A NOTE ON THE HUMAN SKELETONS IN THE ALACA HÖYÜK MUSEUM

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I examined the human remains preserved in the Alaca Höyük Museum during the two trips I made in 1948 and 1949[1]. I brought the skulls of these skeletons to Ankara, and after cornpleting my Studies I returned them to the Alaca Höyük Museum.

The remains of five individuals are preserved in the Alaca Höyük Museum. The skulls of two of these skeletons (No. Al. H. M. II and Al. F. No. 1) had previously been brought to Ankara and after being studied by Drs. Kansu and Tunakan[2] had been returned to the Alaca Höyük Museum for exhibition. These two skulls, some missing portions of which have now been completed, are restudied in this report. However, the Copper Age skull vvithout a number is described here for the first time. In addition, a few cranial fragments of a newborn, or at the most, a couple of months old infant, and the skull and postcranial bones of a dolichocephalic child of approximately 3-4 years of age are also preserved in the Alaca Höyük Museum. The note accompanying the remains of these two skeletons, which are contained in the same box at the Museum, states that these bones are from the place where "the Hittite iron,, was found (probably the copper slag with a high percentage of iron). However, in spite of this note, it has not yet been possible to learn with certainty whether these two skeletons were found together or not, and exactly what level or levels they came from. The remains of these two skeletons are, therefore, not described in this report.

SKELETOM No. AL. H. MII.

The skull of this skeleton, found in the Chalcolithic stratum of Alaca Höyük in the excavation season of 1943, had been previously studied by

[1] I made the first of these trips with the help of the University of Ankara and the second with a grant given by the Faculty of Language, History and Geography of the University. In this connection, I wish to extend my thanks to Dr. Hamit Koşay for inviting me to Alaca Höyük and Büyük Güllücek, and to the office of the President of the University of Ankara and to the office of the Dean of the Faculty of Lanuage, History and Geography.

[2] Kansu, Ş. A. and Tunakan, S. : Alaca-Höyük 1943—1945 kazılarından çıkarılan Kalkolitik, Bakır ve Tunç çağlarına ait halkın antropolojisi (Sur l'Anthropologie de la populations des âges Chalcolithique, du Cuivre et du Bronze mis au jour lors des fouilles d'Alacahöyük 1943—45). Belleten, vol. X, No. 40, 1946, pp. 539—555.

Kansu and Tunakan[3]. In this skull, these authors see a blend of Eurafrican and Alpine types[4]. This skeleton, represented by a calva, upper and lower javvs and by postcranial bones was found in an earth grave surrounded with stones and is now on exhibit in the Alaca Höyük Museum in the condition it was encountered.

The skeleton, lying on its right side, is in the Hocker position. The legs have been drawn toward the abdomen. The femur makes an approximately 90 degree angle with the long axis of the body. The legs have been bent at the knee and the arms have been flexed at the elbow.

As formerly only the skull of this individual had been brought to Ankara, Kansu and Tunakan (op. cit. 1946) have not been able to make use of the evidence furnished by the postcranial bones. Furthermore, I restored an additional part of the left side of the calva with some worn pieces of bone I found with this skeleton in the Museum, which seem to have remained in water (Figs. 1 and 3). Thus it has been possible to measure the cranial width directly. In addition, I have been able to measure the basion-bregma height and the widfh and height of the orbit. I have also readjusted the direction of the anterior border of the forehead (see fig. 1).

All the skull, upper and lower jaw measurements given here have been taken anew by me. The new observations made on this skeleton show the racial affiliation of its owner under a new light.

Age and Sex:

The epiphyses of ali the long bones have been closed. As for the skull, the sagittal suture is stili öpen on the external surface of the skull. On the other hand, on the endocranial surface of the skull the posterior parts of this suture have been erased. The coronal and lambdoid sutures are stili öpen on the ectocranial aspect of the calva. On the endocranial surface, pars temporalis of coronal suture and pars lambdoidea of lambdoid suture have been erased. On the other hand, the sphenosquamosal, squamous and the parietomastoid sutures are öpen on both the ectocranial and endocranial aspects of the skull. Thus this skeleton belongs to an individual of approximately 25 years of age. The morphological features of the skull and os ilium show that, as also stated in the preceding study, a male individual is being dealt with here.

The Skull (Figs. 1 — 3) :

The measurements of the calva are shovvn in Table 1. This skull is weakly mesocephalic (cranial index=75.i3). In fact, although the cranial index is mesocephalic, it is very near the border of dolichocephaly and

[3] Ibid., pp. 542—546 and p. 553.
[4] Ibid., pp. 546, 549 and 553.

mesocephaly. The absolute basion-bregma height is large and is near the highest averages for *Homo sapiens* given by Martin[5]. The basion-bregma height-length and the porion-bregma height-length indices are both hypsicephalic and the basion-bregma height-breadth and the porion-bregma height-breadth indices are akrocranic. The fronto-parietal index is eurymetopic, that is, the forehead is relatively wide. However, this high index is due rather to the fact that the skull width is not very large. The thickness of the parietal bone, measured about i cm. above the squarnous suture, is relatively high. The orbital index is chamaeconchic, that is the orbit is low relative to its width. The absolute nasal breadth is large, but as the nasal length cannot be measured nothing can be said about the nasal index.

The form of the skull, as also pointed out by Kansu and Tunakan, is pronouncedly pentagonoid (Fig. i). The brow ridges and the glabella of this individual are of only nıoderate development (See Fig. 2). The forehead is of medium height, and its slope is small (Fig. 2). The frontal eminences of this skull also show a nıoderate development. The metopic suture is completely elosed. As also pointed out by Kansu and Tunakan, on the frontal bone and on the parietal region there is no sagittal elevation (sagittal crest). The morphology of os frontale of this skull resembles that of the Mediterraıiean racial type. The temporal fullness is medium. The parietal eminences are pronounced. The supramastoid crest is strongly developed while the mastoid process is of only medium size. In norma lateralis, the occiput is vvell-curved. Although there is a lambdoid flattening of moderate size in the occipital region, there is no plano-occipital flattening. The torus occipitalis is weak. The muscle markings on the skull are of submedium development.

The anterior and lateral projeetions of the zygomatic bone are moderate. The elevation of the root of the nose is moderate. The nasalia upper breadth, is 13 mm. The anterior nasal spine is small and in the lower border of apertura pyriformis there is a fossa praenasalis. The canine fossa is deep.

The meaşurements of the maxilla are shown in Table 2 and those of the mandible in Table 3. In this lower jaw, vvhich is relatively short and broad, the height-thickness index of the corpus mandibulae is, as also pointed out by Kansu and Tunakan, high. The height-thickness index of this mandible approaches the values found in fossil man rather than those of the modern man[6]. But the comparison of the height and thickness meaşurements of this corpus mandibulae with the figures given by Martin[7] shows that this high index is rather due to the smallness of the corpus height.

[5] Martin, R. : Lehrbuch der Anthropologic, vol. II, 1928, Jena, p. 795.
[6] Ibid., p. 979.
[7] Ibid., p. 979.

The chin projection is positive but of moderate degree. The development of spina mentalis is submedium. There is no «torus mandibularis. The gonial angles are moderately everted outward.

With the exception of some of the third molars, ali the permanent teeth of this individual have erupted. Though the left third upper molar has erupted, it is stili not at the level of the second upper molar. The right third upper molar is missing and this part of the alveolar proeess is broken. But a contact facet on the distal face of the crown of right second upper molar shows that the right third molar had also erupted. In this lower jaw, the right third molar has not yet erupted and is stili in its socket, only its upper surface being visible from outside. (Figs. 4 and 12). The left third lower molar is not visible externally and is also not seen in the skiagram of this Iower jaw (See Fig. 11). Thus it is seen that the eruption of the vvisdom teeth of this individual has been delayed, as in the modern Europeans. Some of the teeth erupted have fallen off or have been broken from the root recently[8].

The measurements of the available teeth are given in Tables 4 and 5. In a former study[9] I had published. the measurements of the teeth of a mixed series including specimens of Europeans, ancient Egyptians, American Indians, Negroes and Melanesians, which I had measured at. Harvard University. The comparison of the robustness values of the teeth of Alaca Höyük Al. H Mil with those of the corresponding teeth of this mixed series, shows that the teeth of this Alaca Höyük specimen are smaller than those of this mixed series. That is, the teeth of this individual are relatively small.

As fbr the nıorphological peculiarities of the teeth, there are four vvell-developed cusps in the first upper molar. Although there are also four cusps in the right second upper molar, the hypocone is greatly reduced. On the other hand, the left second upper molar has only three cusps and the hypocone has disappeared. In the greatly reduced left third upper molar, the hypocone is lost. As the metacone is also reduced, this tooth exhibits an almost bicuspid form. There is no Carabelli cusp in any of the upper molars.

As for the lower javv, the first molar has five cusps. Although the plan formed by the furrows betvveen the cusps on the masticating surface is not clear, this tooth appears to show a modified Dryopithecus pattern. Both the right and left second lower molar has four cusps and the mesoconid

[8] The anterior teeth are seen in the photograph of this mandible published by Kansu and Tunakan (op. cit., 1946, Fig. 1). Thus it is understood that, at least the missing mandibular teeth, have been broken during the transportation to Alaca Höyük museunı.

