STUDY OF THE SKULLS FROM KARAHÖYÜK, EXCAVATED UNDER THE AUSPICES OF THE TURKISH HISTORICAL SOCIETY

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Introduction

Karahöyük, 10 kilometers north-west of Elbistan in the vilayet of Maraş, was excavated in the summer season of 1947 by a party composed of Dr. Tahsin Özgüç, Dr. Nimet Özgüç and Mr. Lemi Merey, architect. In this excavation, carried out under the auspices of the Turkish Historical Society, cultural strata belonging to Roman, Post-Hittite, and Hittite periods were unearthed and the excavation was terminated in the Hittite stratum. A brief preliminary report has already been published by Dr. Tahsin Özgüç, the director of the expedition [1].

In Karahöyük two skeletons were found, buried in the city and under the houses, and the cranial fragments belonging to these two skeletons were brought to me for study. Dr. Tahsin Özgüç informs me that the first of these two skeletons (No. 1) was found in the third building level [2] of the Post-Hittite cultural stratum, which consists of four architectural levels. Only a

[1] Özgüç, T.: *Elbistan ovasın'daki tetkik gezileri ve Karahöyük kazısı. Archâeological journeys in the plain of Elbistan and the excavation of Karahöyük.* Belleten, Vol. XII, No. 45, 1948.

The report of the excavator will be published in the near future.

[2] In this building level level together with the monochrome pottery is found the painted pottery in Phrygian style which, occurring in the higher building levels as well, presents an interesting problem. Regarding this painted pottery in Phrygian style, Dr. Tahsin Özgüç (Belleten, No. 45, 1948, p. 236) writes: «But as we know with certainty that Phrygians never lived in this very area, how shall we explain the occurrence of this type of ceramics in Karahöyük ?. This excavation has proved that it is dangerous to call this type of pottery «Phrygian», and that it would be preferable to use another name, such as Post-Hittite pottery».

bronze ring and an earring were found beside this skeleton encountered in a grave-pit, surrounded by sun-dried bricks and stones, under the house floor. The skeleton, lying on its left side with the face looking north, was buried in the hocker position. According to the pottery and iron implements found, the age of this building level is not earlier than the first half of the first millenium B. C.; that is, it corresponds to the time when the Phrygians were dominant in north-west and central Anatolia.

The second skeleton (No. 2), found in the lower building level (Post-Hittite period, building level IV), is naturally earlier than the first one. This skeleton lying on its back, was also buried in the hocker position. Only a bronze pin was found beside this skeleton. That skeleton No. 2 belongs to the first building level, established soon after the great Hittite period drew to an end, indicates that it dates back to a little later than 1200 B. C.

According to this information, supplied by Dr. Tahsin Özgüç, both of these skeletons were buried in the native Anatolian tradition and in a different manner from that of the Phrygians. As is known, the Phrygians either cremated their dead, or, when they did not do so, they buried them in a stretched position.

Study of the skulls

From the available cranial fragments the two calva shown in the plates were restored. Dr. Tahsin Özgüç informs me that he has left the post-cranial bones of these skeletons in the local school house. As Elbistan is a new and important region in the study of the Anatolian archaeology, it was considered worthwhile to publish these notes on the crania, though the post-cranial bones have not yet been brought. The post-cranial bones, if they are well preserved, will be published separately when they arrive.

Karahöyük No. 1 (Figures 1 and 2):

This individual is represented only by a broken calva. In this calva the frontal bone, the larger part of the left and a part of the right parietal bone, and the squama occipitalis portion of the occipital bone have been preserved. The temporal bones are lost and the base of the skull is missing.

On the calva, the sutures, at least a large part of them, are still open. Though the fact that the bones have been broken and

opened along the sutures makes a definite diagnosis difficult, the condition of the sutures indicates that this individual was between 20 and 40 years of age. The morphology of the calva suggests that it belongs to a female individual.

