 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, chamaecranial, metriocranial, orthocranial, metriocranial, metriometopic, euryprosopic, mesoconch, leptorrhinian, aristencephalic, orthognathous. Great medium stature (169.5 cm). Ellipsoid. Glabella: 3. Protuberantia occipitalis externa: 1. Forehead high, weakly retroclinate. Very robust arcus superciliaris. Nasal root deep, wide; fragmentary nasal ridge highly projecting. Fossa canina very deep on both sides. Alveolar prognathism. Tuber malare. Double tuber pharyngeum. Mandible high, narrow, short; genial process moderately projecting, straight.

Grave No.99. - Inv.No.6906 (Male, ag 3-x years). Fragmentary skeletal bones.

Grave No.100. - Inv.No.8850 (Inf.I., aged 1 year). Unsuitable for analysis; a fragmentary skull with mandible.

Grave No.101. - Inv.No.6907 (Male, mat., aged 44-48 years). Skull with mandible and skeletal bones. Ultrabrachycranial, hypsicranial, tapeinocranial, hypsicranial, tapeinocranial, stenometopic, euryprosopic, euryen, hypsiconch, mesorrhinian, euencephalic, orthognathous. Medium stature (165.7 cm). Sphaeroid; an expressed plagiocephaly towards right side. Glabella: 1. Protuberantia occipitalis externa: 0. Forehead high, weakly retroclinate. Planoccipitaly. Nasal root medium deep, narrow. Fossa canina moderately deep. Fossa praenasalis. Alveolar prognathism. Mandible wide, medium high, robust; genial process rounded, straight.

Grave No.102. - Inv.No.6908 (Male, mat., aged 42-45 years). Skull with mandible and skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, metriocranial, eurymetopic, euryprosopic, euryen, mesoconch, mesorrhinian, aristencephalic, orthognathous. Medium stature (164.3 cm). Ellipsoid. Skull definitely parietal in character. Glabella: 2. Protuberantia occipitalis externa: 1. Forehead medium high, retroclinate. Nasal root deep, very wide, nasal ridge flatly projecting, expanded, straight. Fossa praenasalis. Fossa canina shallow. Mandible very high, very wide, robust; genial process pointed, expressed, straight.

Grave No.103. - Inv.No.6909 (? aged 23-x years). Fragmentary skeletal bones.

Grave No.104. - Inv.No. - - (Inf.I., aged 2 years). Fragmentary and incomplete skull and skeletal bones, unsuitable for analysis.

Grave No.105. - Inv.No.6910 (Male, aged 23-40 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocra-

nial, hypsicranial, metriocranial, metriometopic, mesoprosopic, mesen, hypsiconch, leptorrhinian, aristencephalic, mesognathous. Great medium stature (168.6 cm). Eury-ellipsoid. Skull parietal in character. Glabella: 3. Protuberantia occipitalis externa: 5 - a peg-like process. A very robust arcus superciliaris. Forehead very high, convex. Nasal root deep, narrow. Fossa canina very deep on both sides. Spina nasalis anterior: 1. Laterally on processus frontalis of left zygomatic an incisure of 1 mm diameter;it would have developed into a foramen. Mandible very robust, high, narrow, dental arc V-shaped; genial process expressed, double.

Grave No.106 - Inv.No. 6911 (Female, ad., aged 29-33 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, tapeinocranial, orthocranial, tapeinocranial, metriometopic, leptoprosopic, lepten, hypsiconch, leptorrhinian. High stature (160.2 cm). Eury-ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Tuber frontale expressed. Tuber parietale flattened. Nasal root very high, narrow; nasal ridge medium long, moderately projecting, weakly concave. Fossa canina moderately deep. Alveolar prognathism. Mandible low, narrow, genial process rounded, straight.

Grave No.107. - Inv.No.6912 (Female, aged 57-61 years). Fragmentary skull with mandible and fragmentary skeletal bones. Mesocranial, hypsicranial, metriocranial, hypsicranial, metriocranial, eurymetopic, hypsiconch, chamaerrhinian, euencephalic, orthognathous. Low stature (148.2 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Tuber frontale very expressed. Tuber parietale flattened. Nasal root very deep, much impressed, wide; nasal ridge hardly projecting, expanden, with a strong bridge. Fossa canina filled. Strong alveolar prognathism.

Grave No.108. - Inv.No.6913 (Male, aged 50-80 years). Skull with mandible. Dolichocranial, orthocranial, acrocranial, hypsicranial, acrocranial, eurymetopic, mesen, chamaeconch, mesorrhinian, aristencephalic, mesognathous. Ellipsoid. Skull parietal in character. Glabella: 4. Protuberantia occipitalis externa: 3. Forehead extremely high, strongly retroclinate. Arcus superciliaris and glabella forming a torus. Nasal root very deep, narrow; nasal ridge highly projecting, long, straight. Fossa canina filled. Spina nasalis anterior: 4. Moderate alveolar prognathism. Margo infraorbitalis of left orbita with a healed wound caused by a cut. Mandible very high, very wide, robust; genial process straight, definite.

Grave No.109. - Inv.No.6914 (Male, aged 38-42 years). Fragmentary skeletal bones.

Grave No.110. - Inv.No.6915 (Male, aged 45-75 years). Fragmentary skull. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, metriometopic, mesoconch, mesorrhinian, mesognathous. Sphaeroid. Glabella: 2. Protuberantia occipitalis externa: 2. Forehead medium high, convex. Nasal root deep, narrow; nasal ridge moderately projecting, straight. Fossa canina filled.

Grave No.112. - Inv.No.6916 (Inf.II., aged 12-13 years). Fragmentary skull and mandible. Dolichocranial, hypsicranial, acrocranial, eurymetopic.

Grave No.113. - Inv.No.6917 (Male, mat., aged 53-57 years). Fragmentary skull with mandible and skeletal bones. Mesocranial, hypsicranial, metriocranial, stenometopic, hypsiconch, leptorrhinian. Great medium stature (168.9 cm). Ellipsoid. Glabella: 2. Protuberantia occipitalis externa: 0. Arcus superciliaris very strong. Forehead very high, steep. Fossa canina medium deep. Frontal teeth lost in vivo and half height of alveolar margin arcuately and completely absorbed. Mandible low,wide; genial process flatly arcuate, straight.

Grave No.114/a. - Inv.No. -- (Inf.II.,aged 12-13 years). Skull fragment. Unsuitable for analysis.

Grave No.114/b. - Inv.No. -- (Inf.II.,aged 12-13 years). Skull fragment. Unsuitable for analysis.

Grave No.115. - Inv.No.6918 (Female, mat., aged 42-46 years). Skull and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, eurymetopic, mesen, mesoconch, chamaerrhinian, euencephalic, mesognathous. High stature (161.3 cm). Meso-ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Tuber frontale expressed. Tuber parietale flattened. Nasal root very low, deep, nasal ridge moderately projecting, short, straight. Spina nasalis anterior: 1. Fossa canina filled. Very robust jugae alveolaris.

Grave No.116. - Inv.No.6919 (Inf.II.,aged 10 years). Fragmentary skull and mandible. Mesocranial, hypsicranial, acrocranial. Os bregmaticum.

Grave No.117. - Inv.No.6921 (Male, mat., aged 46-50 years). Skull with mandible and skeletal bones. Dolichocranial, orthocranial, acrocranial, hypsicranial, acrocranial, eurymetopic, leptoprosopic, mesen, mesoconch, leptorrhinian, aristencephalic, mesognathous. High medium stature (168.6 cm). Ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 2. Highly arcuate and flattening arcus superciliaris. Forehead very high,weakly retroclinate. Nasal root medium, very narrow; nasal ridge medium projecting, straight. Fossa canina medium deep. Fossa praenasalis weak. Spina nasalis anterior:1. Moderate alveolar prognathism. Extensive cysta in place of left molares. Mandible very high, very wide; genial process arcuate, medium, straight.

Grave No.118. - Inv.No.6923 (Inf.II.,aged 7 years). Fragmentary skull. Mesocranial, hypsicranial, metriocranial, hypsicranial, metriocranial, metriometopic, euryen, hypsiconch, leptorrhinian, orthognathous.

Grave No.119. - Inv.No.6924 (Male, mat., aged 53-57 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, orthocranial, tapeinocranial, stenometopic, mesen, mesoconch, mesorrhinian, aristencephalic, orthognathous. Small medium stature (163.4 cm). Meso-ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 1. Arcus superciliaris robust. Forehead high, considerably retroclinate. Nasal root low, medium wide; nasal ridge moderately projecting, long, concave.

Fossa canina deep. Spina nasalis anterior: 2. Alveolar prognathism. Extensive cysta in place of left incisor, extending to margin of apertura piriformis. Mandible low, medium wide, genial process rounded, straight.

Grave No.120. - Inv.No.6925 (Male, ad., aged 30-34 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, metriocranial, eurymetopic, leptoprosopic, lepten, mesoconch, mesorrhinian, aristencephalic, mesognathous. Small medium stature (160.6 cm). Ellipsoid. Skull parietal in character. Glabella: 0. Protuberantia occipitalis externa: 1. Extensive ossa suturarum on both sides along lambda suture. Os epiptericum on both sides. Left squama temporalis with an osseous tuber, 30 mm in diameter. Forehead medium high, convex. Nasal root low, narrow. Fossa canina very deep. Spina nasalis anterior: 1. Alveolar prognathism. Mandible medium high, wide, angular. Genial process T-shaped, of wide base.

Grave No.121. - Inv.No.6926 (Female, aged 47-51 years). Fragmentary skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, eurymetopic, hypsiconch. Medium stature (154.2 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead high, convex. Sutura metopica. Fossa canina medium deep. Very robust processus marginalis. Mandible low, medium wide, genial process moderately developed, straight. Alveolar arc completely absorbed in place of lost teeth.

Grave No.122. - Inv.No.6927 (Female, mat., aged 54-58 years). Fragmentary skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, stenometopic, hypsiconch, aristencephalic. Low stature (139.8 cm). Ovoid. Glabella:0. Protuberantia occipitalis externa: 0. Forehead weakly retroclinate. Nasal root low, very narrow; fragment of nasal ridge highly projecting. Mandible very low, very narrow; genial process pointed, straight. Alveolar margin completely absorbed in place of lost teeth.

Grave No.123. - Inv.No.6928 (Male, aged 56-60 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, metriocranial, metriometopic, mesoprosopic, mesen, chamaeconch, mesorrhinian, euencephalic, mesognathous. Small medium stature (162.2 cm). Ovoid. Glabella: 2. Protuberantia occipitalis externa: 2. Central os incae (os interparietale?). Forehead medium high, strongly retroclinate, low. Arcus superciliaris sharp. Nasal root high, very narrow. Fossa canina very deep. Alveolar prognathism. Wide and flat torus palatinus sagittalis. Mandible narrow, medium high, genial process straight.

Grave No.124. - Inv.No.6929 (Female, aged 23-40 years). Skull with mandible. Mesocranial, orthocranial, tapeinocranial, hypsicranial, metriocranial, eurymetopic, leptoprosopic, lepten, hypsiconch, chamaerrhinian, euencephalic, mesognathous. Brisoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead high, convex. Nasal root very high, wide, nasal ridge

impressed, flatly projecting, concave. Fossa praenasalis shallow. Fossa canina shallow. Mandible low,narrow;genial process sharply rounded, straight.

Grave No.126. - Inv.No.6930 (Female, mat., aged 52-56 years). Fragmentary skeletal bones.

Grave No.127. - Inv.No.6939 (Male, aged 23-x years). Fragmentary skeletal bones.

Grave No.128. - Inv.No.6932 (Male, mat., aged 41-45 years). Fragmentary skull with mandible and fragmentary skeletal bones. Hypsicranial,mesoconch, mesorrhinian. Low stature (158.8 cm). Ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 1. Forehead very high, strongly retroclinate. Nasal root very deep, wide; nasal ridge moderately projecting, bridged, lower third arcuate. Fossa canina filled. Fossa praenasalis. Mandible medium high.

Grave No.129. - Inv.No.6933 (Ad., aged 34-38 years). Fragmentary skeletal bones.

Grave No.130. - Inv.No.6934 (Male, aged 36-40 years). Skull with mandible and skeletal bones. Mesocranial, hypsicranial, acrocranial, Hypsicranial, acrocranial, metriometopic, mesoprosopic, euryen, mesoconch, chamaerrhinian, euencephalic, mesognathous. Medium stature (166.6 cm). Ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 1. Forehead medium high, weakly retroclinate. Nasal root low, deep, narrow; nasal ridge fragmentary, concave. Fossa canina shallow. Moderate alveolar prognathism. Mandible medium high, wide, genial process rounded, medium, straight.

Grave No.131. - Inv.No.6936 (Female, aged 45-75 years). Fragmentary skull. Unsuitable for analysis.

Grave No.132. - Inv.No.6938 (Male, aged 38-42 years). Skull with mandible and skeletal bones. Dolichocranial, hypsicranial, acrocranial, hypsicranial, acrocranial, eurymetopic, mesoprosopic, mesen, hypsiconch, mesorrhinian, euencephalic, mesognathous. Small medium stature (163.0 cm). Ellipsoid. Glabella: 3. Protuberantia occipitalis externa: 1. Forehead high, retroclinate. Arcus superciliaris very robust. Nasal root wide, deep; nasal ridge medium high, straight. Fossa canina filled. Spina nasalis anterior:1. Processus marginalis expressed. Mandible very high, wide, genial process straight, medium.

Grave No.133. - Inv.No.6939 (Male, mat., aged 52-56 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, hypsicranial, acrocranial, hypsicranial, acrocranial, eurymetopic, mesoconch, leptorrhinian, euencephalic, mesognathous. Low stature (159.2 cm). Spheno-ovoid.Skull decidedly parietal in character. Glabella: 1. Protuberantia occipitalis externa: 2. Forehead medium high,arcuate. Nasal root medium high, wide; nasal ridge moderately projecting, long, straight. Fossa canina medium deep. Spina nasalis anterior: 1. Mandible wide, medium high; genial process definite, straight.

Grave No.134. - Inv.No.6940 (Female, aged 57-61 years). Skull with mandible and fragmentary skeletal bones. Brachycranial, chamaecranial, tapei-

nocranial, hypsicranial, metriocranial, metriometopic, mesoprosopic, lepten, hypsiconch, chamaerrhinian, aristencephalic, orthognathous. Great medium stature (158.9 cm). Sphaeroid. Glabella:0. Protuberantia occipitalis externa: 0. Forehead high, convex. Tubera frontalia et parietalia flattened. Nasal root deep, wide; nasal ridge highly projecting, medium long, convex. Fossa canina filled. Spina nasalis anterior: 1. Mandible low, medium wide; genial process straight, rounded.

Grave No.135. - Inv.No.6941 (Female, sen., aged 66-70 years). Fragmentary skull, mandible, and fragmentary skeletal bones. Mesocranial, orthocranial, tapeinocranial, stenometopic. Medium stature (155.0 cm). Decidedly ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Tubera frontalia expressed, tubera parietalia flattened. Mandible very low, narrow; genial process pointed, straight.

Grave No.136. - Inv.No.6942 (Female, mat., aged 54-55 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, chamaecranial, metriocranial, orthocranial, metriocranial, eurymetopic, mesoprosopic, mesen, hypsiconch, mesorrhinian, euencephalic, mesognathous. Great medium stature (157.7 cm). Ellipsoid. Skull parietal in character. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead high and steep, convex. Nasal root deep,wide; nasal ridge elongated, expanded, medium high projecting. Fossa canina shallow. Spina nasalis anterior: 1. Mandible low, narrow; genial process straight, medium robust.

Grave No.137. - Inv.No.6943 (Male, juv., aged 19-20 years?). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, tapeinocranial, hypsicranial, metriocranial, stenometopic, euryprosopic, mesen, mesoconch, leptorrhinian, euencephalic, orthognathous. Medium stature (164.0 cm). Very small,brisoid. Glabella: 2. Protuberantia occipitalis externa: 1. Forehead low, decidedly retroclinate. Torus sagittalis on frontal bone. Strong arcus superciliaris. Nasal root high,narrow. Fossa canina very deep. Fossa praenasalis weak. Alveolar prognathism. Mandible very short, angular, short-arched; genial process straight, rounded.

Grave No.138. - Inv.No. - - (Inf.II., aged 6-7 years). Skull fragment. Unsuitable for analysis.

Grave No.139. - Inv.No.6944 (Male, aged 38-42 years). Skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, stenometopic, chamaeconch, hyperchamaerrhinian, euencephalic, prognathous. Low stature (156.3 cm). Weakly plagiocephalic, brisoid. Glabella: 3-4. Protuberantia occipitalis externa: 1. Forehead high, retroclinate. Extremely strong arcus superciliaris, nearly forming torus. Nasal root deep,medium wide. Facial skeleton very low. Fossa canina very deep.Fossa praenasalis anterior.Alveolar prognathism expressed. Alveolar margin completely absorbed in place of molars. A 20 mm large cysta in place of left upper canine. Forehead with a sagittally situated osseous tubercle, 25 mm in diameter, caused by some mechanical effect. Mandible very

narrow, low; genial process rounded, straight.

Grave No.141. - Inv.No.6946 (Female, aged 23-40 years). Skull and fragmentary skeletal bones (this latter later received Inventory Number 6945). Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, metriometopic, mesoprosopic, mesen, hypsiconch, chamaerrhinian, euencephalic, mesognathous. Great medium stature (156.2 cm). Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low,convex. Arcus superciliaris flat. Fossa canina medium deep. Spina nasalis anterior: 2. Mandibular fragment low, medium wide.

Grave No.142. - Inv.No.6947 (Male, ad., aged 28-32 years). Skull with mandible and incomplete, fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, chamaecranial, metriocranial, metriometopic,mesoprosopic, lepten, mesoconch, mesorrhinian, euencephalic, prognathous. Medium stature (164.5 cm). Eury-ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 1. Forehead high, weakly retroclinate. Arcus superciliaris robust. Nasal root very low, deep; nasal ridge lowly projecting, concave. Fossa canina shallow. Spina nasalis anterior: 3. Mandible low,narrow; genial process straight, situated medially.