[9] Şenyürek, M. S. : Türk Tarih Kurumu adına yapılan Masat Höyük kazısından çıkarılan kafataslarının tetkiki. (Study of the skulls from Masat Höyük, excavated under the auspices'of the Turkish Historical Society). Belleten, vol. X, No. 38, 1946. Table 2.

(hypoconulid) has disappeared. The left second molar shows Milo Hellman's [10] plus-pattern. Although the right second lower molar also approaches the plus-pattern, there is a small connection between the protoconid and the entoconid. The right third lower molar also has four cusps. Although this tooth comes close to the plus-pattern, a small connection between the protoconid and entoconid is observed on this tooth also. From the vievvpoint of size and morphology, the teeth of Alaca Höyük Al. H. Mil show an advanced stage.

The lower teeth have been X-rayed. Although the pulp chamber of the first lower molar is small, the second lower molar, especially on the left side, shovvs a moderate degree of taurodontism (Figs. 11 —12).

The.wear on the teeth is relatively small. In the first upper and lower molars only some islands of dentine are exposed (Fig. 4). Although the attrition is less in the second lower molar, some very small islands of dentine are seen. On the other hand, in the second upper molar only the enamel is abraded and no dentine is visible. There is no wear on the third upper molar.

There are no caries in the available teeth. Also there is no pyorrhea alveolaris in the upper and lower jaws.

The Postcranial Skeleton :

Most of the available postcranial bones are broken. Of these, I measured only the right femur and the right tibia, which are well-preserved.

The Femur:

The measurements of the femur are listed in Table 6. This femur, which is very short, is platymeric. The index pilastricus (90.74) is very small. The crista hypotrochanterica and the fossa hypotrochanterica are little developed. The torsion of the head is weak.

The Tibia :

The measurements of the tibia are given in Table 7. Like the femur, the tibia also is short. This tibia is eurycnemic. The retroversion of the proximal extremity is vveak.

The Stature :

The statures calculated from the lengths of the femur and tibia, according to Pearson's formulae for the males,[11] are given below :

[10] Hellman, M. : Racial characters in human dentition. Proceedings of the American Philosophical Society. 67, No. 2, 1928, pp. 157—174.

[11] See Martin : op. cit., p. 1070.

Formula	Stature
81.306 + 1.880 femur	157.91 cm.
78.664 + 2.376 tibia	156.59 cm.
71.272 + 1.159 (femur + tibia)	156.51 cm.
71.443 + 1.220 femur -+ 1.080 tibia	156.58 cm.

The stature of this individual is short. From the view-point of stature this indvidual falls within the limits of the Mediterranean racial type.

This new study shovvs that Al. H. Mil differs from the big-headed and rugged Eurafrican type. Furthermore, there is no evidence indicating that this individual represents a mixture of Eurafrican and Alpine types. In the sum total of his characters, Al. H. Mil falls within the limits of the Mediterranean race.

SKELETON AL. F. No. 1 (Inventory No. Al. F. 219)

The skull of this individual, found in the Copper Age stratum of Alaca Höyük, had previously been studied by Kansu and Tunakan.[12] Although in their first study Kansu and Tunakan[13] had attributed this skull to a 20—25 years old woman of Mediterranean racial type, in a subsequent note[14] they have corrected the age as 11—12 years. Thus, because of this correction it will be worthwhile to review this skeleton briefly.

This skeleton, vvhich was found in a pot, is exhibited in the Alaca Höyük Museum together with its um. This individual is represented by a broken calva, a broken maxilla, fragments of lower jaw and by posteranial bones.

Age and Sex :

The long bones of this skeleton are broken. The upper epiphysis of tibia, the lower epiphysis of femur and the distal epiphysis of humerus, which are better preserved than the other bones, have stili not united with the shaft. Ali the sutures of the calva, on both the eetoeranial and endocranial aspects, are stili öpen. In the upper jaw, with the exception of the vvisdom teeth and the right second molar, ali the permanent teeth have erupted. The left second upper molar has completed its eruption, but the right second upper molar is stili unerupted and is within its socket.

[12] Kansu and Tunakan : op. cit., 1946, pp. 546—547 and p. 553.

[13] Ibid., pp. 546—547 and p. 553.

[14] Kansu, Ş. A. and Tunakan, S. : Karaoğlan Höyüğünden çıkarılan Eti, Frik ve Klâsik devir iskeletlerinin antropolojik incelenmesi. (Etüde anthropologique des squelettes datant des 6poques Hittite et Phrygienne et de l'Âge classique provenant des fouilles du Höyük de Karaoğlan (1937—1938). Belleten, vol. XII, No. 48, 1948, p. 778.

In the lower jaw, with the exception of the wisdom teeth and the right and left second premolars, ali the permanent teeth have erupted. On both the right and left side of the mandible, the second milk molar is preserved *in süu* and the second premolar is stili underneath the second deciduous molar. (Fig. 13) Thus, we m ay accept the age of this individual as from 11 to 12 years.

As for the problem of the sex of this skeleton, the age of this individual must be taken into consideration here. it is known that the determination of the sex of a skeleton belonging to a young individual is a difficult task. Although most of the permanent teeth of this individual are smaller than those of the mixed series[15] mentioned before, they are, nevertheless, larger than most of those of Alaca Höyük Al. H. Mil. The parietal bone is quite thick (4.3 mm.) for an 11—12 years old child. In addition, the presence of a sagittal elevation (sagittal crest) on os frontale draws attention. Although it is not possible to say anything definite, nonetheless these features of the skull suggest that a boy is being dealt with here.

The Skull (Figs. 5—7) ;

I put a piece belonging to the right lower part of os frontale in place, vvhich was missing in the previous restoration (See Fig. 7). Thus it has been possible to measure the minimum frontal diameter more accurately. The new measurements I have taken on this skull are shown in Table 8.

This skull is dolichocephalic, hypsicephalic and akrocranic. The fronto-parietal index, expressing the minimum frontal diameter as a percentage of skull width, is eurymetopic, that is the forehead is relatively wide. However, it is evident that this high index is due rather to the narrowness of the skull width.

The form of the skull is ovoid (See Fig. 5). The forehead is of medium height and of medium slope. The brow ridges are stili of submedium development and the metopic suture' is completely patent[16]. The frontal eminences are of medium development. The temporal fullness is medium. There is no sagittal elevation in the parietal region. The parietal eminences are of medium development. The parietal foramen is single. In norma lateralis the curvature of the occiput is relatively weak. Although, there is a very extensive lambdoid flattening in the occiput, almost approaching the plano-occipital flattening, there is no plano-occipital flattening (See Fig. 6).

The external palatal index (Table 9) is brachyuranisch, that is, the upper dental arch is relatively broad. But in this connection it must be kept in mind that the right second upper molar and the wisdom teeth have not yet erupted.

[15] Şenyürek : op. cit., 1946, Table a.
[16] Kansu and Tunakan : op. cit., 1946, p. 546.

As also stated by Kansu and Tunakan in their first study on this skull[17], the mandible is represented by fragments (See Fig. 8). The preserved three fragments are as follows : a piece of the symphysis, a fragment belonging to the processus alveolaris of right corpus mandibulae and another fragment containing the left ramus mandibulae and a part of left corpus mandibulae. The measurements that could be taken on these mandibular fragments are listed in Table 10.

The measurements of the permanent teeth of this individual are given in tables n and 12. In the first and second upper incisors a *"trace shovel,,* shape (of Hrdlicka) is observed[18]. The first upper molar has four well-formed cusps. The hypocone of this tooth is well-developed. In the second upper molar, on both the right and left sides, the hypocone has disappeared. There are some differerıces between the right and left second upper molars (See Fig. 8). In the left second upper molar a vertical fissure divides the protocone into two. Thus the tip of the protocone is bifurcated. On the other hand, on the right side the protocone is single and normal. The left second upper molar possesses a well formed Carabelli cusp. On the other hand, there is no Carabelli cusp in the right second upper molar. On the lingual side of the protocone of this tooth there exists a crescent-shaped fold. it is probable that this fold, or ridge, is a remnant of the cingulum. In the left second upper molar there is an oblique ridge (crista obliqua) betvveen the protocone and metacone. On the right side this oblique .ridge has atrophied.

As for the mandibular teeth, the lower incisors are not shovel-shaped. The first lower molar, on both sides, has four cusps. This tooth shows Milo Hellman's plus-pattern. The second lower molar, on either side, possesses four cusps. This tooth, also, exhibits the plus-pattern. The first and second lower molars (Fig. 13) are moderately taurodont.

The teeth, as they belong to a young individual, are but little worn. In the first upper molar only the enamel is abraded and no dentine is exposed. In the first lower molar the wear is a bit more advanced and a small island of dentine is visible. The left second upper molar and the right second lower molar, which is stili vvithin its socket, are not worn. On the other hand, in the left second lovver molar, in its anterior part, only the enamel is abraded (See Fig. 8).