The measurements of this calva are shown in table 1. As the calva is distorted and as the bones are bent, the frontal and occipital bones could not be properly fitted to the parietal bones. Thus it is natural that a certain amount of error exists in the length measurement. This calva is long (190 mm.). As a large portion of the right parietal bone is broken, the maximum skull breadth could not be measured accurately. The maximum width obtained on the preserved parts of the parietal bones is 128 mm., but as a large part of the right parietal bone is missing, there is no doubt that it is less than the actual width. On the other hand, the breadth calculated from the left parietal bone, of which a great portion is preserved, is 140 mm. and this gives a dolichocephalic index. Any way, figure 1 clearly shows that this skull is dolichocephalic. The absolute minimum frontal diameter is small, but the fronto-parietal index, expressing the minimum frontal diameter as a percentage of the estimated skull width, is metriometop, that is, it is of medium value. This situation is not due to the width of the frontal bone, but to the fact that the estimated skull breadth is narrow. The mean thickness of the left parietal bone, one centimeter above the squamosal suture, is 4.3 mm.; that is medium.

In norma verticalis, this calva exhibits an ovoid form. The brow ridges are of submedium development. The glabella region is broken and missing. This broken part exposes the frontal sinuses, which are very large. The forehead, which is of submedium elevation, shows a submedium slope. The frontal eminences, the postorbital constriction and the temporal lines are of average development. The temporal fullness is submedium and the parietal eminence is of average development. In norma lateralis, the occiput, though exhibiting a slight degree of lambdoid flattening, is well curved. On the lambadoid suture, on the left side, there is a large wormian bone. On the right side also, on this suture, there is the impression of a corresponding wormian bone which has been lost.

Though large, this skull approaches the Mediterranean racial type.

Karahöyük No. 2 (Figures 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12):

This individual is represented by a calva and a mandible. In this calva are preserved the largest portion of the frontal bone, the whole of the right parietal bone, a large part of the left parietal bone and the squama occipitalis portion of the occipital bone. The left temporal bone is intact and the largest portion of the right temporal bone is present. The right occipital condyle and the posterior margin of the foramen magnum are retained, but the anterior and the left side margin of the foramen magnum and the base of the skull are missing. Since the fragments appertaining to this skull fitted into each other perfectly well, there is almost no error in the measurements taken on the restored calva.

The coronal, sagittal and the lambdoid sutures are completely closed on the endocranial face of the calva. On the ectocranial surface, however, though some parts of them have syostosed, these sutures are not yet completely obliterated. On the other hand, the squamosal, the parietomastoid and the occipitomastoid sutures are still open, on both the endocranial and ectocranial aspects of the calva. The condition of the sutures and certain features of this calva reveal that it belongs to a male individual, approximately in his fifties.

The measurements of this calva are listed in table 2. It is of medium length and, though in the middle group, is fairly wide. The cranial index is 82.96, that is, it is brachycephalic. The auricular height-length index is hypsicephalic and the auricular height-breadth index is tapeinocanic. The absolute minimum frontal diameter is medium, but the fronto-parietal index is stenometop, that is, the forehead is relatively narrow. The horizontal circumference of the skull is large. The mean thickness of the left parietal bone, one centimeter above the squamosal suture, is 6 mm., that is, it is relatively thick.

The bizygomatic breadth, measured on the preserved parts of the zygomatic processes (processus zygomaticus) of the two temporal bones, is very large. The zygo-frontal index, expressing the minimum frontal width as a percentage of the bizygomatic breadth, is small. This is not due to the narrowness of the forehead, but to the largeness of the bizygomatic diameter. Similarly, the cranio-facial index, representing the bizygomatic diameter as

a percentage of the skull width is, although not much, fairly high.

The large size of the bizygomatic diameter and the values of the zygo-frontal and the cranio-facial indices, recall a preculiarity of the Mongoloid racial type. But it will be useful to record that such a broad face is also met with as an individual variation among the Europeans. For instance, according to the figures quoted by Rudolph Martin[3] from Ranke, the bizygomatic diameter of the male Bavarians varies from 120 to 149 milimeters. That is, the bizygomatic diameter of the Karahöyük skull falls within the range of the Europeans.