Grave No.143. - Inv.No.6948 (Female, aged 38-42 years). Fragmentary skeletal bones.

Grave No.143/a. - Inv.No. - - (Inf.II., aged 9-10 years).Skull fragment of a dolichoid character; unsuitable for analysis.

Grave No.144. - Inv.No.6949 (Female, ad., aged 27-31 years). Fragmentary skull and fragmentary skeletal bones. Mesocranial, hypsicranial, acrocranial, hypsicranial, metriocranial, metriometopic, mesen, hypsiconch, chamaerrhinian. Great medium stature (156.2 cm). Ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex, tubera frontalia expressed. Fossa canina decidedly deep on right side, shallow on left side.

Grave No.146. - Inv.No. - - (Inf.II., aged 11-12 years).Skull fragment, unsuitable for analysis.

Grave No.147. - Inv.No.6950 (Male, ad., aged 32-36 years). Fragmentary skeletal bones.

Grave No.149. - Inv.No.6951 (Female, aged 50-80 years). Fragmentary skull. Hypsicranial, hypsicranial. Ellipsoid. Glabella: 1. Protuberantia occipitalis externa: 1. Forehead steep, convex. Tubera frontalia expressed. Traces of extensive old age depressions on both parietal bones.

Grave No.152. - Inv.No.6952 (Male, aged 30-60 years). Fragmentary skull. Dolichocranial, hypsicranial, acrocranial, eurymetopic. Spheno-ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead medium high, weakly retroclinate. Arcus superciliaris moderately developed.

Grave No.153/a. - Inv.No.6953 (Male, aged 45-75 years). Fragmentary skull. Mesocranial, hypsicranial, metriocranial, eurymetopic. Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, steep, convex. Arcus superciliaris high, arcuate, moderately developed.

Grave No.153/b. - Inv.No.6954 (Male, aged 23-40 years). Fragmentary skull. Brachycranial, hypsicranial, metriocranial, hypsicranial, metriocranial, eurymetopic, mesen, mesoconch, chamaerrhinian, oligencephalic, mesognathous. Eury-sphenoid. Glabella: 1. Protuberantia occipitalis externa: 1. Forehead high, steep, weakly retroclinate. Arcus superciliaris flattened. Nasal root high, projecting, narrow; nasal ridge medium long, straight, moderately projecting. Fossa canina medium deep. Spina nasalis anterior: 3.

Grave No.153/c. - Inv.No.6955 (Female, aged 45-75 years). Fragmentary skull. Mesocranial, orthocranial, tapeinocranial, stenometopic, hypsiconch. Dolicho-ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead low, convex. Tubera frontalia expressed. Tubera parietalia flattened. Arcus superciliaris flatly and weakly arched.

Grave No.154. - Inv.No.6956 (Female, mat., aged 42-56 years). Fragmentary skeletal bones.

Grave No.154/a. - Inv.No.6957 (Male, aged 38-42 years). Fragmentary skeletal bones.

Grave No.154/b. - Inv.No.6958 (Female, mat., aged 43-53 years). Fragmentary skeletal bones.

Grave No.155. - Inv.No.6959 (Male. aged 36-40 years). Fragmentary skull with mandible and skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, stenometopic, euryprosopic, mesen, hypsiconch, aristencephalic, mesognathous. Great medium stature (167.7 cm). Eury-ovoid. Glabella: 3. Protuberantia occipitalis externa: 4. Forehead high, weakly retroclinate. Nasal root medium high, medium deep, narrow; nasal ridge highly projecting, concave. Fossa canina very deep. Fossa praenasalis. Mandible low, very wide, medium high; genial process straight, medium.

Grave No.156. - Inv.No.6960 (Male, aged 30-60 years). Fragmentary skull. Dolichocranial, orthocranial, metriocranial, hypsicranial, acrocranial, metriometopic, euryen, mesoconch, mesorrhinian, mesognathous. Ellipsoid. Glabella: 3. Protuberantia occipitalis externa: 0. Arcus superciliaris very robust, arching highly. Forehead medium high, retroclinate. Nasal root low, deep, impressed; nasal ridge low, concave. Spina nasalis anterior: 3. Fossa canina extraordinarily deep.Teeth lost along entire arc and alveolar margin obsorbed. A high cysta in place of left second molar.

Grave No.157. - Inv.No.6961 (Male, mat., aged 49-53 years). Fragmentary skull with mandible and fragmentary skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, acrocranial, metriometopic, mesoprosopic, euryen, hypsiconch, chamaerrhinian, euencephalic, mesognathous. Great medium stature (167.3 cm). Dolicho-ellipsoid. Glabella: 4. Protuberantia occipitalis externa: 2. Forehead extraordinarily high, with a very robust arcus superciliaris. Os incae bipartitum (os interparietale?). Nasal root very deep, impressed, extremely narrow; nasal ridge medium projecting, weakly concave. Fossa canina extremely deep. Spina nasalis anterior: 4. Fossa praenasalis. Mandible medium high; genial process robust, straight.

Grave No.158. - Inv.No.6962 (Female, aged 30-60 years). Fragmentary skull. Unsuitable for analysis; a 25 mm large os bregmaticum.

Grave No.159. - Inv.No.6963 (Female, aged 23-40 years). Fragmentary skull with mandible. Mesocranial, orthocranial, tapeinocranial, hypsicranial, metriocranial. stenometopic, hyperleptoprosopic, lepten, hypsiconch, mesorrhinian, mesognathous. Brisoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead very low, steep, convex. Tubera frontalia et parietalia wide, flattened. Arcus superciliaris flatly arcuate, hardly projecting. Nasal root low, narrow; nasal ridge medium high, weakly concave. Fossa canina shallow. Mandible narrow, low; genial process weak, straight.

Grave No.160. - Inv.No.6964 (Female, aged 23-40 years). Fragmentary skull. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, metriometopic. Ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead very low, steep, convex. Tubera frontalia robust. Arcus superciliaris completely flattened.

Grave No.161. - Inv.No.6965 (Male, mat., aged 55-59 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, orthocranial, acrocranial, orthocranial, acrocranial, metriometopic, mesoconch, chamaerrhinian, euencephalic, mesognathous. High stature (170.5 cm). Ellipsoid. Glabella: 3. Protuberantia occipitalis externa: 0. Forehead very high, steep. Arcus superciliaris robust. Nasal root deep, impressed, wide. Nasal ridge expanded, medium high, straight. Fossa canina forming a very deep hollow. Fossa praenasalis. Spina nasalis anterior: 3. Alveolar prognathism. Mandible very wide, high; genial process straight, squat, robust.

Grave No.162. - Inv.No.6966 (Female, mat., aged 50-54 years). Skull with mandible and fragmentary skeletal bones. Dolichocranial, chamaecranial, metriocranial, orthocranial, metriocranial, metriometopic, hypsiconch, chamaerrhinian, aristencephalic. Medium stature (154.2 cm). Ovoid. Glabella: 0. Protuberantia occipitalis externa: 0. Forehead very low, convex. Nasal root high, narrow. Fossa canina medium deep. Mandible very low, narrow; genial process pointed, straight.

Grave No.163. - Inv.No.6967 (Inf.II., aged 9-10 years). Fragmentary skull and fragmentary skeletal bones. Tapeinocranial, metriocranial. Unsuitable for further analysis.

Grave No.164. - Inv.No.6968 (Female, mat., aged 49-53 years). Fragmentary skull with mandible and fragmentary skeletal bones. Mesocranial, orthocranial, metriocranial, hypsicranial, metriocranial, eurymetopic, hypsiconch. High stature (162.7 cm). Eury-ellipsoid. Glabella: 0. Protuberantia occipitalis externa: 0. Arcus superciliaris flattened. Forehead low, steep, convex. Nasal root medium deep, wide; nasal ridge medium long, straight. Mandible low, medium wide, atrophied; genial process rounded, straight.

Grave No.165. - Inv.No.8851 (Female, aged 45-75 years). Fragmentary skull with mandible. Dolichocranial, orthocranial, metriocranial, stenometopic, hypsiconch, mesorrhinian, mesognathous. Spheno-ellipsoid. Glabella:

2. Protuberantia occipitalis externa: 3. Forehead very high, retroclinate, arcus superciliaris robust. Nasal root deep, impressed, very narrow. Nasal ridge long, straight, narrow. Fossa canina medium deep. Spina nasalis anterior: 3, beak-shaped. Large cysta above left upper second incisor. Mandible medium high, medium wide; genial process widely rounded, double.

General anthropological analysis

Studying the mean values referring to the measurements of the male skulls, it can be stated that, beside a relatively moderate length (186.09), they are narrow (140.80), moderately high (135.14), their capacity medium (1415), the bizygomatic breadth moderate (132.02), as well as the total and upper facial heights (115.03 and 68.30, respectively).

The female skulls are characterized, similarly to that of the males, by a moderate length (177.52), narrowness (138.19), moderate height (129.12), moderately wide bizygomatic breadth (124.20), and moderately high total and upper face (109.92 and 66.77, respectively). A very slight difference appears only in regard of the cranial capacity, since the mean value of the males belongs to the medium (euencephalic) group, the females are to be relegated, by reason of their mean value 1303 cm^3, to the large (aristencephalic) group. In view of the fact that the mean value of the cranial capacity of the females exceeds that of the euencephalic group by no more than 3 cm^3, this very slight difference can safely be neglected and one might state that the male and female skulls reflect, in regard of the cranial capacity, a significant closeness.

If the mean values of the cranial indices are examined, it will be found that the medium long index group (75.03 and 77.77) is characteristic of both the male and the female skulls. Concerning the length-height index, both series belong to the medium high (72.52 and 73.07) group. The breadth-height index is 95.10 in the males and 93.77 in the females, hence both are medium high as related to the breadth. The transversal-parietal index is medium for both sexes (68.24 and 68.26). The total and upper face indices show a medium face (86.87 and 51.79, respectively) in the males, agreeing also with the female total and upper face indices (88.49 and 54.00, respectively). With respect to the nasal index, the male and the female skulls again agree (49.00 and 49.11, respectively), that is, both belong to the mesorrhinian index group. The orbital index displays some difference, since whereas the male orbita are mesoconch in character (82.64), the female ones are hypsiconch (89.30).

The main measurements and indices of the skull may, by the usual grouping, be evaluated as follows:

The greatest cranial length was possible to determine on 94 per cent

of the adult individuals. The skulls are preponderantly moderately long, that is, 42 per cent of the males and 63 per cent of the females. Long is 35 per cent of the male skulls, and 16 per cent of the females; short is 23 per cent of the males, and 19 per cent of the females. Only one female skull belongs to the very long group (2 per cent).

The greatest width of the skull could be measured on 96 per cent of the material. According to the results, narrow skulls predominate in both sexes (males: 62 per cent; females: 83 per cent). The frequency of very narrow skulls is 36 and 6 per cent, respectively. Moderately wide is one male (2 per cent) and 5 female (11 per cent) skulls.

The cranial height was established on 85 per cent of the material. Accordingly, the majority of both the male (68 per cent) and the female (63 per cent) skulls are moderately high. High is 29 per cent of the male and 37 per cent of the female skulls; and only one male skull proved to be low (2 per cent).

With respect to cranial capacity,67 per cent of the skulls was suitable for examination. Concerning the males, 49 per cent belongs to the euencephalic, and 40 per cent to the aristencephalic, groups, whereas in the females the frequency of aristencephaly is 57 per cent, that of euencephaly is comparatively lower (37 per cent). The frequency of the oligencephalic skulls is the smallest (males: 11 per cent; females: 7 per cent).

The bizygomatic breadth was established on 67 per cent of the skulls. Both sexes are characterized by a moderately wide group frequency (males: 60 per cent; females: 73 per cent). Narrow bizygomatic breadth is shown by 34 per cent of the male,and 20 per cent of the female,skulls. The frequency of skulls with a wide bizygomatic breadth is the lowest (males: 6 per cent; females: 7 per cent).

The facial height could be determined on 53 per cent of the skulls. The majority of both the males and the females are moderately high (males: 65 per cent; females: 60 per cent). The frequency of low facial measurement is 27 per cent in the males and 20 per cent in the females.High face occurs in 8 per cent of the males and in 20 per cent of the females.

To establish the upper facial height, 73 per cent of the skulls was suitable for measurement. The frequencies of the moderately high and low upper facial heights proved to be equally distributed in the males (49 per cent each). Also in the female skulls, preponderantly the same group frequencies were found (47 and 32 per cent, respectively). The occurrence of skulls with a high upper face was the smallest (males: 3 per cent; females: 21 per cent).

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

The length-breadth index was determinable in 92 per cent of the adult individuals. The shape of the skulls is predominantly medium (mesocranial): in 49 per cent of the males and in 74 per cent of the females. Also doli-

chocrany is significant (43 and 10 per cent, respectively). The frequency of short skulls (brachycrany) was the smallest (males: 9 per cent; females: 17 per cent).

To sum up, 60 per cent of the examined skulls is mesocranial, 27 per cent dolichocranial, and 12 per cent brachycranial.

The length-height index was determinable on 82 per cent of the material. The great majority of the skulls (males: 76 per cent; females 59 per cent) are medium (orthocranial). The high (hypsicranial) and low (chamaecranial) group-frequencies are distributed in an equal ratio among the males (12 per cent each), while the former is 26 per cent and the latter 15 per cent in the females, that is, of a disproportionate character.

Combining the two sexes with reference to this index, 68 per cent of the examined skulls is medium (orthocranial), 20 per cent high (hypsicranial), and 12 per cent low (chamaecranial).

The breadth-height index was calculable on 84 per cent of the skulls. The group-frequencies are distributed as follows: medium high (metriocranial) is 56 per cent of the male, and 43 per cent of the female, skulls. The frequency of high (acrocranial) skulls is 34 per cent in the males and 23 per cent in the females. The character is low (tapeinocranial) in 10 per cent of the males and 35 per cent of the females.

On the basis of the combined results, 49 per cent of the skulls is metriocranial, 28 per cent acrocranial, and 22 per cent tapeinocranial.

The frontal-parietal index was establishable on 91 per cent of the material. The skulls show preponderantly a wide forehead (eurymetopic). Comprising 40 per cent of the males and 35 per cent of the females. A medium forehead (metriometopic) is shown by 36 per cent of the males, and 28 per cent of the females, while the frequency of those with a low forehead (stenometopic) is 24 per cent in the males and 37 per cent in the females.

According to the combined results, the frequency of the skulls with a wide forehead is 38 per cent, taht with a medium wide forehead 32 per cent, and with a narrow forehead 30 per cent.

The total facial index was calculable for 46 per cent of the skulls. The index-groups are distributed as follows: 54 per cent of the male, and 52 per cent of the female, skulls is medium wide (mesoprosopic), 14 (male) and 35 (female) per cents are narrow (leptoprosopic), and 27 (male) and 13 (female) per cents are wide (euryprosopic). Only 1 male skull displays a very wide face (5 per cent).

Accordingly, the majority (53 per cent) of the examined skulls are, in this respect,medium wide (mesoprosopic),24 per cent narrow (leptoprosopic), 20 per cent wide (euryprosopic), and 2 per cent very wide (hypereuryprosopic).

The upper face index was determinable on 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 53 per cent of the males and 52 per cent

of the females. The frequency of skulls with a narrow upper face (lepten) is 16 per cent in the males, and 45 per cent in the females; that of the skulls with a wide upper face (euryen) is 31 per cent in the males, and 3 per cent in the females. As is to be seen, there is a difference in the ratio of the two sexes within the narrow (lepten) and wide (euryen) upper face groups.

Consequently, 52 per cent of the skulls display a medium wide (mesen), 29 per cent a narrow (lepten), and 18 per cent a wide (euryen), upper face.

The orbital index was calculable for 81 per cent of the skulls. The majority of the orbital index is high (males: 33 per cent; females: 80 per cent)(hypsiconch), medium (mesoconch) is 59 and 20 per cents, respectively, while a low orbita (chamaeconch) occurred in 3 male skulls only (8 per cent).

Concerning the orbital index, there is a difference between the two sexes: the mesoconch character predominates in the males,and the hypsiconch character in the females. All in all, 57 per cent of the examined skulls exhibit high (hypsiconch), 39 per cent medium high (mesoconch), and 4 per cent low (chamaeconch), orbita.

The evaluation of the nasal index was possible on 75 per cent of the skulls. The distribution of the index-groups is different between the two sexes. While more than half of the male skulls (53 per cent) displays a medium wide nose (mesorrhinian), merely one-quarter of the female skulls (23 per cent) belongs to this index group. The ratio of frequency of wide-nosed (chamaerrhine) skulls is much higher in the females (40 per cent) than in the males (21 per cent). The occurrence of skulls with a narrow nose (leptorrhinian) is also different between the two sexes, but to a lesser rate (males: 26 per cent; females: 37 per cent).

To sum up, 38 per cent of the skulls has a medium wide nose (mesorrhinian), 32 per cent a wide nose (chamaerrhinian), and 30 per cent a narrow nose (leptorrhinian).

The body height was calculated on the basis of the long bones for 75 per cent of the adult individuals. It was found that the majority of both the males and the females are characterized by a great medium stature (males: 50 per cent; females: 34 per cent). The frequency of a medium stature is 18 per cent in the males and 9 per cent in the females. The ratio of the small medium stature is nearly equal in both sexes (16 and 17 per cent, respectively), while the proportion of the low stature is almost twofold in the females against the males (males: 11 per cent; females: 22 per cent), and the high stature is more than threefold in their favour (males: 5 per cent; females: 17 per cent).

The calculated main height is, accordingly, 166.00 cm for the males and 154.42 cm for the females.