There are no caries in any of the available teeth. Also there is no pyorrhea alveolaris in the upper and lovver jaws. On the buccal surfaces of the right and left upper first molars and on the lingual face of the entoconid in the left first lower molar there is a defect in the enamel.

[17] Ibid., p. 546.

[18] Hrdlicka, A. : Shovel-shaped teeth. American Journal of Physical Anthropology, 3, 1920.

As for the racial type represented, as in the case of sex, here too, the fact that this individual is not an adult but a child of 11—12 years of age must be taken into consideration, for, as is known, many of the racial characters reach their ultimate development in the adults. Therefore, with the exception of the types separated by great morphological differences, the determination of the race of a skeleton belonging to a young individual is a difficult job and, especially when two dolichocephahc types of the vvhite race are being dealt with, it is not often possible to reach a definite conclusion. Therefore, it will be safer to reserve judgment on the r|ıestion as to which one of the two dolichocephahc types of the Chalcolithic and Copper Age populations of Anatolia, namely the Eurafrican and Mediterrranean types, this individual belonged to.

THE UNNUMBERED SKULL FOUND IN THE COPPER AGE STRATUM IN THE EXCAVAT10N OF 1946 (Figs. 9 - 10)

According to the information given to me by Dr. Tahsin Özgüç, who had participated in the 1946 excavation at Alaca Höyük, this skull was found under a room in the Copper Age stratum[19].

This individual is represented by only a broken calva. On this calva, the frontal and occipital fontanelles are completely öpen. As the places of the sphenoidal and mastoid fontanelles are broken, the condition of these two fontanelles cannot be determined. This calva appears to belong to an approximately one year old or somevvhat younger infant. it is not possible to say anything definite about the sex of this infant.

As the anterior part of os frontale is missing the maximum skull length cannot be measured precisely. I restored this part of the forehead with plaster of Paris (Figs. 9—10). The maximum length taken from this restored part is 160.00 mm., the maximum skull breadth is 120.00 mm. and the cranial index is 75.00. Although the cranial index is mesocephalic, it is indeed on the border of dolichocephaly and mesocephaly. If this infant had lived, the cranial index would very probably further diminish and fail in the dolichocephahc category.

As for the racial type to vvhich this calva belongs, the statements made in connection wıth Alaca Höyük Al. F. No. 1 are, also, even to a greater extent, true for this skull. Thus it cannot be determined with certainty as to whether this infant belongs to the Eurafrican or to the Mediterranean type.

[19] See Özgüç, T. : Alacahöyük ve Demirciçeşme kazıları. *Belleten,* vol. XI, No. 41, 1947, pp. 163—164.

DISCUSSION

In his study on the two brachycephalic skulls from Alaca Höyük found in 1935, Kansu[20] had concluded : "Za *predominance des elements brachycephales dans la paleoethnologie du sol anatolien est ainsi confirmee par ces nouvelles recherches: anthropologie et archeologie sont nettement d'accord sur ce point.,,* In a subsequent study in 1941 I explained the presence of brachycephals and dolichocephals among crania from Alaca Höyük found in the seasons of 1935 and 1936, as follows[21]: *"These dolichocephalic and mesocephalic skulls resemble the Copper Age skulls found in other Anatolian sites* (*Table* III). *Thus they appear to belong to the native copper age population of Anatolia, ıvhüe the brachycephalic skulls from this site probably represent the aristocrats and. the invaders.,,* Of the three skulls from the Chalcolithic and Copper Age strata of Alaca Höyük described in the present report, one is dolichocephalic and two are weakly mesocephalic. These three skulls do not differ in this respect from the majority of the Chalcolithic and Copper Age populations of Anatolia, who were longheaded[22]. That is, as I stated[23] in 1941, these longheaded inhabitants of Alaca Höyük represent the native population of Anatolia[24].

On this occasion it has been deemed necessary to say a few words about the contributions made to our knowledge of the physical anthropology of the early inhabitants of Anatolia.

As is well known, some writers[25] had previously supposed that the earlier populations of Anatolia were roundheaded. Subsequently Krogman[26], in his exellent study on the crania from Alişar Höyük, showed

[20] Kansu, Ş. A. : Etüde anthropolugique de quelques squelettes d'Alacahöyük. L'Anthropologie, vol. 47, Nos. 1—2, 1937, p. 39.

[21] 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, p. 240.

[22] Şenyürek, : op. cit., 1941, pp. 244—245.

[23] Ibid., p. 240.

[24] In their Studies of 1945 and 1946 Kansu and Tunakan also concur that the dolichocephals are the indigenous inhabitants of Anatolia (Kansu, Ş. A. and Tunakan, S. : Türk Tarih Kurumu Alaca-Höyük kazılarında (1936—1944) Bakırçağı yerleşme katlarından çıkarılan iskeletlerin antropolojik incelenmesi. Belleten, vol. IX, No. 36, 1945; Kansu, and Tunakan, op. cit., 1946, pp. 546-547, 549 and 553).

[25] (a) Luschan, Von F. : The early inhabitants of Western Asia. The Journal of the Royal Anthropological Institute of Great Britain and Ireland, 1911. (b) Fischer, E. "Spezielle Anthropologie : Rassenlehre," Anthropologie, unter Leitung Von G. Schwalbe und E. Fischer "Die Kultur der Gegenvvart," Hrsg. Von F. Hinneberg, 3 Teil, 5 Abt. Leipzig und Berlin. 1923. (Not accessible to the writer. Cited by Krogman, 1937, p. 279). (c) Kansu, Ş. A. Selçuk Türkleri hakkında Antropolojik ilk bir tetkik ve neticeleri. İkinci Türk Tarih Kongresi, istanbul, 20—25 Eylül 1937. Türk Tarih Kurumu yayınlarından, Series IX, No. 2, İstanbul, 1943, pp. 443—444 and 456.

[26] Krogman, W. M. : Granial types from Alişar Hüyük and their relations to other racial types, ancient and modern, of Europe and Western Asia. In Von der Osten's :

that at Alişar the Mediterranean dolichocephals had antedated the brachycephals[27]. In a subsequent study[28], I was able to show on a much larger series that the earlier inhabitants of the entire Anatolia were largely long-headed. This conclusion is now supported by Krogman, who, in his recent paper[29] published in 1949 says : *"Dr. Senyürek's main conclusion that the earliest populations of Anatolia ıvere predominantly dolichocranic is substantiated by ali available comparable data.,,*

On the occasion of revievving two of my more recent papers[30], H. V. Vallois makes the following statements[31]: *"Les faits gui precedent confirment ainsi une notion sur laguelle insiste M. Senyürek et gu'il avait developpee dans un travail anterieur* (1941); *les premieres populations historigues ou plutot proto-historigues de VAnatolie etaient des dolichocephales ; les brachycephales ne sont venus gu'ensuite, avec l'epogue hittite ; apris celle-ci, les uns et les autres subsistent câte â, cote. L'auteur de ce compte rendu se rallie d'autant plus a cette Conception gu'il l'avait lui-meme developpee a l'occassion de ses recherches sur les crânes de Viran ancien (Cf. L'A., t.* 50, *p.* 3^3) *et gu'il l'avait longuement exposee dans une communication faite a Ankara en* 1937 *au IIe Congres turc d'histoire.,,* Vallois had participated in the Second Turkish Historical Congress held in istanbul in 1937 (September 20- 25, 1937), with a lengthy paper entitled "History of Races of Western Asia,,. The records of this Congress were published

Alishar Hüyük, Seasons of 1930—1932. Part III. OIP, Vol. XXX, Researches in Anatolia-Vol. IX, Chicago, 1937, pp. 213—293.

[27] it may also be noted here that Ehrich had considered the cranial features of the children from the Early Cemetery at Tarsus to be indicative of *"the Atlanto-Medi-Urranean or Eurafrican type,,* (Ehrich, R. ; Preliminary notes on Tarsus crania. American Journal of Archaeology, vol. XLIV, 1940, p. 91). He stated (op. cit., 1940, pp. 91—92) : *"Such an interpretation, based upon the parely physical aspects of the crania under consideration, is logically consistent tvith the tentative archaeological classification of the burials as of Northern al-'Obeid affinities. Since the Aflanto—Mediterranean or Eurafrican type seems to hane been dominant in the Mesopotamian region from very early times, it does not seem too rash to suppose that there may have been some correlation or connection betmeen the extension of cullural factors from North Meso-potamia and Ntrth Syria into Cilicia and the h'es-nce in Cilicia at that periud of the basic racial tyt>e of th*. other tzıo a>eı>'.„* That is, Ehrich suggested that the Eurafrican type had extenderi from Syria and Mesopotamia into Cilicia, south of the Taurus range.

[28] Şenyürek : op. cit., 1941.

[29] - Krogman, W. M. : Ancient cranial types at Chatal Hüy'ik and Teli Al—Judaidah, Syria, from the late fifth millenium B. C. to the mid—seventh centvry, A. D. Belleten, vol. XIII, No. 51, 1949, P. 446.