The most pronounced cranial peculiarity of the Mongoloid type is the forward and the lateral flare of the zygomatic bone. In the Mongoloid skulls, when viewed from norma basilaris, the zygomatic bone presents a sharp lateral angle[4]. But as unfortuntely we do not possess the zygomatic bone of the individual under consideration, we can not determine whether this part of his face showed this peculiarity of the Mongoloids or not. But, as the other features of this calva are peculiar to the whites, rather than the mongoloids, it will be more correct to consider this large face as an individual variation. Also the fact that Elbistan is too far removed from the cradle of the Mongoloid race and the fact that the skulls from the preceding Hittite period belong to the Alpine and the Mediterranean races[5] are in support of this opinion.

We can now examine the morphological peculiarities of this calva. In norma verticalis the form of the skull is ovoid. The brow ridges are of submedium development. The broken glabella region exposes the frontal sinuses which are large, as in skull No. 1. The frontal sinuses, besides covering a large area over the roof (paries superior orbitae) of the orbits, extend, on the mid - line, to a little above the point metopion. The forehead is of medium height and exhibits a slope of medium degree. The

[3] Martin, R. : *Lehrbuch der Anthropologie*, Vol. 2, 1928, p. 896.

[4] Hooton, E. A : *Up from the ape*, 1946, p. 747.

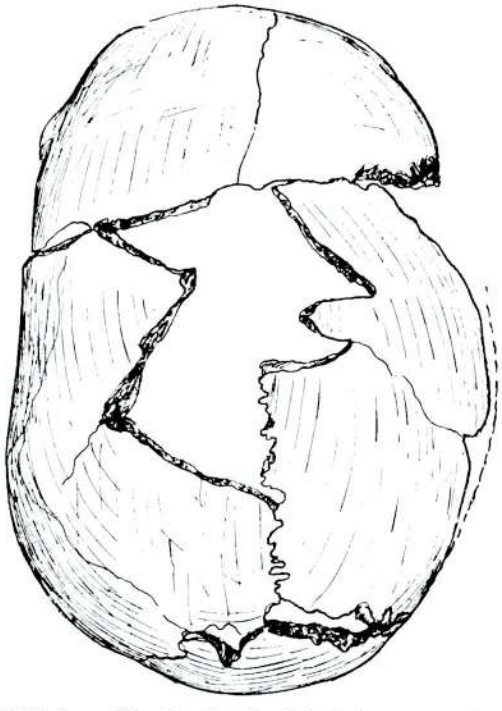
[5] Şenyürek, M. S.: *Anadolu Bakır çağı ve Eti sekenesinin kraniyolojik tetkiki. A craniological study of the Copper age and Hittite populations of Anatolia.* Belleten, Vol. V, No. 19, 1941.

frontal eminences and the postorbital constriction are of medium development. In the parietal region, we observe a sagittal elevation of medium degree. The parietal eminences and the temporal fullness are submedium. The temporal lines are strong and the supramastoid crest exhibits a medium development. The occiput, while exhibiting a submedium dagree of lambdoid flattening, is well curved. There is no plano - occipital flattening in this skull. There is a mound shaped occipital torus. There is no transverse suture on os occipitale and the external relief of this bone is rough. The mandibular fossa is very deep but the postglenoid process is of medium development. The tympanic plate is of medium thickness and the external auditory meatus is oval in shape. The mastoid process is of medium development and the processus zygomaticus temporalis is of submedium thickness.