On the basis of the mean values of the indices, the group frequencies and their evaluation, it can now be stated that the cranial configuration

of the partial population at Zalavár-Kápolna is medium long (mesocranial), laterally medium high (orthocranial), occipitally medium high (metriocranial), the forehead wide (eurymetopic), the total and upper face medium wide (mesoprosopic, mesen), the orbita high (hypsiconch), the nose medium wide (mesorrhinian), the cranial capacity eu-aristencephalic. It should be noted that the morphometric values of majority proportions characterizing the population were obtained by the simple summarization of the group values referring to the two sexes. The brain case is characterized by an occipital convexity. Stature was great medium, especially significant for the males.

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 morphometric and morphoscopic analyses of the character-groups, I distinguished four distinct subgroups. Taxonomic analysis and the subgrouping, respectively, were made by a combination of characters on 67 skulls.

The four distinct character-groups of the partial population at Zalavár-Kápolna in the eleventh century are as follows:

I. Dolicho-Mesocranial - Lepto-Mesoprosopic subgroup with Small Medium Stature

This subgroup comprises 31 skulls (13 males, Inventory Numbers 6836, 6840, 6862, 6870, 6875, 6891, 6898, 6921, 6924, 2939, 6940. 5944, 6947; and 18 females, Inventory Numbers 6834, 6835, 6837, 6845, 6847, 6853, 6859, 6865, 6867, 6872, 6880, 6889, 6903, 6904, 6929, 6942, 6966, 8851). On the basis of the metrico-morphological analysis, the skulls of this subgroup display features characterizing mostly the classic Mediterranean elements.

II. Mesocranial - Lepto-Mesoprosopic subgroup with Great Medium-High Stature

This subgroup comprises 16 skulls (5 males, Inventory Numbers 6882, 6885, 6897, 6910, 6954; and 11 females, Inventory Numbers 6844, 6846, 6850, 6856, 6893, 6895, 6900, 6911, 6918, 6946, 6963), The skulls of this character-group can be distinguished from the preceding ones by mainly the character-complex of the Nordic and Atlanto-Mediterranean types.

III. Dolicho-Mesocranial - Euryprosopic subgroup with Medium-Great Medium Stature

This subgroup consists of 19 skulls (17 males, Inventory Numbers 6851, 6854, 6863, 6873, 6879, 6905, 6908, 6913, 6925, 6928, 6934, 6938, 6943, 6959, 6960, 6961, 6965, and 2 females, Inventory Numbers 6855, 6871). The skulls exhibit a character-complex resembling in general Cromagnoid-A elements.

IV. An Ultrabrachycranial - Euryprosopic character-complex with Medium Stature (alpine) was observable on one male skull only (Inv.No.6907).

By the comparative metric and morphoscopic analysis of the character-complexes, it can be stated that the male and female skeletons of the four taxonomic subgroups discussed above exhibit Europoide features. In no case has a Mongoloide physiognomy been observed. The population of the cemetery is characterized by an intraracial heterogeneity, supported on the basis of the several taxonomic characters by the distinct subgroups distinguished above.

Comparative analysis

The next problem involves the exact place of Zalavár-Kápolna in the ranks of the cemeteries of the Balaton Area, and its relationship to them. The comparative analysis may be based on the relatively great number of the anthropological materials (and the mean values of their main measurements and indices) excavated and published in the Balaton area, namely on: Jutas (4), Várpalota (6), Kérpuszta (5), Veszprém-Kálváriadomb (1), Székesfehérvár-Bikasziget, Sárkereszturi ut, Sóstó, Szárazrét (2), Csákberény (3), Szebény (9), Csákberény (10), Hegykő (11), Előszállás-Bajcsihegy (12),and Kékesd (13). In view of the fact that in the case of one or two cemeteries the authors omitted to publish the mean values of the main measurements and indices, I have supplemented these data by having calculated them from the published individual measurements. The data for comparison are summarized in Tables XX-XXIII. To illustrate the correlational morphological situation of the anthropological material analysed herein, I also submit some character-complexes (Figs. 1-8).

Comparing the mean values of the main measurements of the male skulls deriving from Zalavár-Kápolna with those referring to the materials listed above, it can be established that they show the greatest similarity with the skulls of Kérpuszta. In the material of both cemeteries namely, the skulls are moderately long and narrow, moderately high, their bizygomatic

arch moderately wide, the face moderately high. A smaller difference shows only in the mean value referring to the upper face measurement, since whereas the upper face of the Zalavár population was low (68.3), that of the Kérpuszta population was moderately high (69.2).

In regard of the above values, the female skulls stand also closer to the Kérpuszta material, since, similarly to the male series, they too are characterized by a moderate length, narrowness, moderate height, moderate bizygomatic breadth, and moderately high face. A difference appears also here in the mean value of the upper face, since that of the females from Zalavár is moderately high, whereas that of the females from Kérpuszta low.

Examining the mean values of the cranial indices, the male and the female skulls of both cemeteries will be found to show similarities. The cranial configuration of the male and female series of both cemeteries is namely medium long (mesocranial), laterally medium high (orthocranial), occipitally medium high (metriocranial), in the face and upper face medium wide (mesoprosopic-mesen) and the orbita high (hypsiconch). A small difference appears only in the character of the forehead and the nose. Whereas the forehead of the Zalavár males and females is medium (metriometopic), that of the Kérpuszta series is wide (eurymetopic).The nose of the female skulls from Zalavár is medium wide (mesorrhinian), that of the female series from Kérpuszta wide (chamaerrhinian). On the other hand, this character is the same in the male series (mesorrhinian).

As far as stature is concerned, the male and female series of both cemeteries are again close to each other. The stature of the Zalavár males is great medium, of the Kérpuszta males medium; while the stature of the females is the same in both series (medium).

It should be remarked here that a ceratin morphological agreement, coming to expression in the mean values of the main indices,cannot indicate the similarity, as to the several types of a great race, of the populations cited above. In this respect, the analysis of the main indices, e.g. the distribution of the values of the cranial and the total and upper face indices, is most important. In the case of the male and female skulls from Zalavár, one of the significant distinguishing morphological character is mesocrany, as well as mesoprosopy, and the rate of similarity to the male and female skulls of the cemetery cited.

As a result of the comparative examinations it can be established that, similarly to the male skulls from Zalavár, the ratio of the mesocranial character is the greatest in also the male skulls from Kérpuszta (Zalavár: 49 per cent; Kérpuszta: 52 per cent). Analysing the total and upper face indices of the male skulls, it will be found that skulls with a medium wide total face and upper face (mesoprosopic-mesen) are the most frequent in both materials (Zalavár: 54 and 53 per cent; Kérpuszta: 39 and 49 per cent).

Concerning the cranial index of the female skulls, the ratio of meso-

crany is again the most significant in both series (Zalavár: 74 per cent; Kérpuszta: 40 per cent). With respect to the total and upper face indices, the proportions are again similar, both series being characterized by a medium wide total and upper face (mesoprosopic-mesen) (Zalavár: 52 and 52 per cent; Kérpuszta: 40 and 54 per cent).

As a result of the above investigations, it can be stated that the anthropological materials the two cemeteries are agreeing with respect to the value distribution of also the main indices.

According to the correlational assessment of the several morphological characters, the male findings of Zalavár-Kápolna (Figs.1-4) reflect a topographic nearness with mostly the Kérpuszta ones, whereas the female series (Figs.5-8) with those deriving from Sóstó, Csákberény and Kérpuszta.

For a further comparison of the material presented in the paper (Zalavár-Kápolna), a short survey should be made of the type-mosaic given by the several authors for the other published series deriving from the Balaton area.

The partial population of Jutas is regarded by L. BARTUCZ as a mixed Northern, Mediterranean, Eastern Baltic, Alpine material, while M. MALÁN observed Nordic-Protoeuropoide (Langobardian) elements in the Várpalota series. P. LIPTÁK distinguished in the Kérpuszta material Mediterranean, Cromagnoid-B, Cromagnoid-A, Dinaric, Alpine, Nordic - Atlanto - Mediterranean groups; NEMESKÉRI considers the partial population of Veszprém-Kálváriadomb comprising of Dinaric, Europo-brachycranial, Atlanto-Mediterranean, and Alpine groups; that of Székesfehérvár-Bikasziget consisting of Cromagnoid-B - Europo-brachycranial and Cromagnoid-B - Dinaric groups; that of Székesfehérvár-Sárkereszturi ut composed of Cromagnoid-B - Europoide-brachycranial (Pamirian)-Dinaric, Cromagnoid-B - Dinaric - Cromagnoid-A - Nordic - Alpine - Mediterranean groups; that of Székesfehérvár-Sóstó comprising Dinaric, Northern, Cromagnoid-A, Cromagnoid-B groups; that of Szárazrét consosting of Protoeuropoide, Nordic, Dinaric, Alpine, Eastern Baltic, Turanoid (Mongoloide), Mediterranean groups; that of Csákberény featuring Nordic-Protoeuropoid, Cromagnoid-B - Dinaric - Alpine groups; the Hungarian Conquerors as Turanoid, Europoide-brachycranial, Europosibirian, Mediterranean, Eastern Baltic components. T.TÓTH observed the preponderance of Protoeuropoide, Mediterranean, brachycranial Europoide elements in the Szebény findings; and Brachycranial Europoide, Protoeuropoide ones in Csákberény; Protoeuropoide, Mediterranean ones in Hegykő. According to my investigations, the Előszállás material displays features characteristic of Nordic-Mediterranean, Cromagnoid-A, brachycranial Europoide elements; while the series from Kékesd exhibit Cromagnoid-A - gracile Mediterranean - Nordic, and Cromagnoid-B elements.

By the occurrence of the several type elements and their separability into distinct subgroups in the anthropological materials originating from the cemeteries of the Balaton area, one can now establish that the partial population from Zalavár shows the greatest similarity with that of Kérpuszta.

Summary

1. The anthropological examination of the cemetery from the XI-XII centuries at Zalavár-Kápolna resulted in the separation of the following taxonomic subgroups:

   I. A Dolicho-Mesocranial-Lepto-Mesoprosopic group of a Small Medium Stature, exhibiting the preponderance of features characterizing mainly classic Mediterranean elements;

   II. A Mesocranial-Lepto-Mesoprosopic group of a Great Medium-High Stature, with features resembling Nordic or Atlanto-Mediterranoide types;

   III. A Dolicho-Mesocranial-Euryprosopic group of Medium - Great Medium Stature, with a character-complex resembling mainly Cromagnoid-A elements;

   IV. An Ultrabrachycranial-Euryprosopic character-complex with a Medium Stature occured in merely one case.
2. Concerning the total picture of the cemetery, Europoide characters predominate. No Mongoloide physiognomy could be observed.
3. The male series of Zalavár-Kápolna show, on the basis of comparison with the Europoide male series originating from the Balaton area, the greatest morphological agreement with the Kérpuszta and Sóstó materials, while the female ones also with those deriving from Kérpuszta, Sóstó and also from Csákberény.

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Table I.

Distribution of sexes and ages

Age	Item	%	Males	Females
Inf. II. (7-14 age)	12	10.5	-	-
Juvenis (15-22 age)	5	4.4	-	-
Adultus (23-39 age)	37	32.4	19	18
Maturus (40-59 age)	40	35.1	19	21
Senilis (60-x age)	6	5.3	2	4
Adultus-Senilis (30-60 age)	6	5.3	4	2
Maturus-Senilis (45-75 age)	6	5.3	4	2
Maturus-Senilis (50-80 age)	2	1.7	1	1
Item	114	100.0	49	48

Table II.

Measurements (Brain case: Males)

No of graves	Inv. num.	Age	1.	2.	3.	5.	7.	8.	9.	10.	11.	12.	13.
18	6830	23-40	183	180	179	-	34	147	-	-	131	115	102
21	6832	36-40	182	177	178	-	-	140	96	113	122	107	110
22	6833	72-76	178	178	172	97	44	137	93	116	123	106	101
25	6836	46-50	190	190	182	110	39	138	102	117	126	107	113
30	6840	30-34	192	186	188	101	-	142	104	126	122	106	100
42	6851	56-60	184	178	180	103	30	138	98	113	111	101	105
45	6854	58-62	183	174	176	101	37	135	97	117	120	102	103
49	6857	56-60	-	-	-	-	-	-	-	-	-	-	-
52	6860	52-56	181	175	174	100	38	137	95	-	120	101	104
54	6862	35-39	180	174	174	91	41	135	90	112	121	107	100
55	6863	33-37	187	179	180	107	40	145	103	123	137	115	110
63	6870	49-53	187	186	181	111	44	133	96	112	122	107	108
66	6873	45-75	184	179	175	101	35	137	93	109	125	107	106
68	6875	28-32	184	183	178	103	35	140	98	121	124	111	102
69	6876	31-35	189	177	183	-	36	143	95	115	123	113	104
70	6877	45-75	187	182	184	104	38	143	97	117	126	118	100
72	6879	33-37	198	187	190	108	41	145	100	117	130	110	109
75	6882	67-71	188	180	181	97	38	149	95	120	135	118	115
76	6883	47-51	176	176	173	-	-	149	89	113	135	116	118
78/a	6885	42-46	186	183	179	100	37	141	97	123	125	110	104
83	6891	30-60	196	187	190	111	39	148	100	127	138	123	113
88	6897	51-55	191	185	182	101	43	144	91	110	117	110	1( )
89	6898	30-34	190	183	180	98	37	140	92	115	127	119	111
90	6899	30-60	178	173	172	-	37	140	92	110	131	113	110
94	6901	23-40	190	185	178	98	41	144	-	118	126	-	97
98	6905	52-56	189	187	185	98	39	140	93	117	126	113	104

17.	20.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32/1a	38.
128	112	-	310	-	-	121	113	-	110	93	-	-
-	117	515	300	-	-	126	115	-	114	96	-	-
133	115	505	300	357	125	122	110	112	113	95	51°	1320
140	117	525	303	370	130	130	110	114	115	90	44°	1400
137	115	542	313	358	130	138	90	113	125	76	48°	1420
137	118	513	302	379	130	122	127	117	114	103	50°	1330
137	115	510	303	362	125	124	113	112	114	96	-	1310
-	113	-	-	-	-	130	-	-	117	-	-	-
-	-	515	-	-	-	-	113	-	-	95	-	-
130	111	505	290	365	125	123	118	110	110	93	49°	1210
140	140	530	315	370	132	115	123	118	104	104	50°	1500
134	112	515	295	362	122	135	105	107	117	90	44°	1420
129	113	505	293	367	129	121	117	112	110	92	45°	1400
129	111	517	300	362	126	121	115	113	111	92	48°	1320
134	116	530	305	-	-	140	128	-	126	103	-	1500
133	116	-	315	373	136	127	110	121	114	91	-	-
140	120	547	310	397	140	125	132	119	118	108	48°	1620
140	120	537	315	392	130	138	124	115	123	96	52°	-
-	110	515	310	-	-	118	-	-	109	-	-	-
134	118	525	312	379	131	133	115	113	121	93	48°	1500
133	124	550	318	381	131	135	115	117	123	97	49°	1550
136	115	532	308	383	125	130	128	111	115	102	49°	1560
129	110	520	295	373	122	120	131	110	111	103	47°	1350
131	110	500	294	-	-	125	110	-	113	90	-	1270
130	115	-	310	375	125	130	120	112	119	91	-	-
130	118	525	310	363	141	122	120	120	109	95	47°	1500

Table II. (Continuation)

No of graves	Inv. num.	Age	1.	2.	3.	5.	7.	8.	9.	10.	11.	12.	13.
101	6907	44-48	169	169	159	103	34	153	99	115	133	105	110
102	6908	42-45	189	185	180	106	36	140	98	114	123	111	104
105	6910	23-40	194	186	185	105	39	149	100	117	127	114	112
108	6913	50-80	190	188	186	101	34	140	98	111	127	112	109
110	6915	45-75	182	178	176	101	36	145	100	120	-	-	-
113	6917	53-57	192	182	185	-	-	146	94	115	132	115	111
117	6921	46-50	192	190	188	106	41	135	100	118	122	111	105
119	6924	53-57	189	178	182	100	37	144	95	122	127	108	104
120	6925	30-34	190	184	182	101	36	140	100	125	115	117	99
123	6928	56-60	184	176	182	100	38	135	93	114	118	105	102
128	6932	41-45	190	177	180	-	-	-	95	113	-	-	-
130	6934	36-40	179	176	172	100	41	136	90	110	123	109	112
132	6938	38-42	188	180	172	110	39	135	96	111	121	111	110
133	6939	52-56	186	185	179	98	37	138	97	110	123	109	-
139	6944	38-42	180	174	171	97	34	136	86	108	116	110	107
142	6947	28-32	181	179	178	104	38	142	95	120	122	106	110
152	6952	30-60	189	180	181	-	-	137	97	116	118	110	105
153/a	6953	45-75	180	176	171	-	-	140	100	114	125	108	109
153/b	6954	23-40	172	170	167	91	38	140	98	116	121	110	102
155	6959	36-40	190	180	183	94	42	145	91	105	131	112	115
156	6960	30-60	190	176	184	99	35	139	95	115	118	118	111
157	6961	49-53	191	188	180	98	37	136	93	107	120	116	111
161	6965	55-59	192	188	184	102	32	137	94	112	126	112	110

17.	20.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32/1a	38.
135	122	510	323	340	125	115	100	112	102	85	52°	1360
140	118	525	308	373	125	124	124	109	112	101	47°	1560
145	128	542	325	397	140	133	124	120	120	103	50°	1680
141	122	523	317	402	127	150	125	112	128	103	49°	1600
134	118	520	-	370	128	124	118	111	111	95	53°	-
-	122	532	310	-	130	135	-	112	119	-	-	-
142	123	530	314	383	132	141	110	116	126	91	50°	1530
133	114	533	310	379	132	129	118	114	117	96	45°	1500
139	119	530	317	384	130	124	130	113	121	102	48°	1480
134	112	533	295	375	132	138	105	117	121	91	45°	1380
-	124	-	-	377	129	130	118	114	115	96	-	-
135	118	507	302	360	125	125	110	109	113	92	50°	1310
141	122	510	302	365	125	125	115	114	114	97	46°	1320
140	120	515	305	371	130	125	116	114	113	96	44°	1420
126	114	505	293	358	115	120	123	105	111	98	53°	1280
132	121	516	310	390	125	149	116	109	122	96	51°	1430
-	124	522	308	378	133	115	130	120	107	104	-	-
-	117	515	305	-	122	125	-	107	113	-	-	-
133	117	495	305	349	123	125	105	110	110	89	45°	1260
135	120	530	346	386	134	130	122	120	120	100	42°	1580
135	120	525	310	385	134	119	132	119	108	107	46°	-
137	122	517	305	382	135	112	135	117	104	107	47°	1400
140	118	528	305	389	132	130	127	116	117	67	46°	1430

Table III.