[30] Şenyürek, M. S. : Türk Tarih Kurumu adına yapılan Karahoyük kazısından çıkarılan kafataslarının tetkiki (Study of the skulls irom Karahoyük. excavated under the auspices of the Turkish Historical Sotiety). Belleten, vol. XIIT, No. 49, 1949 ; Senyürek, M. S. : Truva civarında Kumtepe'de bulunmuş olan iskeletlere dair bir not. (A note on the skeletons from Kumtepe, in the vicimty of Troy). Ankara Üniversitesi, Dil ve Tarih—• Coğrafya Fakültesi Dergisi (Revue de la Faculte de Langue, d'Histoîre et de Geographie, Üniversite d'Ankara) vol. VII, No. 2, 1949.

[31] Vallois, II. V. : L"Anthropologie, vol. 54, No. 5—6, Tanuary, 1951, p. 512.

together with the Turkish translation of Vallois' paper[32], by the Turkish Historical Society in 1943.

In this paper, read before the Historical Gongress, Vallois says[33]: *"Finally the situation is totally different in Anatolia. For, the first racial type observed there appears to be brachycephalic. The dolichocephals come later and ıvhile very rare at first, they reach a totally dominant proportion at a certain period.,,* This is the continuation of an opinion expressed by Vallois in his earlier study on the skulls from Tepe-Djamshidi and Tepe-Bad-Hora from Iran, published in 1935. In this study, on the occasion of discussion of the brachycephalic elements from Ingharra at Kish, Vallois stated[34]: *"Ils representent la race arminoîde. II est probable çu'il s'agit de sujets provenant des hauts plateaux d'Aminle et d'Anatolie, car, des les premieres piriodes de l'histoire (1), ces re'gions se sont toujours comporties comme un viritable centre de brachyciphales et, encore aujourd'hui, ceux-ci y constituent la grande majoriti de la population.,,* Thus in 1935 and 1937 Vallois had defended the now abandoned hypothesis that the earlier populations of Anatolia were roundheaded. However, afterwards he seems to have changed his views on this matter, for in his exhaustive monograph on the skeletons from Sialk, in Iran, he states[35]: *"Les recherches de Krogman sur les hommes d'Alishar, sur lesçuelles je reviendrai plus loin, ont montre çu'en Anatolie, les dolichociphales miditerraneens ont ete les premiers occupants ; la fig.* 21 *indiçue sujfisamment çu'il en est de mime pour l'Iran. Toutes les donnees anthropologiçues recueillies depuis* 20 *ans offrent ainsi une remarçuable concordance : elles tendent a prouver, çu'au dibut de l'âge des Mitaux, les Protomediterraneens s'etendaient sur toute l'Asie antirieure, de la cöte de la Mediterranees a l'Indus, et de la mer caspienne au golf d'O man. Et il semble bien çu'ils etaient les seuls occupants de ce vaste territoire.,,* it is evident that in this matter Vallois is in full agreement with Krogman who had also stated[36]: *"The earliest longheads in IVestern Asia — indeed, the earliest inhabitants—* were *almost certainly of the Mediterranean type, perhaps even its prototype.,,*

[32] Vallois, H. V. : Garbi Asyanın ırklar tarihi. İkinci Türk Tarih Kongresi, İstanbul, 20—25 Eylül iQ37. Türk Tarih Kurumu Yayınlarından IX. Seri : No. 2, İstanbul, 1943, pp. 456—483. Translation : "Vallois, H. V. : History of Races of VVestem Asia. Second Turkish Historical Gongress, İstanbul, September 20—25, 1937. Publications of the Turkish Historical Society Series IX : No. 2, İstanbul, 1913, pp. 456—483.,,

[33] Ibid., p. 4.77. This passage has been translated by the present writer. Vallois' Turkish text is as followv : *"Nihayet, Anadolu'da vaziyet büsbütün başka türlüdür. %ira, O'nda müşahede edilen ilk ırk unsuru brakisefal gihi görünmektedir. Dolikosefaller daha sonra gelmekte olup, Snce pek seyrek iken muayyen bir devirde, tamamiyle faik bir nisbete yükselmekledirler.„*

[34] Vallois, H. V. : Notes sur les tetes osseuses. In G. Contenau and R. Ghirshman's "Fouilles du Tepe—Giyan, pres de Nehavcnd. Musee du Louyre— Department des Antiquites Orieniales. Serie arckeologique, vol. III, Paris, 1935, p- I57-

[35] Vallois, H. V. : Les ossemeııts humainş de Sialk. Contribution â Petude de l'histoire raciale de l'Iran ancien. In R. Ghirshman : Foui'les de Sialk, pres de Kashan, vol. II. Musee du Louvre—Departement des Antiquites Orientales. Serie Archeologique, tome V, 1939, p. 181.

[36] Krogman ', op. cit., 1937, p. 269.

Krogman's (1937) and also Vallois' (1939) Studies were based mainly on the skeletons from Alişar Höyük, a site in central Anatolia. Indeed, Krogman[37] ended his lengthy paper with the statement : *"We look forıvard, therefore, to the ultimate discovery of(ı) the origin and time of migration of the early Armenoid type and* (2) *the identity of the basic population {or populations ?) of early Asia Minör. The finds of the Alişar site have started us mell on the path to the ansıvers. May the good ıvork done there be continued and extended to other sites.,,* Then in 1941 I published a study[38] which was a synthesis of ali the published and unpublished crania from various parts of Anatolia. This study was based on crania from Troy, Babaköy and Kusura from western Anatolia ; Ahlatlıbel, Alaca Höyük and Alişar in central Anatolia ; Dündartepe in northern Anatolia ; Arslantepe in south-eastern Anatolia and Tilkitepe from Van in eastern Anatolia. In this study covering the whole of Anatolia, I was able to demonstrate that the majority of the Chalcolithic and Copper Age populations of Anatolia were dolichocephals of Eurafrican and Mediterranean typcs and that the brachycephals were in the minority in these periods.

Thus this study (1941) led to the synthesis that the Chalcolithic and Copper Age populations of Anatolia as a whole were not made up of any one single type, but of three types, two longheaded and one roundheaded ; the roundheads probably representing the invaders and later comers[39].

I believe that the above explanation sufficiently summarizes the contributions made to our knowledge of the physical anthropology of the early inhabitants of Anatolia until 1941.

[37] Ibid.j p. 276.
[38] Şenyürek : op. cit., 1941. For fuller biblioşraphy see this paper (1941).
[39] Ibid., pp. 239—240 and 244—245.

TABLE: 1

Measurements of Alaca Höyük No. Al. H. MII : The Calva

Glabello-occipital length	185.00
Maximum width	139.00
Basion-bregma height	142.00
Porion-bregma height	120.00
Minimum frontal diameter	98.00
Mean thickness of parietal	5.60
Orbit width	36.50
Orbit height	29-50
Nasal width	26.50 ?
Cranial index	75.13
Height-length index	76-75
Height-breadth index	102.15
Po-b-length index	64.86
Po-b-breadth index	86.33
Fronto-parietal index	70.50
Orbital index	80.82

TABLE: 2

Measurements of Alaca Höyük No. Al. H. MII : The Maxilla

Palate-external length	48.00 ?
Palate-external width	67.00 ?
External palatal index	I39-58 ?

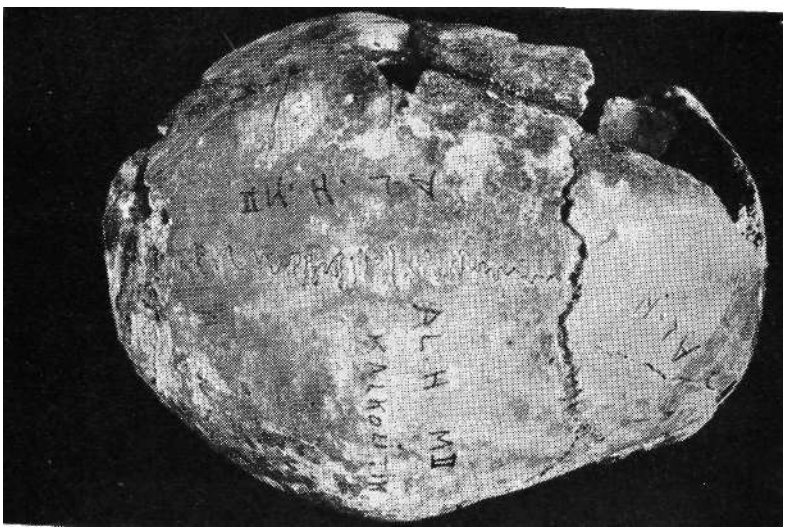


Fig. 1: The Skull of Alaca Höyük Al. H MII in norma verticalis.