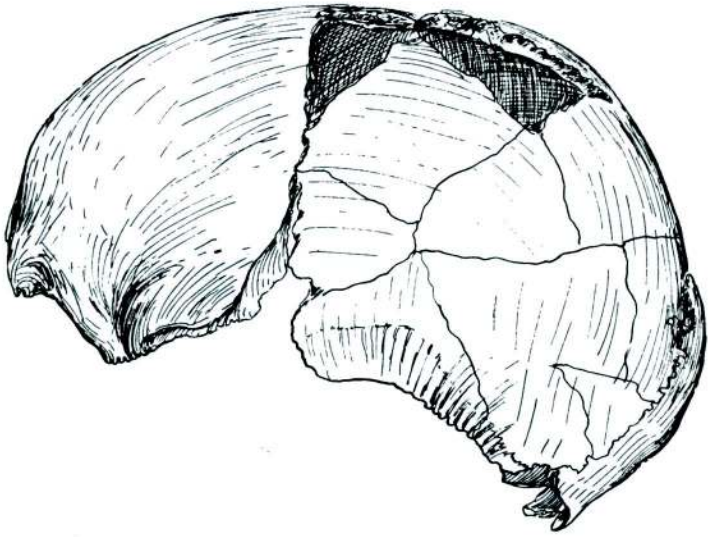
The measurements of the mandible are shown in table 3. This mandible is of medium length and of considerable breadth. The breadth index of the lower jaw, representing the bigonial width as a percentage of the bicondylar breadth, is comparatively small, that is the bigonial width is relatively narrow. The sigmoid notch is considerably wide, but not deep. The index of the ramus mandibulae is comparatively small, that is the ramus is relatively narrow. The mean angle of the mandible (128°) is large. The height of the corpus mandibulae, at the level of foramen mentale, is large, but its thickness is small. Thus the height - thickness index of the corpus is lower than all the figures given by R. martin[6].

As for the morphological peculiarities of the mandible, on the external surface of the ramus mandibulae the place of attachment of the masseter muscle shows a rough relief. On the internal surface of the ramus the area of attachment of the internal pterygoid muscle is also rough. The gonial angles are inverted. The mental foramen is single and large on both sides. The maximum diameter of the right mental foramen amonts to 4.3 mm. and that of the left to 5.7 mm. The mental spine is of medium development. The chin is positive and forms a prominent projection. Though the loss of the lower incisor teeth before death and the

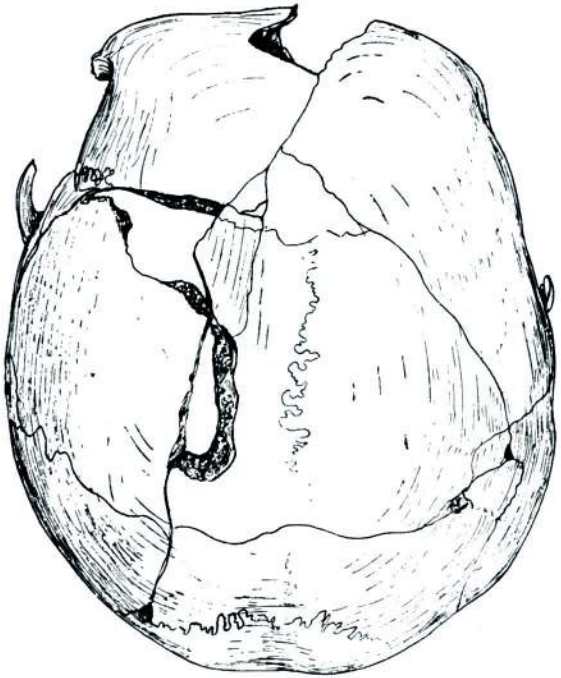
[6] Martin, R.: *Op. cit.*, p. 979.



Şekil 1 — Karahöyük No. 1 kafatasının yukarıdan görünüşü
Fig. 1 — The skull of Karahöyük No. 1 in norma verticalis.

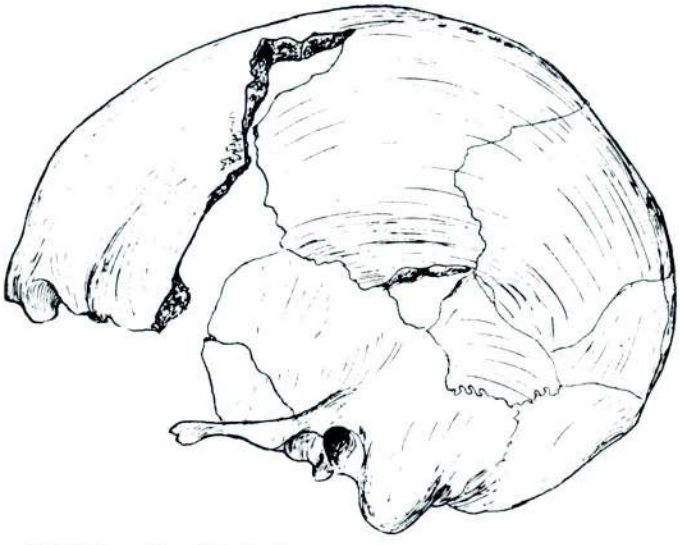


Şekil 2 — Karahöyük No. 1 kafatasının yandan görünüşü. Sol taraf.
Fig. 2 — The Skull of Karahöyük No. 1 in norma lateralis. Left side.