Measurements (Facial skeleton: Males)

No of graves	Inv. num.	40.	42.	43.	44.	45.	46.	47.	48.	51.	52.
18	6830	-	-	-	-	-	-	-	-	-	-
21	6832	-	-	109	-	-	-	-	-	-	-
22	6833	93	-	104	97	129	94	-	68	43	33
25	6836	103	107	110	102	137	94	123	77	43	38
30	6840	102	110	108	-	-	-	112	70	38	37
42	6851	96	108	108	103	129	94	109	64	42	33
45	6854	100	108	109	99	129	99	101	62	39	32
49	6857	-	-	-	-	-	-	-	-	-	-
52	6860	103	--	104	94	135	96	-	65	39	31
54	6862	87	98	107	99	128	96	115	68	38	31
55	6863	105	-	115	102	142	104	-	68	40	34
63	6870	100	-	107	99	130	96	-	72	42	34
66	6873	93	-	103	95	134	87	-	65	42	34
68	6875	95	-	107	98	125	90	-	66	42	34
69	6876	-	-	-	-	-	-	-	-	-	-
70	6877	-	-	108	-	-	-	-	-	-	-
72	6879	107	115	111	105	136	101	114	71	43	34
75	6882	90	108	108	97	136	103	116	72	41	39
76	6883	-	-	-	-	-	-	-	-	-	-
78/a	6885	96	109	108	98	135	92	121	72	40	36
83	6891	106	122	104	98	136	100	117	69	40	34
88	6897	103	115	101	96	129	99	119	73	39	34
89	6898	100	114	107	96	130	99	114	70	37	31
90	6899	-	-	-	-	135	-	-	-	-	-
94	6901	-	-	-	-	-	-	-	-	-	-
98	6905	95	115	105	100	136	100	115	69	41	32

54.	55.	62.	63.	65.	66.	69.	70.	71/a	72.	73.
–	–	–	–	122	94	30	63	30	–	–
–	–	–	–	–	–	–	–	–	–	–
–	49	42	36	116	107	–	62	30	88°	85°
26	54	44	42	120	103	35	62	35	85°	85°
26	51	40	42	120	99	32	67	36	83°	81°
24	50	42	40	121	94	32	60	33	85°	–
24	47	43	41	116	103	29	65	35	77°	–
–	–	–	–	–	–	35	62	35	–	–
26	52	42	39	–	–	–	–	–	–	–
22	48	40	43	–	–	31	64	26	85°	–
29	54	43	42	125	100	32	69	36	88°	–
26	55	46	43	119	99	38	67	33	86°	80°
23	50	38	44	–	–	–	–	–	85°	81°
26	50	42	42	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
27	54	44	44	125	98	32	70	34	80°	–
28	56	–	48	125	106	31	70	30	90°	–
–	–	–	–	–	104	34	70	21	–	–
23	53	40	42	119	96	34	72	30	84°	–
26	53	41	46	130	106	32	69	35	88°	79°
24	52	41	47	119	106	30	70	30	82°	–
25	51	43	44	107	100	35	68	33	78°	–
–	–	–	–	–	–	–	–	–	–	–
–	–	36	44	–	–	–	–	–	–	–
25	54	44	38	125	92	34	65	32	88°	–

Table III. (Continuation)

No of graves	Inv. num.	40.	42.	43.	44.	45.	46.	47.	48.	51.	52.
101	6907	101	115	108	98	140	104	115	68	36	33
102	6908	95	104	110	100	136	94	114	67	37	30
105	6910	102	115	108	99	134	92	116	72	39	34
108	6913	98	-	112	99	135	95	-	73	42	31
110	6915	97	-	103	-	-	-	-	64	39	32
113	6917	-	-	109	98	132	96	-	-	40	37
117	6921	103	114	105	96	133	97	126	72	40	32
119	6924	87	-	105	95	133	98	-	68	40	33
120	6925	102	108	108	99	123	97	114	69	38	32
123	6928	93	114	109	100	128	93	112	65	41	30
128	6932	-	-	104	-	-	-	119	70	42	34
130	6934	100	111	105	99	132	96	115	64	40	32
132	6938	103	116	109	100	133	94	119	70	40	34
133	6939	99	108	109	99	-	93	119	70	42	33
139	6944	101	-	101	96	125	89	-	-	37	27
142	6947	100	109	106	98	128	93	114	71	39	32
152	6952	-	-	103	-	-	-	-	-	-	-
153/a	6953	-	-	108	-	-	-	-	-	-	-
153/b	6954	90	-	105	98	127	96	-	64	40	32
155	6959	86	115	105	95	134	92	113	70	39	36
156	6960	94	-	103	94	127	90	-	62	38	32
157	6961	92	114	102	93	130	89	112	64	38	33
161	6965	98	115	108	102	-	95	108	63	41	32

54.	55.	62.	63.	65.	66.	69.	70.	71/a	72.	73.
26	52	41	43	127	104	31	66	34	85°	-
26	51	41	43	126	110	29	69	33	85°	-
23	51	43	39	-	95	34	59	35	84°	78°
24	49	38	42	-	108	40	72	33	82°	76°
24	49	40	37	-	-	-	-	-	84°	-
23	53	39	37	-	-	34	-	36	-	-
24	54	42	39	-	101	36	73	32	82°	80°
26	54	-	45	124	94	31	69	32	90°	86°
25	50	42	41	111	107	31	65	30	80°	-
25	50	39	42	114	100	31	62	29	84°	-
26	52	-	46	-	-	36	-	-	-	-
26	50	43	47	122	90	31	64	34	80°	78°
26	50	39	41	115	110	35	65	34	82°	80°
25	54	45	45	118	105	30	70	33	81°	80°
25	43	35	37	109	87	30	64	31	78°	-
24	48	41	42	112	94	34	65	30	78°	74°
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
26	48	39	41	-	-	-	-	-	83°	78°
24	54	-	-	127	109	26	71	32	81°	-
22	46	39	41	-	-	-	-	-	82°	77°
25	49	39	35	-	-	33	-	-	83°	79°
26	48	46	46	-	-	29	71	33	80°	78°

Table IV.
Indices (Males)

No of garves	Inv. num.	8:1	17:1	17:8	20:1	9:8	9:10	45:8	47:45	48:45	52:51	54:55	66:45
18	6830	80.3	69.9	87.0	61.2	-	-	-	-	-	-	-	-
21	6832	76.9	-	-	64.2	68.5	84.9	-	-	-	-	-	-
22	6833	76.9	74.4	97.0	64.6	67.8	80.1	94.1	-	52.7	76.7	-	82.9
25	6836	72.6	73.6	101.4	61.5	73.9	87.1	90.2	89.7	56.2	88.3	48.1	75.1
30	6840	73.9	71.3	96.4	59.9	73.2	82.5	-	-	-	97.3	50.9	-
42	6851	75.0	74.4	99.2	64.1	71.0	86.7	93.4	84.5	49.6	78.5	48.0	72.8
45	6854	73.7	74.8	101.4	62.8	71.8	82.9	95.5	78.2	48.0	82.0	51.0	79.8
49	6857	-	-	-	-	-	-	-	-	-	-	-	-
52	6860	75.6	-	-	-	69.3	-	98.5	-	48.1	79.4	50.0	-
54	6862	75.0	72.2	96.3	61.6	66.6	80.3	94.8	89.8	53.1	81.5	45.8	-
:	6863	77.5	74.8	96.5	64.1	71.0	83.7	97.9	-	47.8	85.0	53.7	70.4
6	6870	71.1	71.6	100.7	59.8	72.1	85.7	97.7	-	55.3	80.9	47.2	76.1
6	6873	74.4	70.1	94.1	61.4	67.8	85.3	97.8	-	48.5	80.9	46.0	-
6	6875	76.0	70.1	92.1	60.3	70.0	80.9	89.2	-	52.8	80.9	52.0	-
6	6876	75.6	70.9	93.7	61.3	66.4	82.6	-	-	-	-	-	-
70	6877	76.4	71.1	93.0	62.0	67.8	82.9	-	-	-	-	-	-
72	6879	73.2	70.7	96.5	61.6	68.9	85.4	93.7	83.8	52.2	79.0	50.0	72.0
75	6882	79.2	74.4	93.9	63.8	63.7	79.1	91.2	85.2	52.9	95.1	50.0	77.9
76	6883	84.6	-	-	62.5	59.7	78.7	-	-	-	-	-	-
78/a	6885	75.8	72.0	97.1	63.4	68.7	78.8	95.7	89.6	53.3	90.0	43.4	77.1
83	6891	71.9	67.8	89.8	63.2	67.5	78.7	91.8	86.0	50.7	85.0	49.0	77.9
88	6897	75.3	71.2	94.4	60.2	63.1	82.7	89.5	92.2	56.5	87.1	46.1	82.1
89	6898	73.6	67.8	92.1	57.8	65.7	80.0	92.8	87.6	53.8	83.7	49.0	76.9
90	6899	78.6	73.6	93.5	61.8	65.7	83.6	96.4	-	-	-	-	-

Table IV. (Continuation)

No of graves	Inv. num.	8:1	17:1	17:8	20:1	9:8	9:10	45:8	17:45	48:45	52:51	54:55	66:45
94	6901	75.7	68.4	90.2	60.5	-	-	-	-	-	-		-
98	6905	74.0	68.7	92.8	62.4	66.4	79.4	97.1	84.5	50.7	78.0	46..	67.6
101	6907	90.5	79.8	88.2	72.1	64.7	79.2	91.5	82.1	48.5	91.6	50.0	74.2
102	6908	74.0	74.0	100.0	62.4	70.0	85.9	97.1	83.8	49.2	81.0	50.9	80.8
105	6910	76.8	74.7	97.3	65.9	67.1	85.4	89.9	86.5	53.7	87.1	45.1	70.9
108	6913	73.6	74.2	100.7	64.2	70.0	88.2	96.4	-	54.0	73.8	48.9	80.0
110	6915	79.6	73.6	92.4	64.8	68.9	83.3	-	-	-	82.0	.3.9	-
113	6917	76.0	-	-	63.5	64.3	81.7	90.4	-	-	92.5	45.4	-
117	6921	70.3	73.9	105.1	64.0	74.0	84.7	98.5	94.7	54.1	80.0	44.4	75.9
119	6924	76.1	70.3	92.3	60.3	65.9	77.8	92.3	-	51.1	82.5	48.1	70.6
120	6925	73.6	73.1	99.2	62.6	71.4	80.0	87.8	92.6	56.1	84.2	50.0	86.9
123	6928	73.3	72.8	99.2	60.8	68.8	81.5	94.8	87.5	50.7	73.1	50.0	78.1
128	6932	-	-	-	65.2	-	84.0	-	-	-	80.8	50.0	-
130	6934	75.9	75.4	99.2	65.9	-	81.8	97.0	87.1	48.4	80.0	52.0	68.1
132	6938	71.8	75.0	104.4	64.8	71.1	86.4	98.5	89.4	52.6	85.0	50.0	82.7
133	6939	74.1	75.2	101.4	64.5	70.2	88.1	-	-	-	78.5	46.3	-
139	6944	75.5	70.0	92.6	63.3	63.2	79.6	91.6	-	-	72.9	58.1	69.6
142	6947	78.4	72.9	92.9	66.8	66.9	79.1	90.1	89.0	55.4	82.0	50.0	73.4
152	6952	72.4	-	-	65.6	70.8	83.6	-	-	-	-	-	-
153/a	6953	77.7	-	-	65.0	71.0	87.7	-	-	-	-	-	-
153/b	6954	81.4	77.3	95.0	68.0	70.0	84.4	90.7	-	50.3	80.0	54.1	-
155	6959	76.3	71.0	93.1	63.1	62.7	86.6	92.4	84.3	52.2	92.3	44.4	81.3
156	6960	73.1	71.0	97.1	63.1	68.3	82.6	91.3	-	48.8	84.2	47.8	-
157	6961	71.2	71.7	100.7	63.8	68.3	86.9	95.5	86.1	49.2	86.6	51.0	-
161	6965	71.3	72.9	102.1	61.4	68.6	83.9	-	-	-	78.0	54.1	-

Table V.

Measurements (Brain case: Females)

No of graves	Inv. num.	Age	1.	2.	3.	5.	7.	8.	9.	10.	11.	12.	13.
23	6834	55-59	175	171	172	96	31	142	94	119	122	102	98
24	6835	44-48	179	176	170	97	39	144	97	-	123	109	104
26	6837	23-40	176	172	169	92	34	135	96	112	120	104	104
32	6842	67-71	174	166	164	93	34	136	89	110	119	101	103
34	6844	59-63	187	182	184	96	40	142	93	124	123	114	106
35	6845	45-49	178	172	172	97	36	130	92	109	114	101	102
36	6846	55-59	180	175	172	95	39	140	102	127	116	108	92
38	6847	23-40	181	175	173	97	39	136	93	116	119	115	102
41	6850	50-54	178	177	170	96	36	140	89	110	126	115	108
44	6853	44-48	177	172	166	96	34	135	93	110	119	107	102
46/a	6855	27-31	173	170	165	92	41	135	89	110	118	108	100
46/b	6856	23-40	179	173	172	103	34	138	93	115	120	106	106
51	6859	40-44	175	171	171	97	36	137	90	120	110	103	97
56	6864	30-60	-	-	-	-	39	148	97	-	126	-	111
57	6865	38-42	174	160	171	90	35	133	92	120	110	100	94
60	6867	24-28	174	170	170	94	34	134	93	112	112	101	89
61	6868	48-52	-	-	-	-	36	142	-	-	121	103	100
64	6871	44-48	176	170	172	92	34	139	92	118	118	104	103
65	6872	23-40	181	178	171	100	37	137	97	119	121	108	106
73	6880	37-41	175	168	167	94	34	141	93	118	124	111	102
84	6889	35-39	173	165	164	-	-	141	89	116	117	110	110
85	6893	49-53	168	163	162	84	38	128	84	105	121	109	105
86	6895	23-40	169	165	164	92	36	138	94	110	118	103	96
87	6896	46-50	171	173	166	92	38	147	95	121	120	102	101

17.	20	23.	24.	25.	26.	27.	28.	29.	30.	31.	32/1a	38.
124	111	504	300	367	126	120	110	112	107	90	47°	1300
130	116	-	-	360	123	119	124	108	103	103	45°	-
126	110	503	292	364	125	120	119	109	107	96	45°	1250
124	111	492	265	356	113	124	119	100	109	97	-	1130
135	119	530	317	388	135	140	113	118	124	92	48°	1500
128	114	495	295	380	117	123	120	102	112	99	49°	1200
138	120	520	315	377	130	125	122	109	116	100	55°	1500
137	120	506	297	363	123	130	114	107	120	92	51°	1320
122	110	510	288	347	115	117	115	105	105	94	45°	1300
123	108	497	288	348	116	107	125	104	97	101	44°	1200
125	110	490	290	348	121	119	108	108	110	87	50°	1200
141	115	507	306	369	125	130	114	109	113	100	54°	1410
135	113	503	300	360	120	120	120	108	110	98	55°	1350
-	-	-	-	-	-	-	120	-	-	98	-	-
128	113	500	297	367	132	125	110	113	116	94	47°	1400
126	109	495	290	358	128	120	110	109	107	92	44°	1250
127	110	-	310	-	-	132	113	-	115	92	-	-
126	111	503	298	360	129	122	119	111	111	96	45°	1260
135	118	513	310	374	133	123	118	114	111	97	47°	1420
133	120	500	302	360	125	125	110	109	110	91	47°	1350
-	109	495	300	360	125	120	115	109	109	92	50°	-
129	112	477	285	344	114	120	110	100	110	93	50°	1150
126	106	485	289	352	120	118	110	105	106	92	46°	1200
127	114	500	303	354	120	120	114	107	107	96	-	-

Table V. (Continuation)

No of graves	Inv. num.	Age	1.	2.	3.	5.	7.	8.	9.	10	11.	12.	13.
93	6900	69-73	178	172	169	102	40	134	96	114	115	108	103
95	6902	23-40	-	-	-	-	39	135	-	-	-	107	-
96	6903	44-48	179	173	177	97	38	142	98	118	125	112	101
97	6904	23-27	177	174	168	96	38	139	93	118	122	110	101
106	6911	29-33	184	181	174	108	37	144	99	124	121	112	106
107	6912	57-61	170	163	163	92	33	133	95	118	117	106	99
115	6918	42-46	168	162	164	93	37	133	92	117	117	104	105
121	6926	47-51	178	177	172	91	36	138	103	-	-	-	-
122	6927	54-58	180	179	172	98	35	138	90	115	120	114	104
124	6929	23-40	174	170	167	97	35	136	95	118	121	106	102
131	6936	45-75	-	-	-	-	-	132	-	-	-	-	-
134	6940	57-61	183	179	178	94	35	149	101	127	123	120	104
135	6941	66-70	185	182	178	-	-	143	94	120	123	110	96
136	6942	54-55	193	180	181	104	37	140	103	120	125	113	105
141	6946	23-40	178	174	170	96	38	137	94	114	120	113	108
144	6949	27-31	182	178	174	97	37	139	95	115	121	110	105
149	6951	50-80	174	170	173	95	34	-	99	-	122	110	102
153/c	6955	45-75	183	182	174	-	-	138	90	113	120	104	96
158	6962	30-60	-	-	-	-	-	-	-	-	-	-	-
159	6963	23-40	173	172	170	92	34	138	91	115	122	105	102
160	6964	23-40	177	165	170	95	38	137	94	115	122	113	104
162	6966	50-54	186	180	179	96	34	139	92	118	120	108	102
164	6968	49-53	178	173	171	104	39	142	99	123	128	120	107
165	8851	45-75	180	175	174	-	-	133	87	113	-	110	-

17.	20.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32/1a	38.
129	113	505	295	352	125	116	111	110	105	92	46°	1350
133	120	-	-	-	-	117	120	-	107	96	-	-
135	120	510	305	371	130	136	105	115	121	89	46°	1410
122	110	510	296	357	122	115	120	103	105	98	46°	1320
130	113	520	305	358	125	113	120	112	103	99	-	-
128	111	488	300	359	114	130	115	100	114	93	54°	1250
125	110	486	292	346	116	120	110	102	107	95	50°	1310
132	118	-	-	364	122	130	112	110	108	94	-	-
129	118	506	303	365	125	120	120	110	110	100	51°	1350
125	113	498	290	347	121	121	105	104	110	93	48°	1300
-	-	-	-	-	-	139	100	-	120	87	-	-
123	120	525	310	374	127	127	120	111	114	96	46°	1480
-	112	518	300	-	125	140	-	110	115	-	-	-
135	118	534	305	387	130	122	135	110	111	103	46°	1380
132	115	507	295	370	115	133	122	101	117	97	46°	1370
138	115	510	298	367	129	120	118	110	110	101	-	-
134	116	-	-	362	125	138	99	111	121	85	-	-
-	110	512	293	368	135	120	113	116	111	89	-	-
--	113	-	-	-	128	130	-	111	117	-	-	-
123	113	500	295	354	122	117	115	109	107	95	42°	-
130	115	507	300	365	128	128	109	110	116	90	-	-
129	117	520	302	379	135	134	110	117	121	90	46°	1350
133	115	515	-	356	124	120	112	109	109	95	-	-
-	112	500	-	360	129	116	115	112	105	95	47°	-

Table VI.