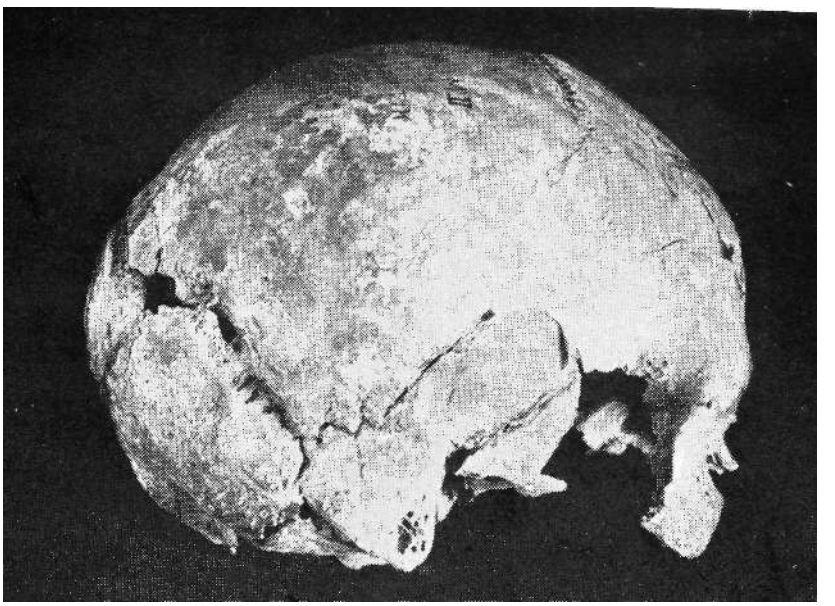


Fig. 2: The Skull of Alaca Höyük Al. H. MII in norma lateralis

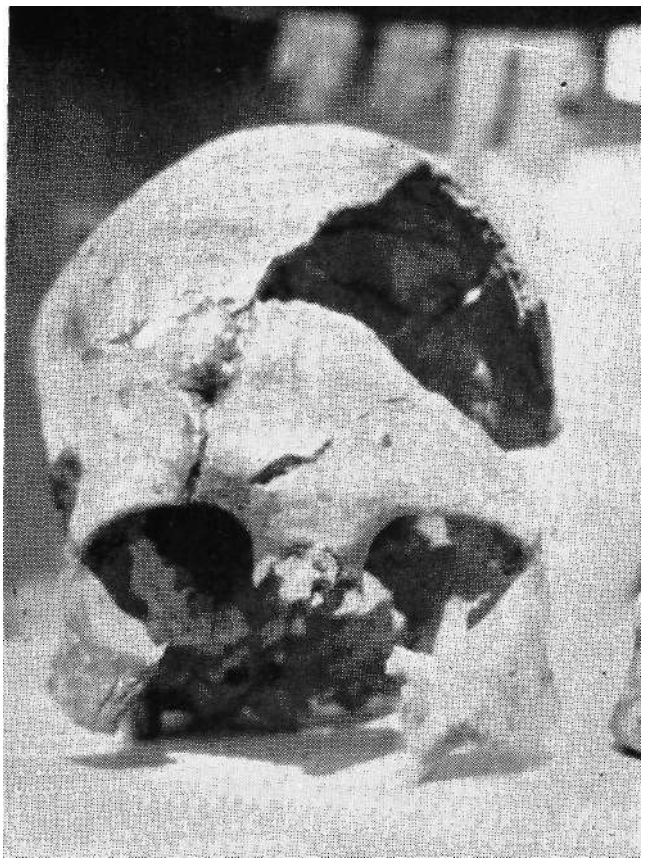
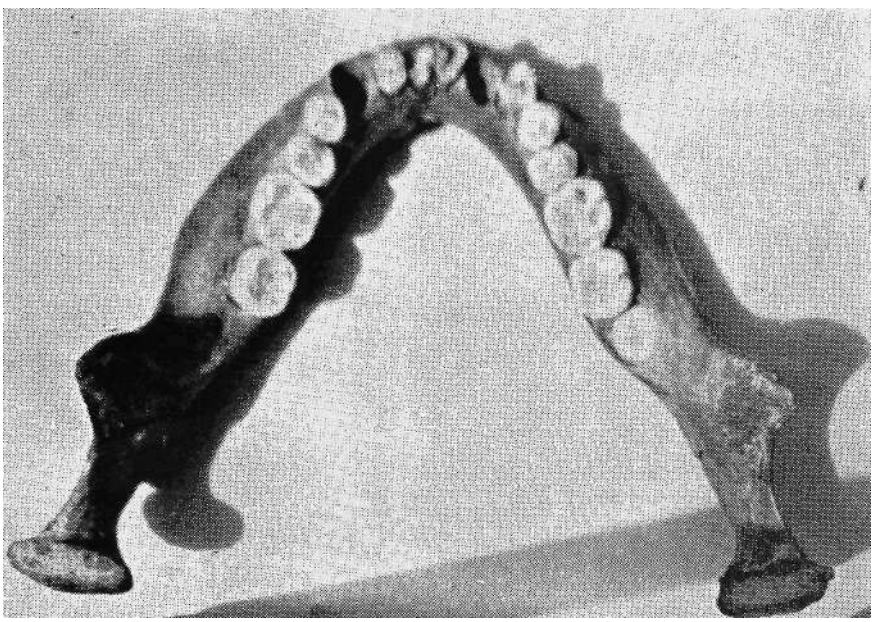


Fig. 3: The Skull of Alaca Höyük Al. H. MII in norma frontalis.



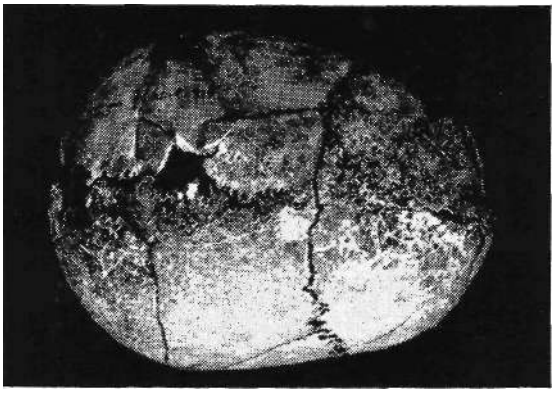


Fig. 5: The Skıull of Alaca Höyük Al. F No. I in norma verticall

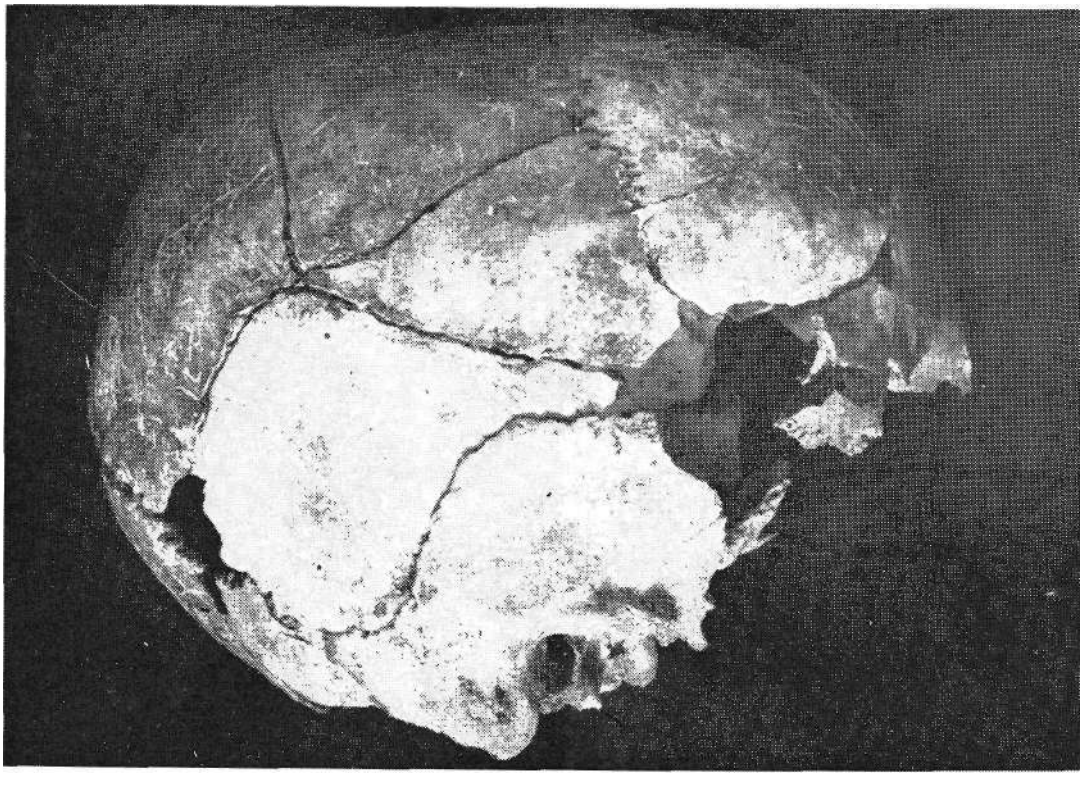


Fig. fi: The Skull of Alaca Höyük Al. F. No. I in norma laterali:
(Not on the Frankfort plane)