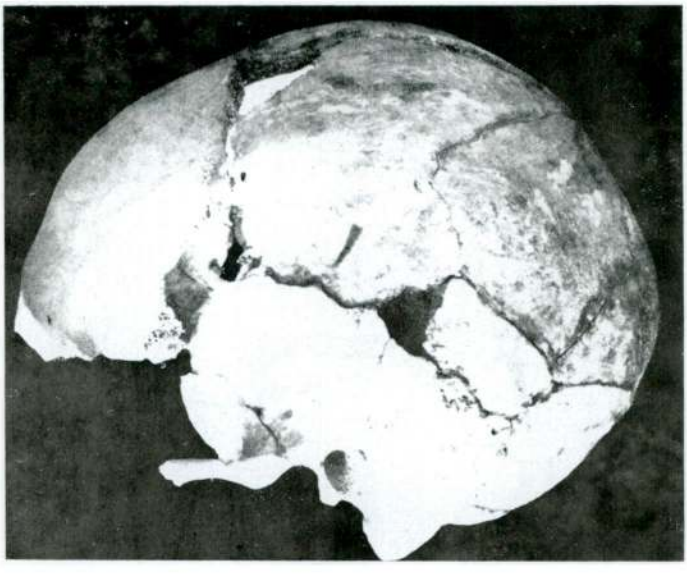


Şekil 3 — Karahöyük No. 2 kafatasının yukarıdan görünüşü
Fig. 3 — The skull of Karahöyük No. 2 in norma verticalis.

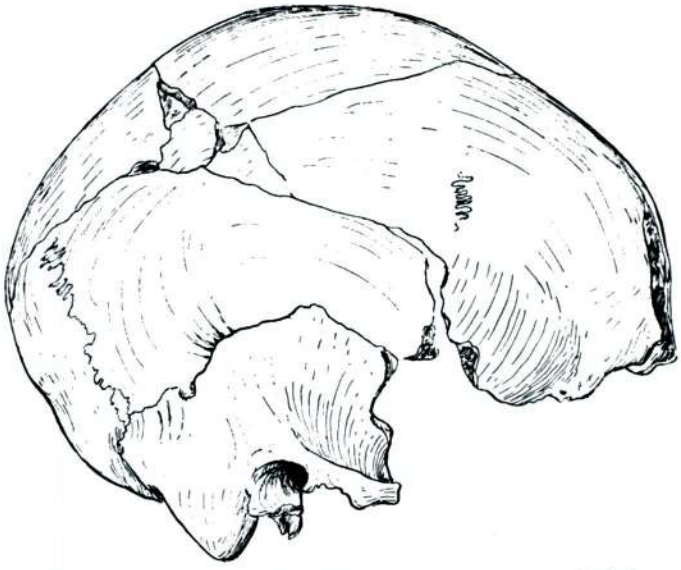
Şekil 4 — Karahöyük No. 2 kafatasının yukarıdan görünüşü
Fig. 4 — The skull of Karahöyük No. 2 in norma verticalis.