Measurements (Facial skeleton: Females)

No of graves	Inv. num.	40.	42.	43.	44.	45.	46.	47.		51.	52.
23	6834	93	-	102	96	128	96	-	64	40	33
24	6835	90	103	103	94	126	96	110	68	38	36
26	6837	95	107	96	96	126	89	110	69	40	35
32	6842	-	-	100	-	-	-	-	-	-	-
34	6844	94	107	101	97	131	93	120	73	40	36
35	6845	95	111	100	94	123	91	109	69	38	33
36	6846	88	-	108	96	-	101	-	62	38	31
38	6847	92	-	102	94	124	93	-	64	40	36
41	6850	98	107	101	100	127	94	109	64	44	34
44	6853	89	104	100	94	121	87	111	63	38	36
46/a	6855	90	106	97	92	125	96	103	63	37	33
46/b	6856	95	-	101	94	125	93	-	71	34	32
51	6859	98	102	102	95	120	93	109	64	40	33
56	6864	-	-	104	97	-	92	-	70	44	36
57	6865	85	-	95	89	114	83	-	67	35	37
60	6867	96	98	97	90	117	90	103	67	38	31
61	6868	-	-	-	-	-	-	-	-	-	-
64	6871	85	92	100	94	124	94	104	67	38	37
65	6872	104	114	103	98	125	95	120	73	42	36
73	6880	86	100	103	99	124	93	110	68	39	37
84	6889	-	-	94	88	-	91	112	67	36	34
85	6893	86	95	95	89	126	88	110	64	37	36
86	6895	90	102	101	95	122	91	99	60	39	32
87	6896	-	-	105	-	-	-	-	-	42	36

54.	55.	62.	63.	65.	66.	69.	70.	71/a	72.	73.
25	51	-	38	111	96	22	54	29	87°	-
24	50	41	37	117	87	-	62	32	85°	-
23	48	42	40	114	89	32	63	29	77°	-
-	-	-	-	-	-	-	60	25	-	-
26	50	44	41	-	92	36	66	29	83°	84°
25	48	45	43	113	86	28	60	30	80°	-
23	52	44	40	104	83	27	61	30	88°	-
26	50	42	41	-	87	26	-	-	83°	79°
25	51	49	45	111	90	32	62	31	78°	-
25	47	41	33	110	95	29	54	25	87°	83°
26	48	43	40	114	94	28	59	30	87°	84°
24	52	38	43	-	-	-	-	-	89°	87°
23	47	49	38	108	83	33	61	32	79°	-
23	51	46	36	124	91	24	59	28	-	-
23	53	42	39	105	90	-	55	23	86°	82°
23	49	48	38	108	93	29	61	29	78°	80°
-	-	-	-	-	-	-	-	-	-	-
26	48	39	38	114	82	29	52	30	88°	-
23	51	49	43	121	91	36	66	34	79°	86°
23	50	42	41	-	-	28	64	30	85°	-
23	50	43	41	105	83	30	64	27	86°	-
23	51	41	40	120	96	30	59	28	84°	-
25	47	42	40	119	86	23	61	29	80°	-
27	-	-	-	-	89	27	57	25	-	-

Table VI. (Continuation)

No of graves	Inv. num.	40.	42.	43.	44.	45.	46.	47.	48.	51.	52.
93	6900	86	99	105	97	122	92	110	70	41	38
95	6902	-	-	-	-	-	-	-	-	-	-
96	6903	91	102	102	92	128	95	112	71	42	37
97	6904	99	104	99	95	123	85	110	68	40	37
106	6911	94	111	109	100	125	93	116	71	42	37
107	6912	-	-	101	97	-	100	-	-	38	34
115	6918	89	-	99	95	121	89	-	62	39	33
121	6926	92	-	108	-	-	-	-	57	39	35
122	6927	-	-	98	-	121	-	-	-	38	33
124	6929	94	103	103	94	122	93	111	68	36	34
131	6936	-	-	-	-	-	-	-	-	-	-
134	6940	94	104	105	99	125	94	110	69	37	35
135	6941	-	-	102	-	-	-	-	-	-	-
136	6942	100	114	110	102	132	97	114	69	39	34
141	6946	87	99	102	98	127	92	108	65	39	34
144	6949	90	-	106	100	128	92	-	69	40	34
149	6951	-	-	106	-	-	-	-	-	-	-
153/c	6955	-	-	110	-	-	-	-	-	37	34
158	6962	-	-	-	-	-	-	-	-	-	-
159	6963	88	102	99	96	124	95	118	69	40	37
160	6964	-	-	100	-	-	-	-	-	-	-
162	6966	-	103	99	92	-	94	100	-	37	33
164	6968	-	-	106	-	-	-	-	-	40	35
165	8851	-	-	94	88	-	88	-	65	37	35

54.	55.	62.	63.	65.	66.	69.	70.	71/a	72.	73.
25	55	40	37	–	91	26	55	28	85°	–
–	–	–	–	104	85	28	50	26	–	–
23	51	43	40	120	110	30	56	32	84°	83°
23	51	45	41	117	91	28	60	30	80°	80°
22	52	–	38	114	86	29	63	29	–	–
26	46	38	40	–	–	–	56	26	86°	–
26	48	42	34	–	–	–	–	–	84°	–
–	42	–	–	116	98	28	61	29	–	–
–	–	–	–	105	82	30	62	24	–	–
26	50	45	39	–	84	30	54	29	84°	–
–	–	–	–	–	–	–	–	–	–	–
27	52	46	40	117	89	29	60	29	85°	80°
–	–	–	–	–	88	28	59	33	–	–
25	52	40	45	116	87	33	70	35	80°	–
25	47	43	42	–	–	26	54	30	82°	79°
27	50	42	43	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
26	52	–	42	110	88	31	58	29	83°	–
–	–	–	–	–	–	–	–	–	–	–
25	46	–	41	–	–	24	59	21	–	–
–	–	–	–	119	99	31	52	29	–	–
24	49	43	34	119	99	31	66	31	82°	78°

Table VII.
Indices (Females)

No of graves	Inv. num.	8:1	17:1	17:8	20:1	9:8	9:10	45:8	47:45	48:45	52:51	54:55	66:45
23	6834	81.4	70.8	87.3	63.4	66.2	78.9	90.1	-	50.0	82.5	49.0	75.0
24	6835	80.4	72.6	90.2	64.8	67.3	-	-	87.3	53.9	94.7	48.0	69.0
26	6837	76.7	71.5	93.3	62.5	71.1	85.7	93.3	87.3	54.7	87.5	47.0	70.6
32	6842	78.1	71.2	91.1	63.7	65.4	80.9	-	-	-	-	-	-
34	6844	75.9	72.1	95.0	63.6	65.4	75.0	95.7	91.6	55.7	90.0	52.0	70.2
35	6845	73.0	71.9	98.4	64.0	70.7	84.4	94.6	88.6	55.2	86.8	52.0	69.9
36	6846	77.7	76.6	98.5	66.6	72.8	80.3	-	-	-	81.5	44.2	-
38	6847	75.1	75.6	100.7	66.3	68.3	80.1	91.1	-	51.0	90.0	52.0	70.1
41	6850	78.6	68.5	87.1	61.8	63.5	80.9	90.7	85.8	50.3	77.2	49.0	70.8
44	6853	76.2	69.4	91.1	61.0	68.8	91.1	89.6	91.7	52.0	94.7	53.1	78.5
46/a	6855	78.0	72.2	92.5	63.5	65.9	80.9	92.5	82.4	50.4	89.1	54.1	75.2
46/b	6856	77.0	78.7	102.9	64.2	67.3	80.8	90.5	-	56.8	94.1	46.1	-
51	6859	78.2	77.1	98.5	64.5	71.5	81.6	87.5	90.8	53.3	82.5	48.9	69.1
56	6864	-	-	-	-	65.5	-	-	-	-	81.8	45.1	-
57	6865	76.4	73.5	96.2	64.9	69.1	76.6	85.7	-	58.7	105.7	43.4	78.9
60	6867	77.0	72.4	94.0	62.6	69.4	83.0	87.3	88.0	57.2	81.5	46.9	79.4
61	6868	-	-	89.4	-	-	-	-	-	-	-	-	-
64	6871	78.9	71.5	90.6	63.0	66.1	77.9	89.2	83.8	54.0	97.3	54.1	66.1
65	6872	75.6	74.5	98.5	65.1	70.8	81.5	91.2	96.0	58.4	85.7	45.1	72.8
73	6880	80.5	76.0	94.3	68.5	65.9	78.8	87.9	88.7	54.8	94.8	46.0	-
84	6889	81.5	-	-	63.0	63.1	76.7	-	-	-	94.4	46.0	-
85	6893	76.1	76.7	100.7	66.6	65.6	80.8	98.4	87.3	50.7	97.3	45.1	76.1
86	6895	81.6	74.5	91.3	62.7	68.1	85.4	88.4	81.1	49.1	82.0	53.1	70.4
87	6896	85.9	74.2	86.3	66.6	64.6	78.5	-	-	-	85.7	-	-

Table VII. (Continuation)

No of graves	Inv. num.	8:1	17:1	17:8	20:1	9:8	9:10	45:8	17:45	48:45	52:51	54:55	66:45
93	6900	75.2	72.4	96.2	63.4	71.6	84.2	91.0	90.1	57.3	92.6	45.4	74.5
95	6902	-	-	98.5	-	-	-	-	-	-	-	-	-
96	6903	79.3	75.4	95.0	67.0	69.0	83.0	90.1	87.5	55.4	88.1	45.1	85.9
97	6904	78.5	68.9	87.7	62.1	66.9	78.8	88.4	89.4	55.2	92.5	45.1	73.9
106	6911	78.2	70.6	90.2	61.4	68.7	79.8	86.8	92.8	56.8	88.1	42.3	68.8
107	6912	78.2	75.2	96.2	65.2	71.4	80.5	-	-	-	89.4	56.5	-
115	6918	79.1	74.4	93.9	65.4	79.1	78.6	90.9	-	51.2	84.6	54.1	-
121	6926	77.5	74.1	95.6	66.2	74.6	-	-	-	-	89.7	-	-
122	6927	76.6	71.1	92.7	65.5	65.2	78.2	-	-	-	86.8	-	67.7
124	6929	78.1	71.8	91.9	64.9	69.8	80.5	89.7	90.9	55.7	94.4	52.0	68.8
131	6936	-	-	-	-	-	-	-	-	-	-	-	-
134	6940	81.4	67.2	82.5	65.5	67.7	79.5	83.8	88.0	55.2	94.5	51.9	71.2
135	6941	77.3	-	-	60.5	65.7	78.3	-	-	-	-	-	-
136	6942	72.5	69.9	96.4	61.1	73.5	85.8	94.2	86.3	52.2	87.1	48.0	65.9
141	6946	76.9	74.1	96.3	64.6	68.6	82.4	92.7	85.0	51.1	87.1	53.1	-
144	6949	76.3	75.8	99.2	63.1	68.3	82.6	92.0	-	53.9	85.0	54.0	-
149	6951	-	77.0	-	66.6	-	-	-	-	-	-	-	-
153/c	6955	75.4	-	-	60.1	65.2	79.6	-	-	-	91.8	-	-
158	6962	-	-	-	-	-	-	-	-	-	-	-	-
159	6963	79.7	71.1	89.1	65.3	65.9	79.1	89.8	95.1	55.6	92.5	50.0	70.9
160	6964	77.4	73.4	94.8	64.9	68.6	81.7	-	-	-	-	-	-
162	6966	74.7	69.3	92.8	62.9	66.1	77.9	-	-	-	89.1	54.3	-
164	6968	79.7	74.7	93.6	64.6	69.7	80.4	-	-	-	87.5	-	-
165	8351	73.8	-	-	62.2	65.4	76.9	-	-	-	94.5	48.9	-

Table VIII.

Measurements (Brain case: Inf.II. and Juvenis)

No of graves	Inv. num.	Age	1.	2.	3.	5.	7.	8.	9.	10.	11.	12.	13.
20	6820	7-8	178	173	169	-	-	138	-	114	114	105	101
27	6838	12-13	167	162	162	87	40	127	88	107	107	99	92
33	6843	15-16	182	174	175	-	40	134	89	110	118	111	104
39	6848	9	173	162	169	90	40	136	88	113	111	105	102
40	6849	9	183	179	178	94	37	139	90	115	109	105	99
43	6852	9	166	155	157	87	33	135	87	105	111	101	94
59	6866	10	160	156	155	82	33	131	85	111	104	102	86
62	6869	19-20	-	-	-	-	-	148	-	-	-	-	-
67	6874	15-16	180	177	171	92	34	135	94	109	115	107	96
71	6878	12-13	181	175	176	87	39	134	94	108	107	98	97
74	6881	11	173	169	168	92	37	143	90	110	113	109	90
77/a	6884	19-20	160	152	159	83	34	135	94	122	106	100	88
112	6916	12-13	161	178	172	-	-	135	97	125	-	-	-
116	6919	10	172	163	168	-	-	133	-	-	96	103	79
118	6923	7	176	170	168	98	38	138	94	115	117	103	100
137	6943	19-20	170	164	165	90	33	132	85	104	116	105	91
163	6967	9-10	-	-	-	-	37	142	-	-	110	109	91

17.	20.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32/1a	38.
-	114	505	310	-	-	115	-	-	108	-	-	-
122	107	470	280	342	120	114	108	102	103	91	53°	1130
134	117	505	290	-	-	135	117	-	120	98	-	-
139	115	487	297	370	125	135	110	108	110	94	-	-
130	115	506	305	373	130	128	115	111	116	93	54°	1430
124	114	470	295	345	115	115	115	101	105	94	61°	1220
.123	112	460	290	344	120	120	104	100	108	85	55°	1220
-	120	-	-	-	-	135	110	-	122	92	-	-
123	111	500	285	361	122	114	125	106	106	99	-	-
127	112	500	300	387	128	138	121	110	125	100	-	-
126	107	500	293	350	125	115	110	107	105	93	-	-
123	120	485	312	357	130	137	90	109	113	81	56°	1200
-	127	-	-	373	123	130	120	105	121	100	53°	-
-	115	-	305	-	132	118	-	109	100	-	-	-
132	117	495	305	353	122	126	105	108	115	90	53°	1360
120	110	473	280	337	113	119	105	102	108	88	45°	1250
129	121	-	317	-	-	133	122	-	121	99	-	-

Table IX.