Fig. 7: The Skull of Alaca Höyük Al. F. No. I in norma frontalis

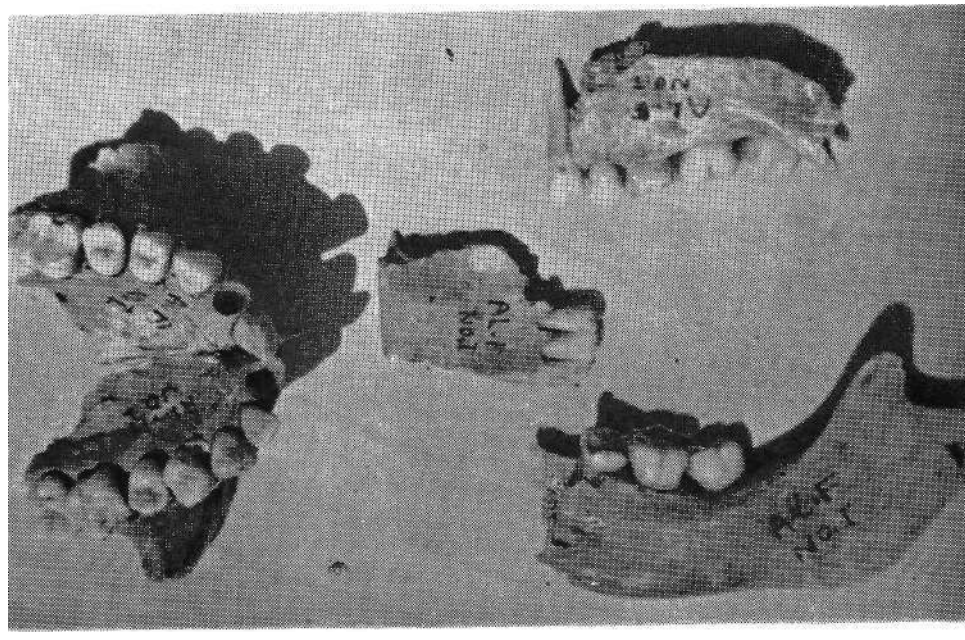
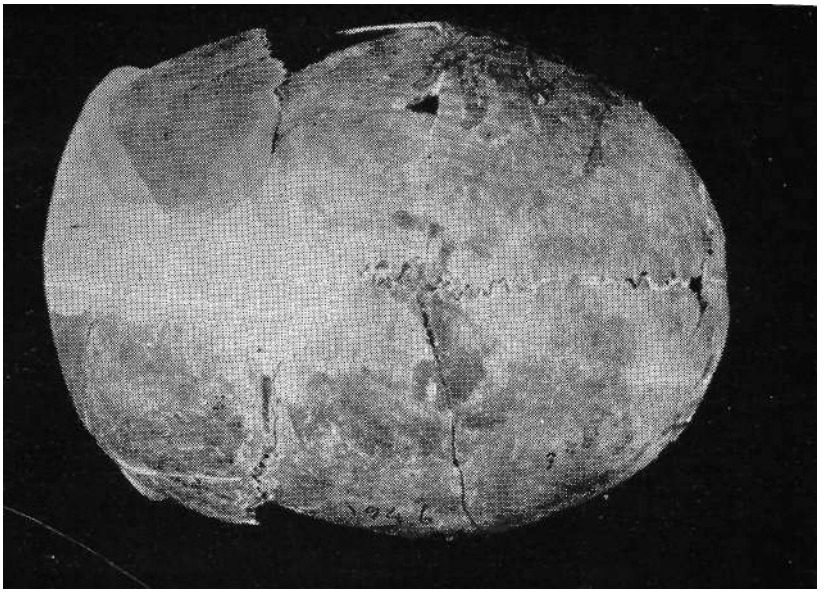


Fig. 8: The upper jaw and mandibular fragments of Alaca Höyük Al. F. No. I.



Kg. 9: The skull, found in 1946 in the Copper Age stratum, m norma verticalis.

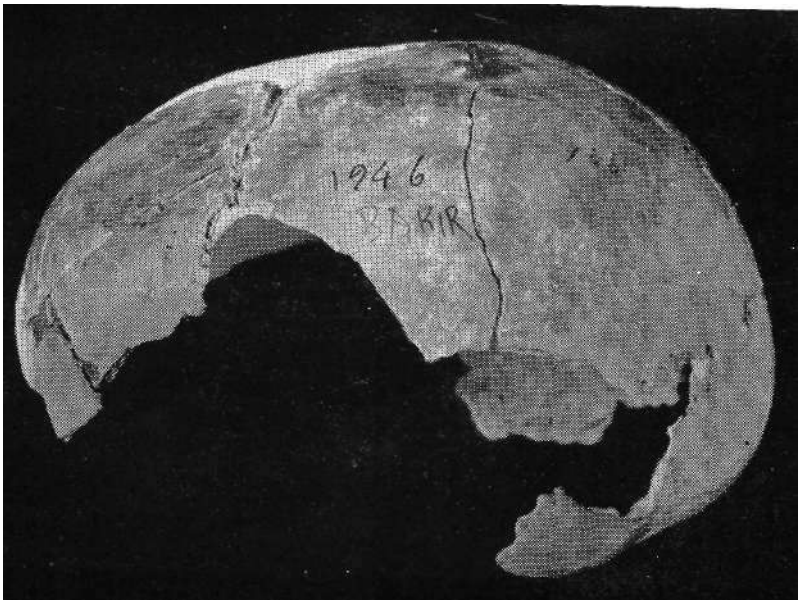


Fig. 10: The skull, found in 1946 in the Copper Age stratum, ın norma lateralis,

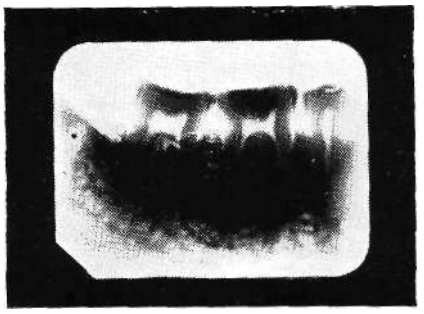


Fig. 11: The skiagram of the lower teeth of Alaca Höyük Al. H. MII (left side).

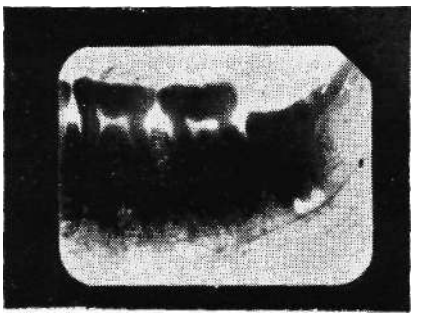


Fig. 12; The skiagranı of the lower teeth of Alaca Höyük Al. H. MII (right side).

Fig. 13: The skiagram of the lower teeth of Alaca Höyük Al. F. No. I.

TABLE: 3

Measurements of Alaca Höyük No. Al. H. MII : The Mandible

Bicondylar width	124.0? *
Bigonial width	103.0
Bimental width (Distance between the two foramina mentalia)	44.0
Condylo-symphyseal length	95-5
Height of corpus (At foramen mentale)	29.5
Thickness of corpus (At foramen mentale)	14.0 *
Symphysis length	29-5
Height of ascending ramus (From gonion to the highest point of the condyle)	55-0 *
Height of ascending ramus (projected)	48.0
Minimum breadth of ascending ramus	31.0
Mandibular index	77.01
Breadth index	83.06
Index of ascending ramus	56-36
Height-thickness index of the corpus	47-45

* - Measurements shown with an asterisk in these tables are the same as those of Kansu and Tunakan, op. cit., 1946.

TABLE: 4

Measurements of Alaca Höyük No. Al. H. MII : The Permanent Teeth

Maxillary Teeth	Length	Breadth	Height (Crown)	Robustness Value[1]	Crovvn Index[2]
P^3	6-5	8.6	—	55-90	132.30
P^4	6.4	9-1	—	58.24	142.18
M^1	10.0	11.8	—	118.00	118.00
M^2	9-1	II.2	6.6	101.92	123.07
M^3	7.6	10.9	6.0	82.24	143.42

1. Breadth x length.
   Breadth x 100
   Length.

TABLE: 5

Measurements of Alaca Höyük No. Al. H. MII : The Permanent Teeth

Mandibular Teeth	Length	Breadth	Trigonid Breadth	Talonid Breadth	Height (Crown)	Robustness Value	Crown Index	Trigonid-Talonid Index[1]
P_3	6.8	7.0	—	—	—	47.60	102.94	—
P_4	6.6	8.0	—	—	—	52.80	121.21	—
M_1	11.0	10.1	10.1	10.1	—	111.10	91.81	100.00
M_2	10.4	9.3	9.1	9.3	—	96.72	89.42	102.19