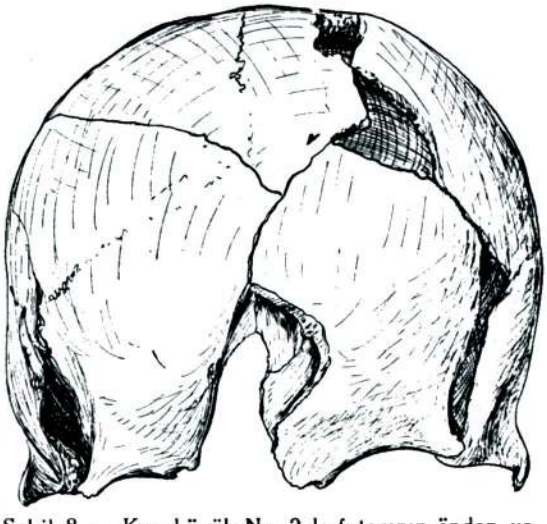
Şekil 5 — Karahöyük No. 2 kafatasının yandan görünüşü. Sol taraf
Fig. 5 — The skull of Karahöyük No. 2 in norma lateralis. Left side.



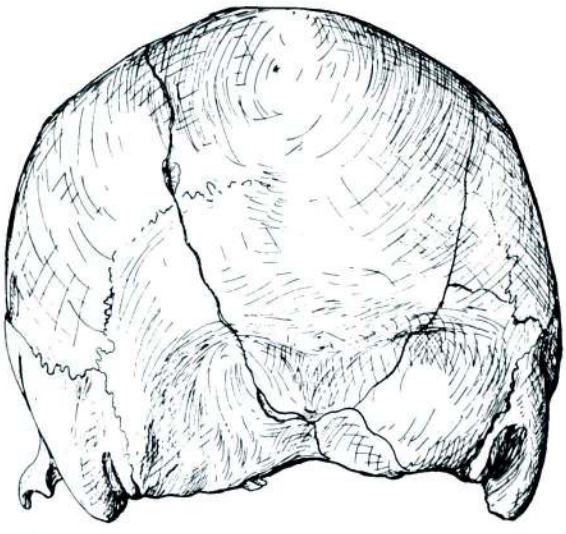
Şekil 6 — Karahöyük No. 2 kafatasının yandan görünüşü. Sol taraf
Fig. 6 — The skull of Karahöyük No. 2 in norma lateralis. Left side.



Şekil 7 — Karahöyük No. 2 kafatasının yandan görünüşü. Sağ taraf
Fig. 7 — The skull of Karahöyük No. 2 in norma lateralis Right side.

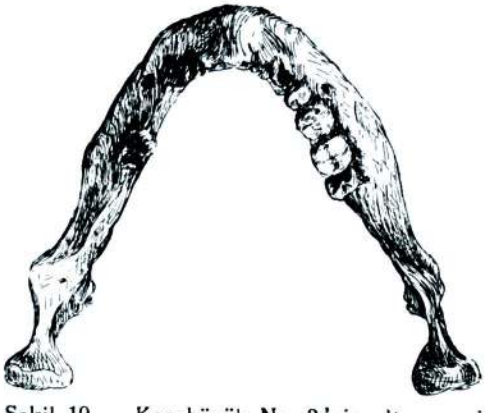


Şekil 8 — Karahöyük No. 2 kafatasının önden ve yukarıdan görünüşü
Fig. 8 — The skull of Karahöyük No. 2 from front and above. (In norma frontalis and verticalis).



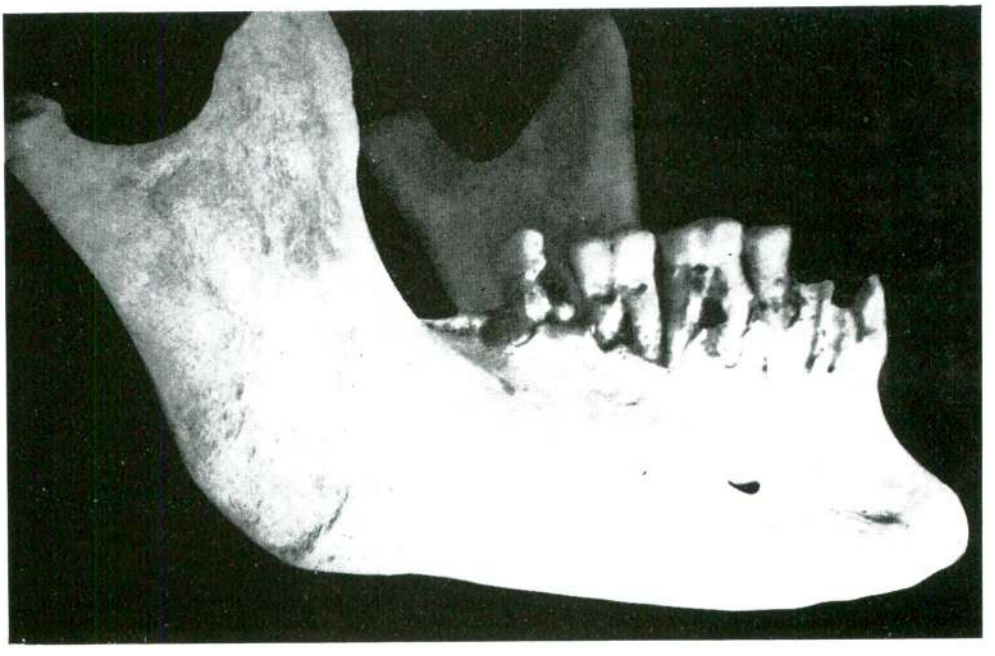
Şekil 9 — Karahöyük No. 2 kafatasının arkadan görünüşü