Measurements (Facial skeleton: Inf.II. and Juvenis)

No of graves	Inv. num.	40.	42.	43.	44.	45.	46.	47.	48.	51.	52.
20	6820	-	-	-	-	-	-	-	-	-	-
27	6838	84	87	90	84	113	79	93	54	34	30
33	6843	86	103	94	91	-	87	-	-	39	36
39	6848	85	91	91	-	-	-	84	48	35	30
40	6849	90	105	92	87	-	83	103	60	38	31
43	6852	91	96	89	85	110	84	94	56	34	31
59	6866	82	86	86	81	-	80	85	50	33	30
62	6869	-	-	-	-	-	-	-	-	-	-
67	6874	-	-	98	-	-	-	-	-	-	-
71	6878	-	-	95	-	-	-	-	-	-	-
74	6881	85	-	94	87	-	84	-	60	-	13
77/a	6884	83	100	94	88	114	84	94	56	34	32
112	6916	-	-	98	-	-	-	-	-	-	-
116	6919	-	-	-	-	-	-	-	-	-	-
118	6923	92	-	96	90	120	86	-	56	35	34
137	6943	83	90	97	91	121	92	101	61	39	32
163	6967	-	-	-	-	-	-	-	-	-	-

54.	55.	62.	63.	65.	66.	69.	70.	71/a	72.	73.
-	-	-	-	106	85	24	46	29	-	-
20	42	40	34	103	73	24	49	29	84^{o}	84^{o}
23	-	-	44	-	-	-	54	20	-	-
-	35	-	-	100	85	21	47	29	-	-
24	45	41	37	-	-	30	51	31	89^{o}	88^{o}
24	40	43	35	99	70	26	48	28	83^{o}	-
20	36	35	33	93	71	23	45	26	80^{o}	-
-	-	-	-	121	95	30	64	33	-	-
-	-	-	-	113	82	27	46	28	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	86	26	51	27	-	-
22	43	38	34	100	75	24	52	31	85^{o}	84^{o}
-	-	-	-	-	82	24	49	28	-	-
-	-	-	-	94	68	25	47	24	-	-
21	45	-	38	-	-	-	-	-	85^{o}	-
21	47	37	41	112	98	26	64	29	87^{o}	84^{o}
-	-	-	-	101	74	24	47	31	-	-

Table X.

Indices (Inf.II. and Juvenis)

No of graves	Inv. num.	8:1	17:1	17:8	20:1	9:8
20	6920	77.5	-	-	64.0	-
27	6838	76.0	73.0	96.0	64.0	69.2
33	6843	73.6	73.6	100.0	64.2	66.4
39	6848	78.6	80.3	102.2	66.4	64.7
40	6849	75.9	71.0	93.5	62.8	64.7
43	6852	81.3	74.7	91.8	68.6	64.4
59	6866	81.8	76.8	93.8	70.0	64.8
62	6869	-	-	-	-	-
67	6874	75.0	68.3	91.1	61.6	69.6
71	6878	74.0	70.1	94.7	61.8	70.1
74	6881	82.6	72.8	88.1	61.8	62.9
77/a	6884	84.3	76.8	89.5	75.0	69.6
112	6916	74.5	-	-	70.1	71.8
116	6919	77.3	-	-	66.8	-
118	6923	78.4	75.0	95.6	66.4	68.1
137	6943	77.6	70.5	90.9	64.7	64.3
163	6967	-	-	90.8	-	-

9:10	45:8	47:45	48:45	52:51	54:55	66:45
-	-	-	-	-	-	-
82.2	88.9	82.3	47.7	88.2	47.6	64.6
80.9	-	-	-	92.3	-	-
77.8	-	-	-	85.7	-	-
78.2	-	-	-	81.5	53.3	-
82.8	81.4	85.4	50.9	91.1	60.0	63.6
76.5	-	-	-	90.9	55.5	-
-	-	-	-	-	-	-
86.2	-	-	-	-	-	-
87.0	-	-	-	-	-	-
81.8	-	-	-	-	-	-
77.0	84.4	82.4	49.1	94.1	51.1	65.7
77.6	-	-	-	-	-	-
-	-	-	-	-	-	-
81.7	86.9	-	46.6	97.1	46.6	-
81.7	91.6	83.4	50.4	82.0	44.6	80.9
-	-	-	-	-	-	-

Table XI.

Precental distribution of decisive cranial measurements and indices
(Brain case)

Measurements and Characteristics		Males			Females		
		Min.-Max.	n	%	Min.-max.	n	%
1. Maximum cranial length	short	x-181	11	22.9	x-173	8	18.6
	medium long	182-189	20	41.7	174-181	27	62.8
	long	190-199	17	35.4	182-191	7	16.3
	very long	200-x	-	-	192-x	1	2.3
	Item		48	100.0		43	100.0
8. Maximum cranial breadth	very narrow	x-138	17	36.2	x-132	3	6.5
	narrow	139-149	29	61.7	133-143	38	82.6
	medium broad	150-158	1	2.1	144-152	5	10.9
	broad	159-x	-	-	153-x	-	-
	Item		47	100.0		46	100.0
17. Basion-bregma height	low	x-127	1	2.4	x-120	-	-
	medium high	128-138	28	68.3	121-131	26	63.4
	high	139-x	12	29.3	132-x	15	36.6
	Item		41	100.0		41	100.0
38. Cranial capacity	small	x-1300	4	11.4	x-1150	2	6.7
	medium	1301-1450	17	48.6	1151-1300	11	36.7
	large	1451-x	14	40.0	1301-x	17	56.6
	Item		35	100.0		30	100.0
8:1 Cranial index	Dolichocranial	x-74.9	20	42.6	x-74.9	4	9.5
	Mesocranial	75.0-79.9	23	48.9	75.0-79.9	31	73.8
	Brachycranial	80.0-x	4	8.5	80.0-x	7	16.7
	Item		47	100.0		42	100.0
17:1 Length-height index	Chamaecranial	x-69.9	5	12.2	x-69.9	6	15.4
	Orthocranial	70.0-74.9	31	75.6	70.0-74.9	23	59.0
	Hypsicranial	75.0-x	5	12.2	75.0-x	10	25.6
	Item		41	100.0		39	100.0
17:8 Breadth-height index	Tapeinocranial	x-91.9	4	9.8	x-91.9	14	35.0
	Metriocranial	92.0-97.9	23	56.1	92.9-97.9	17	42.5
	Acrocranial	98.0-x	14	34.1	98.0-x	9	22.5
	Item		41	100.0		40	100.0
9:8 Transv.fron-topar. index	Stenometopic	x-65.9	11	24.4	x-65.9	16	37.2
	Metriometopic	66.0-68.9	16	35.6	66.0-68.9	12	27.9
	Eurymetopic	69.0-x	18	40.0	69.0-x	15	34.9
	Item		45	100.0		43	100.0

Table XII.

Precental distribution of decisive cranial measurements and indices
(Facial skeleton)

Measurements and indices		Males			Females		
		Min.-Max.	n	%	Min.-max.	n	%
45.Maximum bizygomatic breadth	narrow	x-129	12	34.3	x-121	6	20.0
	medium broad	130-137	21	60.0	122-129	22	73.3
	broad	138-145	2	5.7	130-137	2	6.7
	very broad	146-x	-	-	138-x	-	-
	Item		35	100.0		30	100.0
47.Total cranial facial	low	x-113	7	26.9	x-105	5	20.0
	medium high	114-121	17	65.4	106-113	15	60.0
	high	122-129	2	7.7	114-121	5	20.0
	very high	130-x	-	-	122-x	-	-
	Item		26	100.0		25	100.0
48.Upper cranial facial	low	x-68	18	48.6	x-64	11	32.3
	medium high	69-73	18	48.6	65-69	16	47.1
	high	74-78	1	2.7	70-74	7	20.6
	very high	79-x	-	-	75-x	-	-
	Item		37	99.9		34	100.0
47:45 Total facial index	Hypereuryprosopic	x-79.9	1	4.6	x-79.9	-	-
	Euryprosopic	80.0-84.9	6	27.4	80.0-84.9	3	13.0
	Mesoprosopic	85.0-89.9	12	54.4	85.5-89.9	12	52.2
	Leptoprosopic	90.0-x	3	13.6	90.0-x	8	34.8
	Item		22	100.0		23	100.0
48:45 Upper facial index	Euryen	x-49.9	10	31.3	x-49.9	1	3.5
	Mesen	50.0-54.9	17	53.1	50.0-54.9	15	51.7
	Lepten	55.0-x	5	15.6	55.0-x	13	44.8
	Item		32	100.0		29	100.0
52:51 Orbital index	Chamaeconch	x-75.9	3	7.7	x-75.9	-	-
	Mesoconch	76.0-84.9	23	59.0	76.0-84.9	8	20.0
	Hypsiconch	85.0-x	13	33.3	85.0-x	32	80.0
	Item		39	100.0		40	100.0
54:55 Nasal index	Leptorrhinian	x-46.9	10	26.3	x-46.9	13	37.1
	Mesorrhinian	47.0-50.9	20	52.6	47.0-50.9	8	22.9
	Chamaerrhinian	51.0-x	8	21.1	51.0-x	14	40.0
	Item		38	100.0		35	100.0
Stature	Short	x-159	4	10.5	x-149	8	22.9
	Short average	160-162	6	15.8	150-152	6	17.1
	Average	163-164	7	18.4	153-154	3	8.6
	Tall average	165-169	19	50.0	155-159	12	34.3
	Tall	170-x	2	5.3	160-x	6	17.1
	Item		38	100.0		35	100.0

Table XIII.

Parameters of the male series measurements

Martin	Measurements	n	Vmin-max.	M ± m	σ	v
1	Maximum cranial length	48	169-198	186.09± 0.84	5.98	4.24
8	Maximum cranial breadth	47	133-153	140.80± 0.66	4.56	3.23
9	Min.frontal cranial breadth	46	86-104	95.86± 0.56	3.85	4.04
11	Bi-aulicular breadth	46	111-138	124.36± 0.95	6.03	4.84
17	Basion-bregma height	41	126-145	135.14± 0.70	4.54	3.25
23	Max.cranial circumference	44	495-550	521.20± 2.10	13.94	2.62
32/1a	Frontal angle	35	42-53	47.43± 0.45	2.72	5.75
38	Cranial capacity	35	1210-1680	1415.42±16.42	97.10	6.86
43	Upper facial breadth	43	101-115	106.70± 0.45	3.01	2.76
44	Bi-orbital breadth	36	93-105	98.23± 0.45	2.72	2.76
45	Bizygomatic breadth	35	123-142	132.02± 0.67	4.01	3.03
46	Maxillar-breadth	36	87-104	95.48± 0.68	4.13	4.44
47	Total facial height	26	101-126	115.03± 0.94	4.83	5.04
48	Upper facial height	37	62-77	68.30± 0.64	3.91	5.72
72	Total facial angle	35	77-90	83.32± 0.57	3.41	4.08
74	Nasalspine angle	18	74-86	79.78± 0.72	3.03	3.79

Table XIV.

Parameters of the female series measurements

Martin	Measurements	n	Vmin-max.	M ± m	σ	v
1	Maximum cranial length	43	168-193	177.52± 0.78	5.14	2.89
8	Maximum cranial breadth	46	128-149	138.19± 0.60	4.11	2.97
9	Min.frontal cranial breadth	44	84-103	94.90± 0.61	4.11	2.95
11	Bi-aulicular breadth	43	110-128	120.44± 0.59	3.87	3.21
17	Basion-bregma height	41	122-141	129.12± 0.79	5.06	3.91
23	Max.cranial circumference	40	477-531	504.90± 1.93	12.20	2.41
32/1a	Frontal angle	33	42-55	47.81± 0.58	3.33	6.96
38	Cranial capacity	30	1130-1500	1303.33±19.10	104.88	8.04
43	Upper facial breadth	44	94-110	101.73± 0.60	4.03	3.95
44	Bi-orbital breadth	35	88-102	95.03± 0.60	3.60	3.78
45	Bizygomatic breadth	30	114-132	124.20± 0.60	3.66	2.94
46	Maxillar breadth	35	83-101	92.80± 0.63	3.77	4.06
47	Total facial height	25	99-120	109.92± 1.04	5.24	4.76
48	Upper facial height	34	57-73	66.77± 0.62	3.63	5.43
72	Total facial angle	31	77-89	83.36± 0.57	3.18	3.81
74	Nasalspine angle	13	78-87	82.93± 0.81	2.92	3.52

Table XV.

Parameters of the male series indices

Martin	Indices	n	Vmin-max	M ± m	σ	v
8:1	Cranial index	47	70-91	75.03±0.53	3.68	4.74
17:1	Length-height index	41	68-80	72.52±0.39	2.54	3.50
17:8	Breadth-height index	41	87-105	95.10±0.68	4.36	4.53
9:8	Transverse frontopar. index	45	60-74	68.24±0.45	3.04	4.45
45:8	Cranio-facial index	35	88-99	94.11±0.55	3.27	3.45
47:45	Total facial index	22	78-95	86.87±0.82	3.87	4.45
48:45	Upper facial index	32	48-57	51.79±0.50	2.86	5.37
52:51	Orbital index	39	73-97	82.64+0.88	5.57	6.64
54:55	Nasal index	38	43-58	49.00±0.54	3.35	6.83
--	Stature	38	155-173	166.00±0.66	4.07	2.45

Table XVI.

Parameters of the female series indices

Martin	Indices	n	Vmin-max	M ± m	σ	v
8:1	Cranial index	42	73-86	77.77±0.38	2.51	3.22
17:1	Length-height index	39	67-79	73.07±0.46	2.93	4.00
17:8	Breadth-height index	40	83-103	93.77±0.71	4.50	4.79
9:8	Transverse frontopar. index	43	63-79	68.26±0.50	3.29	4.81
45:8	Cranio-facial index	28	84-98	90.54±0.60	3.19	3.52
47:45	Total facial index	23	81-96	88.49±0.77	3.71	4.44
48:45	Upper facial index	29	49-59	54.00±0.52	2.85	5.27
52:51	Orbital index	40	77-106	89.30±0.87	5.54	6.69
54:55	Nasal index	35	42-57	49.11±0.65	3.86	7.85
-	Stature	35	140-165	154.42±0.90	5.36	3.47

Table XVII.

Distribution of morphological characteristics according to age

Morphological characteristics	Males							Females						
	23-30	31-40	41-50	51-60	61-70	71-x	n	23-30	31-40	41-50	51-60	61-70	71-x	n
Norma verticalis:														
Ellipsoid	1	5	5	6	1	-	18	2	5	5	4	2	1	19
Dolicho-ellipsoid	-	3	1	3	-	-	7	-	-	-	-	-	-	-
Eury-ellipsoid	1	3	2	1	1	-	8	-	1	-	1	1	-	3
Spheno-ellipsoid	-	-	1	-	-	-	1	-	-	-	1	-	-	1
Meso-ellipsoid	-	-	-	1	-	-	1	-	-	1	-	-	-	1
Item	2	11	9	11	2	-	35	2	6	6	6	3	1	24
Pentagonoides	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Ovoides	-	1	-	1	-	1	3	1	1	2	3	1	-	8
Brachy-ovoid	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Dolicho-ovoid	-	-	-	1	-	-	1	-	-	-	1	-	-	1
Eury-ovoid	-	1	-	-	-	-	1	1	-	-	-	-	-	1
Spheno-ovoid	-	-	-	1	-	-	1	1	-	-	-	-	-	1
Item	-	2	-	3	-	1	6	2	2	2	4	1	-	11
Eury-sphenoides	-	1	-	-	-	-	1	-	-	-	-	-	-	-
Spheroid	-	1	2	1	-	-	4	-	2	2	2	-	-	6
Brisoid	-	1	-	-	-	-	1	-	2	-	-	-	-	2
Glabella:														
0	1	2	4	2	-	-	9	4	11	10	11	3	1	40
1	1	6	4	4	-	-	15	-	2	-	-	1	-	3
2	-	2	2	4	1	-	9	-	-	-	1	-	-	1
3	-	5	1	4	-	1	11	-	-	-	-	-	-	-
3-4	-	1	-	-	-	-	1	-	-	-	-	-	-	-
4	-	-	-	1	1	-	2	-	-	-	-	-	-	-
Item	2	16	11	15	2	1	47	4	13	10	12	4	1	44

Prot. occ. ext.:														
0	1	3	4	5	-	-	14	4	13	7	11	2	1	38
0-1	-	-	1	-	-	-	1	-	-	1	-	-	-	1
1	1	8	4	6	1	-	20	-	-	2	-	2	-	4
2	-	1	2	4	-	-	7	-	-	-	-	-	-	-
3	-	2	-	-	1	-	3	-	-	-	1	-	-	1
4	-	1	-	-	-	-	1	-	-	-	-	-	-	-
5	-	1	-	-	-	-	1	-	-	-	-	-	-	-
Item	2	16	11	15	2	1	47	4	13	10	12	4	1	44
Full	-	3	1	2	1	-	7	2	7	3	4	-	-	16
Shallow	1	1	2	2	1	-	7	-	3	2	1	-	-	6
Slightly deep	-	1	2	2	-	-	5	-	-	-	1	-	-	1
Medium deep	-	4	1	2	-	1	8	1	2	4	2	-	-	9
Very deep	1	4	3	6	-	-	14	1	-	-	1	1	1	4
Item	2	13	9	14	2	1	41	4	12	9	9	1	1	36
Spina nas. ant.:														
1	-	3	1	2	1	1	8	1	3	2	3	-	-	9
2	-	3	2	3	-	-	8	-	4	1	1	-	-	6
3	1	2	2	1	-	-	6	1	-	-	1	-	-	2
4	-	-	-	2	1	-	3	-	-	-	-	1	-	1
Item	1	8	5	8	2	1	25	2	7	3	5	1	-	18
Alv. prognathia:														
Moderately expressed	-	1	1	-	1	-	3	-	-	-	1	-	-	1
Medium expressed	-	1	2	6	-	-	9	2	4	2	-	-	-	8
Expressed	-	1	-	-	1	-	2	-	-	2	1	1	-	4
Item	-	3	3	6	2	-	14	2	4	4	2	1	-	13

Table XVIII.

Distribution of stature according to age and morphological groups

M a l e s

Stature groupe / Age groupe	Very short	Short	A v e r a g e			Tail	Very tail	n
	130.0-149.9	150.0-159.9	short 160.0-163.9	average 164.0-166.9	tail 167.0-169.9	170.0-179.9	180.0-199.9	
23-30	-	-	-	2	-	-	-	2
31-40	-	1	4	4	5	-	-	14
41-50	-	1	2	3	2	-	-	8
51-60	-	2	3	-	5	2	-	12
61-70	-	-	-	-	1	-	-	1
71-x	-	-	1	-	-	-	-	1
Item	-	4	10	9	13	2	-	38

Table XIX.