1. $\frac{\text{Talonid breadth x 100}}{\text{Trigonid breadth}}$

TABLE: 6

Measurements of Alaca Höyük No. Al. H. **MII** : The Right Femur

a. Length in natural position	403.00
b. Maximum length	407.50
c. Greatest diameter of the head	47.00
d. Antero-posterior diameter of subtrochanteric part of diaphysis	26.00
e. Breadth of subtrochanteric part of diaphysis	33-00
f. Antero-posterior diameter in the rniddle of diaphysis	24.50
g. Breadth (lateral) in the middle of diaphysis	27.00
h. Circumference in the middle of diaphysis	81.00
Index platymericus $(\frac{d \times 100}{e})$	78.78
Index pilastricus $(\frac{f \times 100}{g})$	90-74
Length-thickness index $(\frac{h \times 100}{a})$	20.09
Robusticity index $(\frac{f+g \times 100}{a})$	12-77

TABLE : 7

Measurements of Alaca Höyük No. Al. H. MII : The Right Tibia.

a. Maximum length	328.0 mm.
b. Antero-posterior diameter at the level of foramen nutricium	26.5 mm.
c. Breadth (lateral) at the level of foramen nutricium	24.0 mm.
d. Antero-posterior diameter at the middle of diaphysis	27.0 mm.
e. Breadth (lateral) at the middle of diaphysis	19.5 mm.
f. Circumference in the middle	75.0 mm.
g. Minimum circumference of diaphysis	70.0 mm.
Index cnemicus $(\frac{c \times 100}{b})$	90-56
Middle index $(\frac{e \times 100}{d})$	72.22
Length-thickness index $(\frac{g \times 100}{a})$	21.34

TABLE: 8

Measurements of Alaca Höyük Al. F. No. 1: The Calva

Glabello-occipital length	175.0 mm. *
Maximum width	130.0 mm. *
Minimum frontal diameter	95.0 mm.
Porion-bregma height	115.5 mm.
Mean thickness of parietal	4.3 mm.
Cranial index	74.28
Po-b-length index	66.00
Po-b-breadth index	88.84
Fronto-parietal index	73-07

TABLE: 9

Measurements of Alaca Höyük Al. F. No. 1 : The Maxilla

Palate-external length	49.00
Palate-external width	58.00
External palatal index	118.36

TABLE: 10

Measurements of Alaca Höyük Al. F. No. 1 : The Mandible

Thickness of corpus (At foramen mentale)	13.00
Symphysis length	30.00
Minimum breadth of ascending ramus	30.00

TABLE : 11

Measurements of Alaca Höyük Al. F. No. 1 : The Permanent Teeth

Maxillary Teeth	Length	Breadth	Height (Crovvn)	Robustness Value	Crovvn Index
P	8.6	7-1	—	61.06	82.55
I^2	6-5	6.2	—	40.30	95-38
C^1	7-5	8.1	10.4	60.75	108.00
p_3	6.9	8.8	8.0	60.03	126.08
P^4	6.9	9-1	7.6	62.79	131.88
M^1	9-9	10.9	—	107.91	110.10
M^2	9-5	11.5	7.8	109.25	121.05

TABLE : 12

Measurements of Alaca Höyük Al. F. No. 1 : The Permanent Teeth

Mandibular Teeth	Length	Breadth	Trigonid Breadth	Talonid Breadth	Height (Crown)	Robustness Value	Crown Index	Trigonid-Talonid Index
I_2	5-3	5-8	—	—	—	30.74	109.43	—
I_2	6.0	6.3	—	—	—	37.80	105.00	—
G_1	6.4	7-5	—	—	—	48.00	117.18	—
P_3	6.6	7-5	—	—	9-2	49-50	113-63	—
M_1	10.1'	9.8	9.8	9-7	—	98.98	97.02	98-97
M_2	9-8	9-4	9-4	9-2	7.6	92.12	95.91	97.87

TABLE : 13

Measurements of the Unnumbered skull Found in the Copper Age Stratum in the Excavation of 1946.

Glabello-occipital length	160.00
Maximum width	120.00
Cranial index	75.00

GÖKDERE (ELMADAĞ!) FAUNA'SINA DAİR BİR NOT

ÖN RAPOR

Dr. MUZAFFER SÜLEYMAN ŞENYÜREK

Ankara Üniversitesi Antropoloji Profesörü

Bu yıl Ankara Üniversitesi Antropoloji Bölümünün öğrenci gezilerinden ikincisinde[1] Dr. Oğuz Erol'ün 1948 yılında birkaç fosil kemik topladığı[2] Gökdere bölgesine gitmeğe ve buradaki fossilifere üçüncü zaman yatağını incelemeğe karar verdim. Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesinin temin ettiği bir otobüsle Gökdere bölgesine gittik ve burada sadece beş saat kaldık[3]. Bu arada satıhta ve açtığımız çok küçük bir çukur içinde (bu çukurun derinliği takriben 25 santimetredir) birçok fosil diş ve kemik parçası topladık.

Gökdere fossilifere mevkii Ankara'nın güney doğusunda bulunan Evciler Ağılları köyü civarındadır. Dr. Oğuz Erol'ün bu bölgenin mevkii ve jeolojisi hakkındaki yazısı bu rapora eklenmiş olduğu için, burada bu fossilifere yatağın mevkii üzerinde daha fazla durmayacağım.

Ankaraya getirdiğim fosil materyelin bir kısmının teşhisini yapmış bulunuyorum. Elde ettiğim neticeler aşağıda bildirilmiştir.

TAKIM (ORDRE) : PERISSODACTYLA

Hipparion gracile KAUP

Hipparion gracile (Kaup sp.) muhtelif yaşlardaki hayvanlara ait 70 diş tarafından temsil edilmektedir. Bu dişlerin bir kısmı resim 2 ve 3'de gösterilmiştir. Ayrıca bu cinse ait bazı etraf kemikleri de mevcuttur (Resim 3 ve 7 A, B, C).

[1] Birinci gezi Gâvurkalesi ve Haymana bölgesinde yapılmıştır.

[2] Dr. Oğuz Erol 1948 yılında doktora tezini hazırladığı sırada bu mevkide bir boynuz parçası ile bir astragalus ve bir pha!anx bulmuş ve bunları eski talebem Bay Fikret Ozansoy'a göstermiştir. Ozansoy boynuz parçasını *Oioceros rothi* Wagner'e ve iki kemiği de Hipparion cinsine atfetmiştir (Bak : Erol, O., 1949). 1943'de bulunmuş olan materyel resim 7'de (B, C ve D) gösterilmiştir. Bunlara ilâveten, Dr. Oğuz Erol 1948 yılında bir kısmı kırık ikinci bir astragalus bulmuştur. Bu gezi esnasında buna müşabih fakat çok daha büyük başka bir astragalus parçası bulduk. Bu iki astragalus henüz daha teşhis edilememiştir.

[3] Bu geziye Dr. M. S. Şenyürek, Bayan E. Şenyürek, Dr. S. Tunakan, Dr. H. İnalcık, Dr. M. Özerdim, Dr. O. Erol, Dr. Ş. İnalcık, Dr. H. Özçörekçi, Dr. î. Işıklar, Bay O. Aydın, Bayan M. Silemek, Bayan R. Çiner, Bayan P. Bayan ve Bayan B. Gürer iştirak etmişlerdir. Bu münasebetle bu gezi için bir otobüs temin eden Ankara Üniversitesi Dil ve Tarih—Coğrafya Fakültesi Dekanlığına teşekkür etmek isterim,.

TAKIM (ORDRE) : ARTIODACTYLA

Gazella sp.

Gazella cinsi dördü kaide kısmına ve biri de uç kısmına ait olmak üzere beş boynuz parçası tarafından temsil edilmektedir. Kaide kısımları muhafaza edilen dört boynuz resim 4'de gösterilmiştir. Kesitleri ellipse şeklinde olan bu boynuzların üzerinde oldukça derin tulâni yivler müşahade edilmektedir. Boynuzlar arkaya doğru hafif bir kavis çizmektedir (resim 4). Kaide kısımları gibi, uç kısmına ait parça da önden bakıldığı zaman düzdür. Fakat yandan bakıldığı zaman bunun da arkaya doğru hafif bir kavis çizdiği görülmektedir. Bu boynuzların kaide kısımlarının maksimum ön-arka ve transverse kuturları aşağıda gösterilmiştir.

	Ön-Arka Kutur	Transverse Kutur
Gökdere No. 1	23.0 mm.	17.5 mm.
Gökdere No. 2	24.0 mm.	18.0 mm.
Gökdere No. 3	22.5 mm.	18.0 mm.
Gökdere No. 4	23.0 mm.	18.0 mm.
Ortalama:	23.12 mm.	17.87 mm.

Arambourg ve Piveteau Selanik civarında Pontien tabakalar içinde bulunmuş olan *Gazella gaudryi* Schlosser ve *Gazella bailloudi* Arambourg ve Piveteau boynuzları için aşağıdaki ölçüleri vermektedirler[4] :

	Ön-Arka Kutur	Transverse Kutur
Gazella gaudryi Schlosser	25.0 mm.	20.0 mm.
Gazella bailloudi Arambourg ve Piveteau	27.0 mm.	23.0 mm.