Fig. 9 The skull of Karahöyük No. 2 in norma occipitalis.

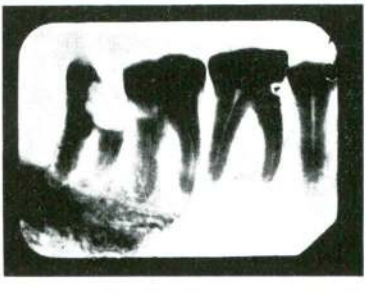


Şekil 10 — Karahöyük No. 2'nin alt çenesi

Fig. 10 — The mandible of Karahöyük No. 2.



Şekil 11 — Karahöyük No. 2 'nin alt çenesi
Fig. 11 — The mandible of Karahöyük No. 2.



Şekil 12 — Karahöyük No. 2 'nin alt dişlerinin röntgeni
Fig. 12 — The skiagram of the lower teeth of Karahöyük No. 2.

absorption of their alveoli may have slightly increased the chin projection, it is evident that the chin projected strongly, as in the Europeans.

In this lower jaw only the right second premolar, and the first, second and third molars are preserved. All the other teeth were lost before death and the condition of their alveoli reveals that this individual had pyorrhea during life. Among the teeth present, on the buccal sides of the first and second molars, at the region of cemento - enamel junction, deep erosions are observed. Besides this, the mesial half of the third lower molar has been destroyed by a large caries.

The measurements of the available teeth are shown in table 4. As for their morphological peculiarities, the first and second molars have four cusps. Both of these molars exhibit the plus pattern of Milo Hellman [7]. In spite of the advanced age of this individual, his teeth are relatively little worn. The skiagram of the molars reveals that the pulp cavity is small, that is, cynodont.

The sum total of his characters shows that this individual belongs to the Alpine racial type.

Conclusion

The excavation made in Karahöyük, in the Elbistan district of the vilayet of Maraş, has brought to light the remains of two skeletons belonging to the end of the second millenium B. C. and the first half of the first millenium B. C. Though there is a slight difference in time [8] between them, both of these skeletons belong to the Post-Hittite period.

One of these skulls found at Karahöyük belongs to the Mediterranean and the other to the Alpine racial type. In addition, a skull dating from the Néo-Hittite period [9] of Arslantepe in Malatya, in this neighbourhood, is also brachycephalic and of the Alpine type. Though the skulls coming from south-eastern Anatolia are still few in number, the fact that the skulls found represent two different racial

[7] Hellman, M. : *Racial characters in human dentition*. Proceedings of the American Philosophical Society, 68, No. 2, 1928.

[8] This difference involves only the time elapsed between the two successive building levels.

[9] Kansu, Ş. A. : *Etude anthropologique d'ossements d'Arslantepe (Malatya)*. Revue Hittite et Asianique, 35, 1939.

types (Mediterranean and Alpine) is evidence of the existence of at least two different racial elements during the Post-Hittite period in this region.