Distribution of stature according to age and morphological groups

F e m a l e s

Stature groupe / Age groupe	Very short	Short	A v e r a g e			Tail	Very tail	n
	121.0-139.9	140.0-148.9	short 149.0-152.9	average 153.0-155.9	tail 156.0-158.9	159.0-167.9	168.0-186.9	
23-30	-	-	1	1	1	-	-	3
31-40	-	1	2	1	2	2	-	8
41-50	-	1	5	2	1	1	-	10
51-60	1	1	1	1	4	2	-	10
61-70	-	-	1	1	-	1	-	3
71-x	-	-	-	-	-	1	-	1
Item	1	3	10	6	8	7	-	35

Table XX.

Numerical analysis of differences
(Cranial series: Males)

Locality	Jutas	Várpalota	Kérpuszta	Veszprém Kálvária-domb
Martin \ Date / Author / Year	Avar Bartucz-Malán 1931	Avar Malán 1952	Arpadian Lipták 1953	Arpadian Nemeskéri 1957
1.	188.7 (7)	182.8 (6)	183.4 (84)	171.0 (19)
8.	138.6 (7)	138.1 (6)	142.6 (84)	146.4 (19)
9.	95.8 (7)	97.7 (6)	99.0 (76)	97.9 (18)
17.	135.4 (5)	134.7 (6)	135.0 (74)	135.5 (18)
45.	129.5 (4)	126.0 (5)	133.7 (72)	134.8 (17)
47.	111.3 (3)	114.8 (6)	116.6 (69)	115.0 (16)
48.	65.3 (4)	67.5 (6)	69.2 (70)	69.1 (18)
8:1	73.6 (7)	75.4 (6)	77.9 (83)	82.9 (19)
17:1	72.0 (5)	74.1 (6)	74.4 (72)	76.2 (18)
17:8	97.4 (5)	98.0 (6)	95.6 (75)	92.9 (18)
9:8	69.6 (7)	71.0 (6)	69.7 (79)	66.5 (18)
47:45	86.0 (3)	91.3 (5)	87.7 (62)	85.7 (15)
48:4	50.7 (3)	53.5 (5)	52.3 (63)	52.6 (17)
52:51	79.4 (5)	83.0 (6)	83.2 (76)	78.2 (18)
54:55	50.7 (4)	45.4 (5)	49.9 (70)	47.0 (17)
Stature	162.2 (5)	-	164.8 (104)	-

Székesfehérvár				Zalavár-Kápolna
Bikasziget	Sárkeresztúri út	Sóstó	Szárazrét	
Arpadian Nemeskéri 1959				Arpadian Wenger 1968
179.1 (16)	182.0 (6)	176.4 (10)	185.0 (23)	186.1 (48)
144.4 (15)	143.1 (6)	141.9 (9)	145.6 (23)	140.8 (47)
95.7 (15)	96.1 (6)	95.9 (10)	98.9 (23)	95.9 (46)
134.7 (13)	132.8 (5)	131.6 (10)	137.0 (23)	135.1 (41)
128.1 (10)	132.0 (6)	132.0 (9)	134.8 (19)	132.0 (35)
120.6 (10)	121.0 (5)	114.5 (6)	117.1 (19)	115.0 (26)
71.8 (9)	69.7 (6)	68.1 (10)	67.7 (23)	68.3 (37)
81.2 (15)	79.5 (6)	80.2 (9)	78.8 (23)	75.0 (47)
75.7 (12)	71.8 (5)	72.6 (10)	73.9 (23))	72.5 (41)
94.7 (13)	93.5 (5)	93.6 (9)	93.5 (23)	95.1 (41)
67.0 (15)	67.1 (6)	67.6 (9)	68.8 (21)	68.2 (45)
93.6 (9)	91.7 (5)	88.7 (5)	86.9 (17)	86.9 (22)
56.0 (9)	52.5 (6)	51.1 (9)	52.6 (19)	51.8 (32)
80.9 (12)	80.4 (6)	94.3 (10)	79.7 (23)	82.6 (39)
50.4 (11)	50.0 (5)	47.9 (10)	51.1 (22)	49.0 (38)
162.9 (12)	-	-	167.8 (18)	166.0 (38)

Table XXI.

Numerical analysis of differences
(Cranial series: Males)

Locality	Csákberény	Szebény I.	Csákberény
Martin \ Date / Author / Year	Arpadian Nemeskéri 1958	Avar Tóth 1961	Avar Tóth 1962
1.	181.7 (8)	181.7 (25)	180.5 (14)
8.	137.8 (8)	141.1 (27)	140.1 (13)
9.	95.1 (8)	96.4 (29)	95.4 (14)
17.	134.3 (7)	131.7 (23)	130.7 (11)
45.	130.1 (7)	136.1 (8)	135.2 (10)
47.	138.1 (8)	130.0 (1)	116.4 (7)
48.	71.0 (8)	68.6 (17)	69.2 (14)
8:1	75.0 (8)	77.8 (25)	77.8 (13)
17:1	74.5 (7)	72.5 (12)	72.6 (11)
17:8	97.0 (7)	93.7 (13)	93.1 (10)
9:8	69.0 (8)	68.6 (27)	68.5 (13)
47:45	91.7 (7)	94.9 (1)	85.4 (5)
48:45	56.6 (7)	52.1 (8)	51.1 (10)
52:51	81.6 (8)	77.7 (21)	79.4 (12)
54:55	48.2 (8)	49.4 (18)	47.3 (13)
Stature	-	165.6 (22)	-

Hegykő	Előszállás	Kékesd	Zalavár-Kápolna
Avar Tóth 1964	Avar Wenger 1966	Avar Wenger 1967	Arpadian Wenger 1968
183.8 (10)	185.7 (25)	182.9 (20)	186.1 (48)
137.4 (10)	143.6 (28)	143.7 (20)	140.8 (47)
95.6 (10)	97.5 (34)	99.4 (20)	95.9 (46)
132.1 (10)	132.8 (11)	137.2 (16)	135.1 (41)
133.3 (8)	131.4 (10)	134.3 (14)	132.0 (35)
116.7 (8)	118.7 (11)	116.2 (16)	115.0 (26)
68.0 (9)	70.4 (17)	69.8 (18)	68.3 (37)
74.8 (10)	76.8 (24)	78.3 (20)	75.0 (47)
71.9 (10)	70.1 (10)	74.8 (16)	72.5 (41)
96.1 (10)	93.4 (10)	95.9 (16)	95.1 (41)
69.6 (10)	68.3 (28)	69.3 (20)	68.2 (45)
87.7 (6)	93.0 (7)	86.1 (13)	86.9 (22)
50.5 (7)	53.2 (10)	51.2 (14)	51.8 (32)
75.5 (10)	89.2 (21)	83.2 (18)	82.6 (39)
48.3 (9)	51.1 (18)	50.8 (17)	49.0 (38)
164.1 (9)	165.3 (16)	163.8 (10)	166.0 (38)

Table XXII.

Numerical analysis of differences
(Cranial series: Females)

Locality	Jutas	Várpalota	Kérpuszta	Veszprém Kálvária-domb
Date / Author / Year / Martin	Avar Bartucz-Malán 1931	Avar Malán 1952	Arpadian Lipták 1953	Arpadian Nemeskéri 1957
1.	178.1 (14)	175.3 (6)	175.5 (75)	173.7 (11)
8.	137.6 (14)	134.3 (6)	137.2 (75)	141.8 (11)
9.	97.3 (14)	92.7 (6)	94.5 (67)	93.7 (11)
17.	129.9 (13)	126.8 (6)	130.4 (61)	128.1 (9)
45.	121.8 (12)	123.8 (6)	125.0 (57)	126.3 (10)
47.	110.2 (12)	110.5 (6)	107.1 (59)	109.1 (11)
48.	65.9 (13)	64.8 (6)	64.0 (59)	65.3 (11)
8:1	78.9 (14)	76.7 (6)	78.3 (74)	82.3 (11)
17:1	75.4 (12)	72.4 (6)	74.3 (60)	74.4 (11)
17:8	96.7 (12)	94.4 (6)	95.7 (61)	90.7 (11)
9:8	69.6 (14)	69.3 (6)	69.2 (66)	66.3 (11)
47:45	91.0 (11)	89.5 (6)	86.1 (50)	87.4 (10)
48:45	53.7 (12)	52.4 (6)	51.9 (50)	51.8 (10)
52:51	79.7 (13)	85.7 (6)	84.6 (64)	78.4 (11)
54:55	49.8 (12)	43.8 (6)	52.5 (56)	49.8 (10)
Stature	150.6 (4)	-	153.5 (92)	-

Székesfehérvár				Zalavár-Kápolna
Bikasziget	Sárkeresztúri ut	Sóstó	Szárazrét	
Arpadian Nemeskéri 1959				Arpadian Wenger 1968
173.2 (26)	175.1 (9)	171.7 (4)	174.4 (13)	177.5 (43)
139.6 (26)	141.1 (9)	133.3 (4)	140.0 (13)	138.2 (46)
92.9 (26)	95.0 (9)	90.7 (4)	95.2 (15)	94.9 (44)
130.4 (23)	132.6 (8)	132.7 (3)	128.3 (13)	129.1 (41)
124.3 (21)	128.5 (6)	124.0 (2)	126.7 (11)	124.2 (30)
109.8 (19)	112.0 (7)	-	109.6 (9)	109.9 (25)
64.5 (22)	65.8 (7)	65.0 (2)	60.2 (14)	66.8 (34)
81.3 (26)	81.5 (9)	76.2 (4)	81.3 (13)	77.8 (42)
75.6 (23)	72.6 (8)	75.8 (3)	74.8 (13)	73.1 (39)
94.7 (23)	97.1 (8)	99.6 (3)	92.4 (12)	93.8 (40)
67.1 (26)	67.8 (9)	68.1 (4)	68.4 (13)	68.3 (43)
88.7 (29)	88.6 (6)	-	88.7 (6)	88.5 (23)
52.9 (21)	53.2 (6)	-	51.9 (11)	54.0 (29)
81.1 (24)	82.3 (7)	88.9 (3)	81.2 (14)	89.3 (40)
53.1 (24)	51.7 (7)	49.7 (2)	51.9 (13)	49.1 (35)
156.3 (27)	-	-	159.1 (9)	154.4 (35)

Table XXIII.

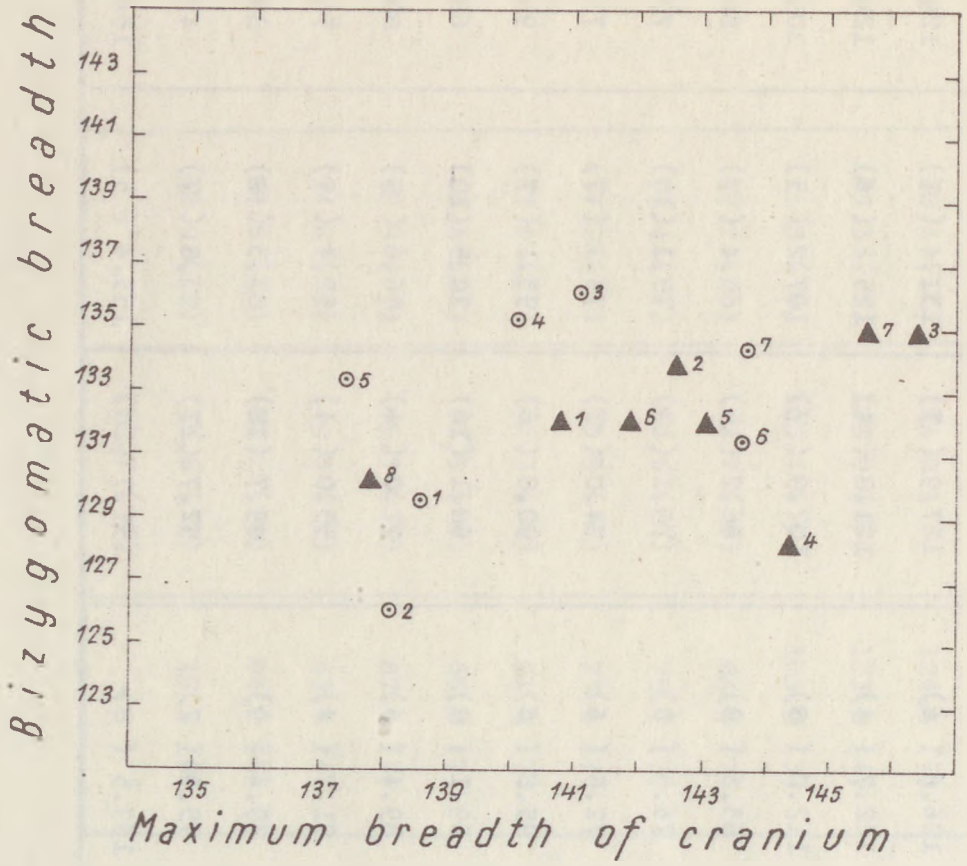
Numerical analysis of differences
(Cranial series: Females)

Locality	Csákberény	Szebény I.	Csákberény
Martin \ Date / Author / Year	Arpadian Nemeskéri 1958	Avar Tóth 1961	Avar Tóth 1962
1.	179.4 (11)	168.8 (8)	170.3 (7)
8.	138.0 (11)	136.2 (9)	135.7 (7)
9.	94.0 (11)	92.4 (10)	91.5 (7)
17.	128.4 (11)	124.0 (6)	124.5 (7)
45.	125.3 (9)	123.0 (5)	123.0 (4)
47.	111.3 (8)	103.4 (5)	105.0 (3)
48.	67.2 (10)	62.7 (8)	64.4 (7)
8:1	77.4 (11)	80.6 (8)	79.7 (7)
17:1	77.2 (11)	73.9 (6)	73.1 (7)
17:8	93.0 (11)	92.3 (6)	91.9 (7)
9:8	68.6 (11)	67.5 (8)	65.9 (7)
47:45	92.9 (7)	85.3 (3)	87.0 (3)
48:45	54.2 (9)	49.8 (5)	53.4 (4)
52:51	84.5 (10)	81.2 (8)	84.2 (6)
54:55	52.9 (10)	49.6 (7)	48.9 (6)
Stature	-	151.7 (9)	-

Hegykő	Előszállás	Kékesd	Zalavár-Kápolna
Avar Tóth 1964	Avar Wenger 1966	Avar Wenger 1967	Arpadian Wenger 1968
174.6 (9)	174.6 (14)	175.2 (10)	177.5 (43)
133.1 (8)	136.4 (17)	136.8 (10)	138.2 (46)
92.5 (10)	92.4 (30)	96.1 (10)	94.9 (44)
126.6 (6)	127.9 (7)	131.4 (7)	129.1 (41)
122.7 (4)	121.8 (4)	125.2 (6)	124.2 (30)
112.0 (8)	107.9 (7)	107.2 (5)	109.9 (25)
63.6 (8)	66.2 (15)	65.4 (7)	66.8 (34)
76.3 (8)	79.1 (13)	78.1 (10)	77.8 (42)
72.5 (6)	74.0 (7)	75.1 (7)	73.1 (39)
95.8 (6)	90.8 (6)	95.1 (7)	93.8 (40)
69.1 (8)	68.1 (16)	70.5 (10)	68.3 (43)
89.4 (4)	91.0 (4)	86.6 (5)	88.5 (23)
51.7 (4)	53.0 (4)	52.4 (5)	54.0 (29)
79.4 (9)	89.7 (18)	85.3 (8)	89.3 (40)
45.9 (7)	52.7 (17)	53.8 (7)	49.1 (35)
159.5 (8)	151.7 (20)	153.4 (5)	154.4 (35)

Fig. 1.

COMPARISON OF SOME MALE SERIES



▲ ÁRPÁDIAN EPOCH

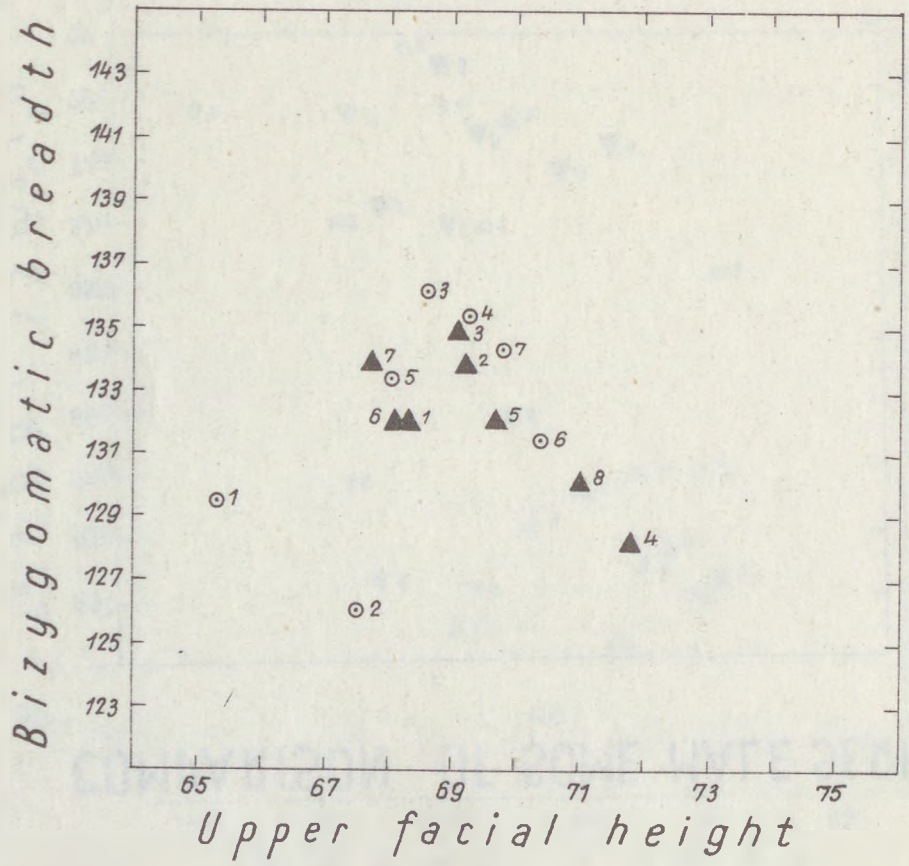
1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. —"— – Sárkeresztúri út
6. —"— – Sóstó
7. —"— – Szárazrét
8. —"— – Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. Hegykő
6. Előszállás
7. Kékesd

Fig. 2.

COMPARISON OF SOME MALE SERIES



▲ ÁRPÁDIAN EPOCH

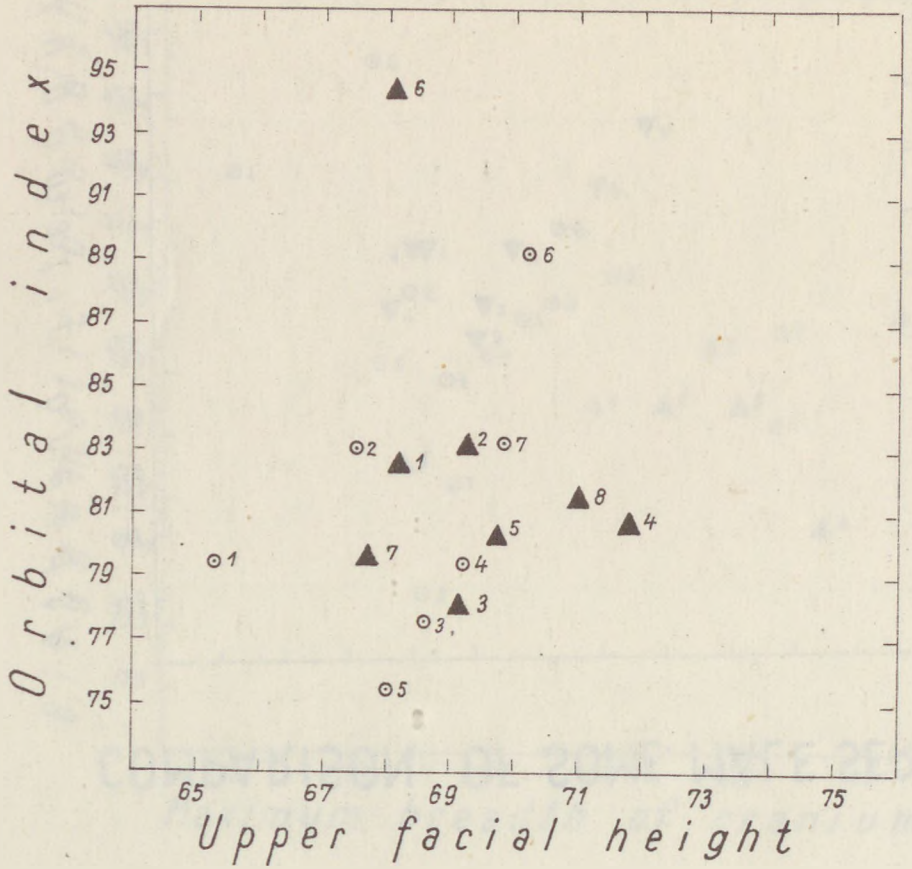
1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. —"— - Sárkeresztúri út
6. —"— - Sóstó
7. —"— - Szárazrét
8. —"— - Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. Hegykő
6. Előszállás
7. Kékesd

Fig. 3.

COMPARISON OF SOME MALE SERIES



▲ ÁRPÁDIAN EPOCH

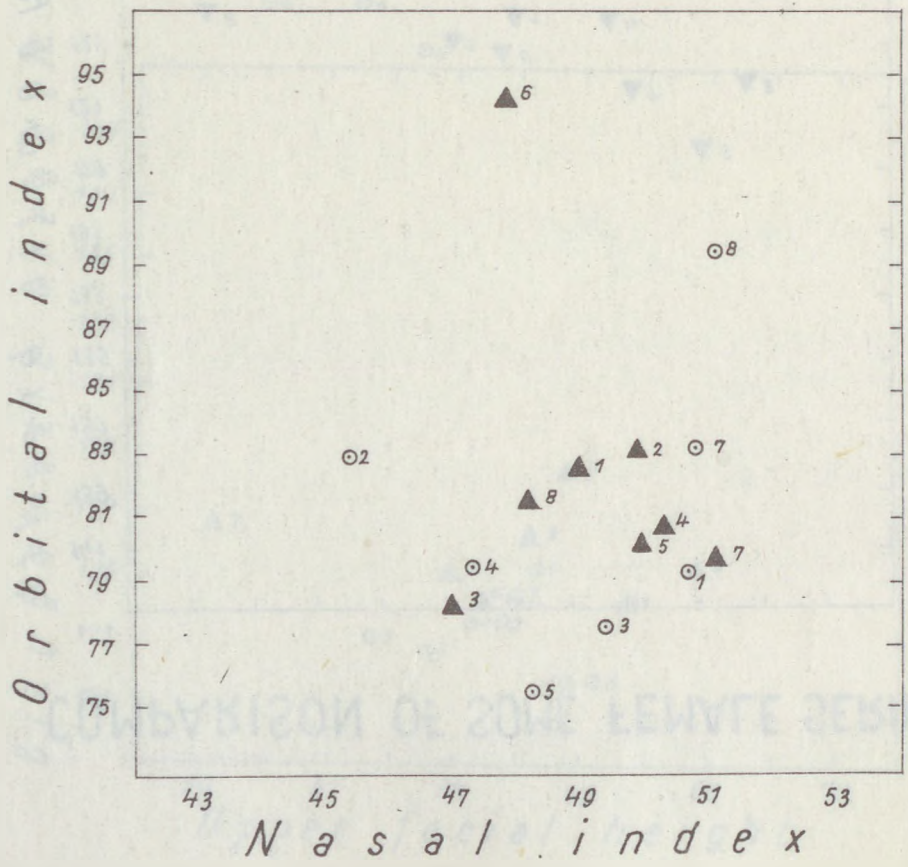
1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. -"- - Sárkeresztúri út
6. -"- - Sostó
7. -"- - Szárazrét
8. -"- - Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. Hegykő
6. Előszállás
7. Kékesd

Fig. 4.

COMPARISON OF SOME MALE SERIES



▲ ÁRPÁDIAN EPOCH

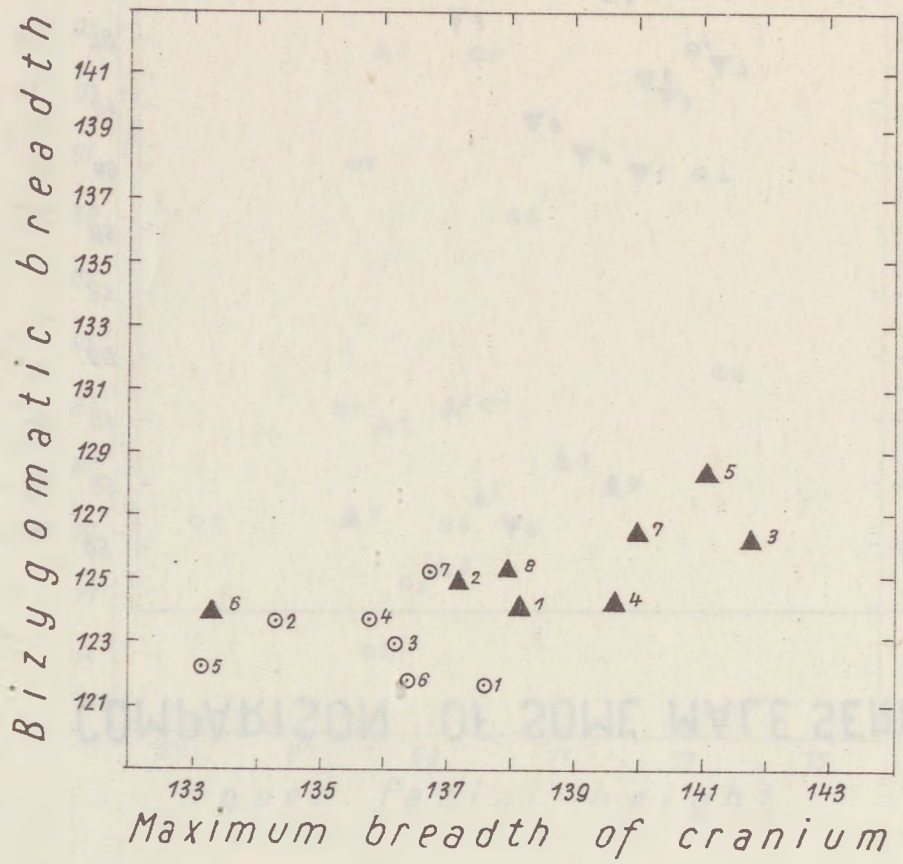
1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. –"– – Sárkeresztúri út
6. –"– – Sóstó
7. –"– – Szárazrét
8. –"– – Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. „Hegykő"
6. Előszállás
7. Kékesd

Fig. 5.

COMPARISON OF SOME FEMALE SERIES



▲ ÁRPÁDIAN EPOCH

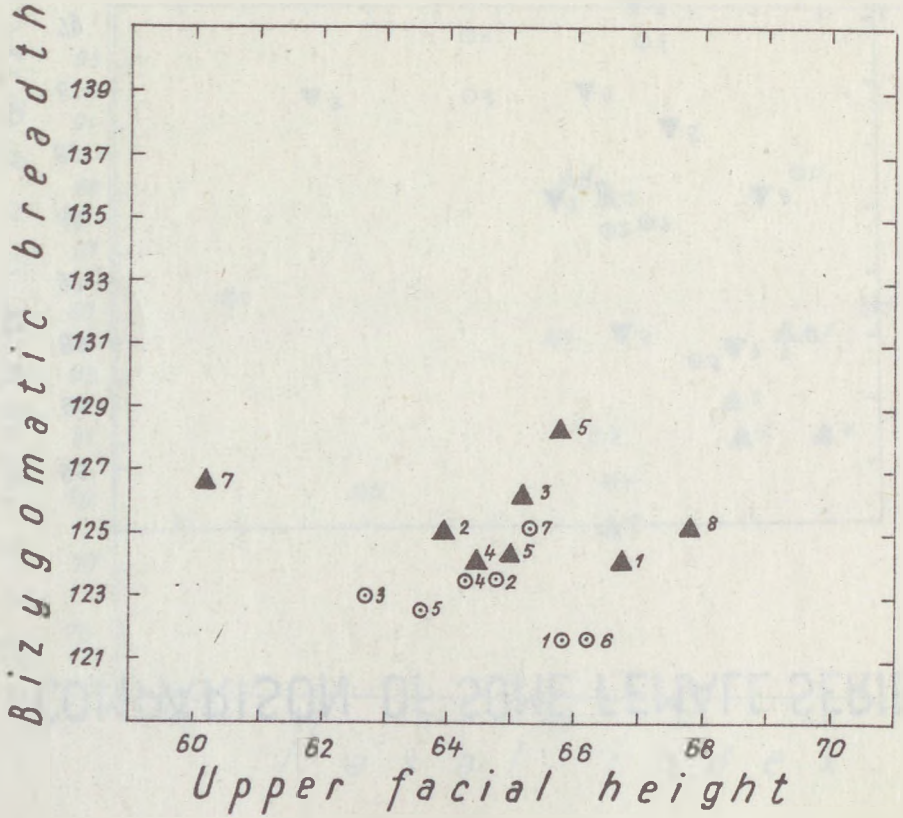
1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. –"– - Sárkeresztúri út
6. –"– - Sóstó
7. –"– - Szárazrét
8. –"– - Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. Hegykő
6. Előszállás
7. Kékesd

Fig. 6.

COMPARISON OF SOME FEMALE SERIES



▲ ÁRPÁDIAN EPOCH

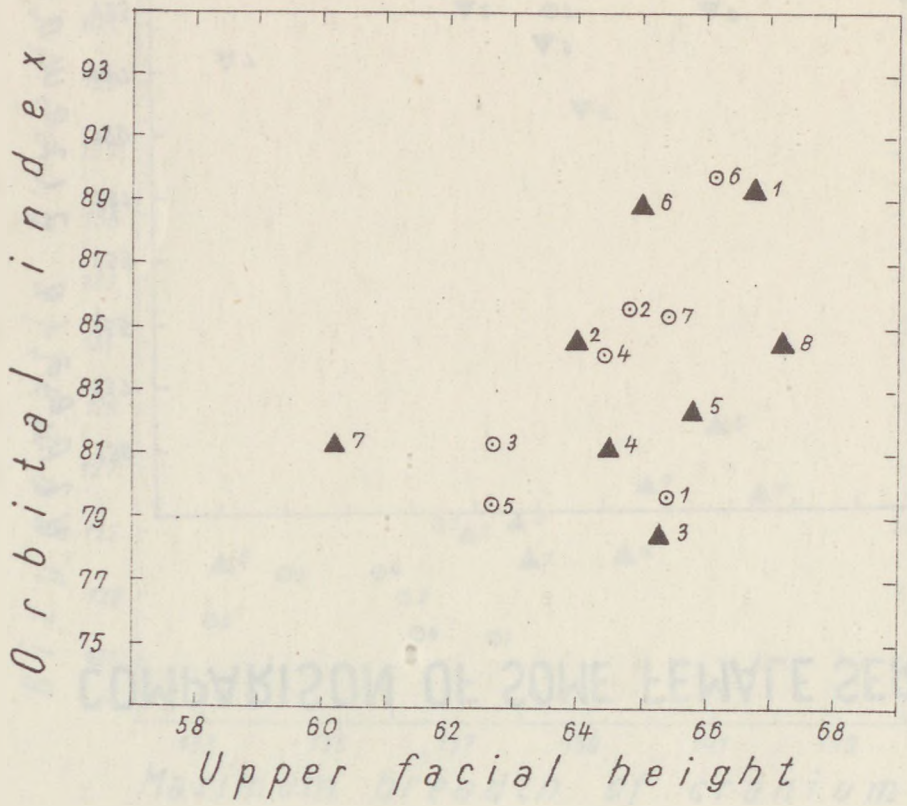
1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. —"— – Sárkeresztúri út
6. —"— – Sóstó
7. —"— – Szárazrét
8. —"— – Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. Hegykő
6. Előszállás
7. Kékesd

Fig. 7.

COMPARISON OF SOME FEMALE SERIES



▲ ÁRPÁDIAN EPOCH

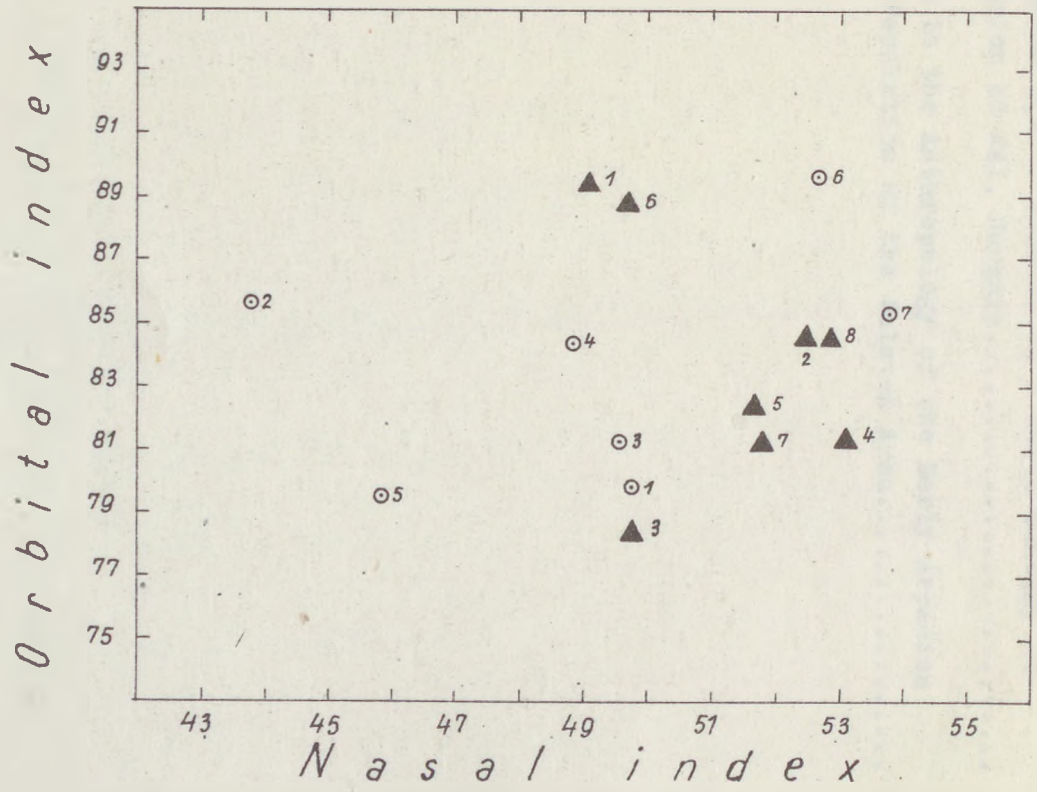
1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. —"— – Sárkeresztúri út
6. —"— – Sóstó
7. —"— – Szárazrét
8. —"— – Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. Hegykő
6. Előszállás
7. Kékesd

Fig. 8.

COMPARISON OF SOME FEMALE SERIES



▲ ÁRPÁDIAN EPOCH

1. Zalavár-Kápolna
2. Kérpuszta
3. Veszprém-Kálváriadomb
4. Székesfehérvár-Bikasziget
5. —"— – Sárkeresztúri út
6. —"— – Sóstó
7. —"— – Szárazrét
8. —"— – Csákberény

⊙ AVAR EPOCH

1. Jutas
2. Várpalota
3. Szebény
4. Csákberény
5. Hegykő
6. Előszállás
7. Kékesd

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