In a former study [10], I had shown that the majority of the Chalcolithic and Copper age inhabitants of Anatolia were dolichocephals of Eurafrican and Mediterranean types and that the brachycephals were in the minority in these periods. In the same study I also showed that the brachycephals had increased in the succeeding Hittite period and from this I concluded that the Hittites were invaders of predominantly Alpine type. But in that study I further pointed out that the dolichocephals as well had lived along-side the brachycephals in the Hittite period. We know that after the great Hittite empire came to an end and was succeeded by the Phrygians in central Anatolia, the Hittites continued to rule for some time in south-eastern Anatolia in the form of independent principalities or kingdoms. Thus, even though there is the difference in time already mentioned between the two skeletons discovered at Karahöyük, it is very probable that in the Post-Hittite period of this region of Anatolia round-headed and long-headed racial elements co-existed synchronously, as they did in the Hittite empire period in central Anatolia.

TABLE : 1

Measurements of Karahöyük No. 1 : The calva

Glabello-occipital length	190	mm.
Maximum width	140 ??	mm.
Minimum frontal diameter	92.5	mm.
Mean thickness of left parietal	4.3	mm.
Cranial index	73.68	??
Fronto-parietal index	66.07	

TABLE : 2

Measurements of Karahöyük No 2 : The calva

Glabello-occipital length	182	mm.
Maximum width	151	mm.
Minimum frontal diameter	98	mm.

[10] Şenyürek, M. S.: *Op. cit.*

TABLE: 2

(Continued)

Porion-bregma height	118.5 (Average of two sides)	mm.
Mean thickness of left parietal	6	mm.
Horizontal circumference	532	mm.
Transverse arc	318	mm.
Bizygomatic diameter	145.5	mm.
Cranial index	82.96	
Po-b-length index	65.10	
Po-b-breadth index	78.47	
Fronto-parietal index	64.90	
Cranio-facial index	96.35	
Zygo-frontal index	67.35	

TABLE: 3

The measurements of Karahöyük No. 2: The mandible

Bicondylar width	129	mm.
Bigonial width	97	mm.
Bimental width (Distance between the two foramina mentalia)	44.5	mm.
Condylo-symphyseal length	107	mm.
Height of corpus (At the level of foramen mentale)	38	mm.
Thickness of corpus (At the level of foramen mentale)	11	mm.
Height of ascending ramus (From gonion to the highest point of the condyle)	61	mm.
Height of ascending ramus (projected)	49	mm.
Depth of incisura mandibulae	11.2	mm.
Width of incisura mandibulae	34	mm.
Minimum breadth of ascending ramus	30.5	mm.
Mean angle mandible	128°	
Mandibular index	82.94	
Breadth index	75.19	
Index of ascending ramus	50.00	
Index of incisura mandibulae	32.94	
Height-thickness index of the corpus	28.94	

TABLE: 4

Measurements of the teeth of Karahöyük No. 2

	Second lower premolar	First lower molar	Second lower molar
Length	7.1 mm.	10.5 mm.	10.9 mm.
Breadth	8.5 mm.	10.5 mm.	10.2 mm.
Trigonid breadth	—	10.5 mm.	10.2 mm.
Talonid breadth	—	10.2 mm.	9.8 mm.
Robustness value (L. X Br.)	60.35	110.25	111.18
Crown index (Br. X 100 / L.)	119.71	100.00	93.57
Trigonid-talonid index (Talonid Br. X 100/ trigonid breadth)	—	97.14	96.07

YANLIŞLAR (ERRATA)

Bu makalenin ilk 16 sahifesinde sonradan görülen aşağıdaki yanlışları lütfen düzeltiniz:

Please correct the following errors in the first 16 pages of this paper, which were noticed subsequently:

Sayfa (Page)	Satır (Line)	Yanlış (Wrong)	Doğru (Correct)
2	5	görülmüştür	gömülmüştür
2	19	yakut	yahut
7	2	mesculus	musculus
7	10	çukurlarını	çukurlarının
8	21	ue	ve
11	20	level level	level
13	28-29	submedium	medium
13	34	ambadoid	lambdoid
16	33	amonts	amounts