Gökdere'de bulunan boynuzların ölçüleri, biraz daha küçük ve nisbeten daha dar olmakla beraber, Selanik Pontien'inde bulunan *Gazella gaudryi* Schlosser'in ölçülerine yaklaşmaktadır. Keza bu boynuzların şekli, ellipse şeklinde olan kesitleri ve üzerlerinde görülen derin yivler daha ziyade *Gazella gaudryi* Schlosser'in boynuzlarını hatırlatmaktadır[5]. Fakat, buna rağmen, mevcut boynuzların kırık olması, bunların temsil ettiği türün kesin olarak tesbit edilmesini güçleştirmektedir. Bu boynuz parçalarının ait oldukları türün kesin olarak tayini için, sağlam boynuzlara ve kafataslarına ihtiyaç vardır.

[4] Arambourg ve Piveteau, 1929, s. 102 ve 105.

[5] *Gazella deptrdita* ve *Gazella gaudryi* boynuzları için bak : Mecquenem, 1925, s. 2—3 ve Arambourg ve Piveteau, 1929, s. 99—100 ve 101—103.

Oioceros rothi WAGNER

Oioceros rothi Wagner Dr. Oğuz Erol'ün 1948'de bulduğu boynuz parçası ile (resim 7D), bu gezi esnasında bulunan ikinci bir boynuz parçası (resim 5 ve 6) tarafından temsil edilmektedir[6]. Her iki parça da boynuzun kaide kısmına aittir. Kesitleri oval biçiminde olan bu boynuzlar *Oioceros rothi* Wagner'in karakteristiği olan torsion'u göstermektedir. Bu boynuzların kaide kısımlarında Ölçtüğüm maksimum ön-arka ve transverse kuturlar aşağıda gösterilmiştir :

	Ön-Arka Kutur	Transverse Kutur
1948'de bulunan numune	32.0 mm.	25.0 mm.
1951'de bulunan numune	33.0 mm.	26.0 mm.

DİĞER CİNSLER

Yukarıda saydığımız cinslere ilâveten, henüz daha tayin edilememiş bir iki omur parçası, birisi 1948'de bulunmuş olan iki astragalus, bir Carnivore'a ait yarım bir diş (resim 8) ve çok büyük bir hayvan veya hayvanların (Proboscidea ?) etraf kemiklerine ait üç parça mevcuttur. Bu sonunculardan biri nisbeten iyi muhafaza edilmiş büyük bir astragalus'dür.

NETİCE

Gökdere'de fosilleri ihtiva eden yatak Pontien çağa[7], yani Alt Pliocene'e[8] aittir. Bu yeni araştırma Ozansoy'un[9] burada Hipparion fauna'sı bulunduğu hakkındaki ifadesini teyid etmektedir. Gökdere fauna'sı ayni zamanda Ayaş civarında İlhançayı'nda[10] ve Küçükyozgat civarında (Elmadağ)[11], bulunan fauna'ya müşabih ve bunlarla yaşıttır[12]

Gökdere Pontien fauna'sı üzerinde daha etraflı bir rapor, bu bölgede yapmak niyetinde olduğum kazılardan sonra yayımlanacaktır[13].

[8] Ayrıca uç kısmına ait küçük bir boynuz parçasının da bu türe ait olması muhtemeldir.

[7] Karakteristik Pontien fosilleri için bak : Mecquenem, 1924—1925 ; Zıttel, 1925, s. 155 ve 209—210 ; Arambourg ve Piveteau, 1929 ; Boule ve Piveteau, 1935,s.654—655, 719 ve 723 ; Romer, 1946, s. 567.

[8] Zittel (1925, s, 300), Lewis (1937, s. 194) ve Romer (.1946, tablo 4) Pontien'i Alt Pliocene'e atfetmektedirler.

[9] Bak : Ozansoy, 1951, s. 150. Ozansoy (1951) Türkiye'de bulunan bütün Hipparion fauna'larmı, doğru olarak, Pontien'e atfetmektedir.

[10] Bak : Kansu, 1937, s. 482.

[11] Bak : Tschachtli, 1942, s. 324.

[12] Kansu (1937, s. 485) Bâlâ ilçesinde Karakeçili civarında da Hipparion dişleri bulunduğunu bildirmektedir.

[13] Yukandaki rapor yazıldıktan sonra Bayan E. Şenyürek ile birlikte Gökdere bölgesine yaptığını ikinci bir ziyarette *Hihpurion grazile'e* ait dişler, bazı etraf kemikleri ve Suidae'ye ait bir azı dişi bulduk. Kazdığımız küçük bir çukur içinde bulunan bu sağ alt büyük azı dişi *Sus erymanthius* Roth ve Wagner'e aittir. Böylece, Gökdere faunası içinde şimdiye kadar teşhis edilebilen cinslerin (genera) sayısı dörde çıkmıştır.

EK

ELMADAĞI - EVCİLER AĞILLARI MEMELİ FOSİL YATAĞI

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Fosillerin bulunduğu yer Gökdere'nin, Elmadağının eski sert külteleri içinde açtığı dar vadiden çıktığı noktadaki söğütlüğün 200 metre kadar batısında ve Evciler Ağılları köyünün 1 kilometre kadar doğusundadır. Ankara-Bâlâ şosesini takip etmek ve 49'uncu kilometrede araba yoluna dönmek suretiyle gidildiği takdirde Evciler Ağılları köyü Ankara'nın takriben 60 kilometre güney doğusundadır.

Evciler Ağılları, Elmadağı yamaçları ile dağın güney doğusu boyunca uzanan Balaban ovası düzlüklerinin intikal hattı üzerindedir. Elmadağın daha eski külteleri burada Balaban ovasının Miosen-Pliosen dolgularının altından çıkarak dağın yamaçlarını teşkile başlarlar.

Balaban ovasının dolguları üstte çakıl, kum vesaireden müteşekkildir. Daha altta bulunan göl kalkerleri, marn vesaire ancak ovanın kenarlarında yükselen daha eski temelle birlikte meydana çıkar. Bu alt serinin fossilifere kısmı Evciler Ağılları ile bunun doğusundaki Gökdere arasında, nümülitli Lutetien kalker ve konglomeralardan müteşekkil tepelere yaslanmış bir şekilde bulunmaktadır. Fosilli seri ile kuzey batısındaki Lutetien serisi arasındaki temas sathı oldukça dik meyillidir. Görünüşe göre burada bir fay mevcuttur.

Kaba göl kalkerleri, marn ve esmer killerden müteşekkil serinin yatımları bu temas hattında oldukça diktir. Fakat buradan uzaklaştıkça yatım azalır ve 200—300 metre kadar güney doğuda seri ovanın çakıl ve kumdan müteşekkil üst serisi altında kaybolmaya başlar.

BİBLİOGRAFYA

Andree, J. : Neue Cavicornier aus dem Pliozân von Samos. Palaeontographica, cilt LXVII, 1926.

Arambourg, C. et Piveteau, J. : Les vertebres du Pontien de Salonique. Annales de Paleontologie, cilt XVIII, 1929. s. 59—138.

Boule, M. et Piveteau, J. : Les fossiles. Elements de paleontologie. Paris, 1935-

Chaput, E. et Nafiz, H. : Nouvelles observations sur les terrains Neogenes de l'ouest d'Istanbul. İstanbul Üniversitesi Geologie Enstitüsü neş-

riyatından (Publications del'Institut de Geologie de l'Universite de Stamboul), sayı 9. İstanbul, 1934.

Davies, A. M. : Tertiary Faunas, iki cilt. London, 1934—1935.

Erol, O. : Ankara güneydoğusundaki Elma dağı ve çevresinin jeoloji ve jeomorfolojisi üzerinde bir araştırma. Ankara, 1949. (Doktora tezi. Henüz daha yayımlanmamıştır).

İzbırak, R. ve Yalçınlar, I. : Kayserinin Kuzeyinde üst Miosene ait omurgalılar (Les vertebres du Miocene superieur au nord de Kayseri). Türkiye Jeoloji Kuruntu Bülteni (Bulletin of the Geological Society of Turkey), cilt III, sayı 1, 1951. s. 153—154 ve 155—157.

Kansu, Ş. A. : 1936 yılında Ankara ve yakınlarında meydana çıkarılan paleontolojik ve prehistorik vesikalar hakkında ilk bir not. Ülkü, cilt VIII, sayı 48. Ankara, 1937. s. 482—488.

Lewis, G. E. : A new Siwalik Correlation. American Journal of Science, cilt XXXIII, 1937. s. 191—204.

Malik, A. ve Nafiz, H. : Küçükçekmece fosil fıkralı hayvanlar mecmuası (Vertebres fossiles de Küçükçekmece). İstanbul Darülfününu Geologie Enstitüsü neşriyatından (Publication de I'Institut de Geologie de l'Universite de İstanbul), No. 8. İstanbul, 1933.

Mecquenem, R. De : Contribution a l'etude des fossiles de Maragha. Annales de Paleontologie, cilt XIII (1924), s. 135—160 ve cilt XIV (1925), s. 1—34.

Ozansoy, F. : Preliminary report on a Pontian mammalian fauna from Muğla. Türkiye Jeoloji Kurumu Bülteni (Bulletin of the Geological Society of Turkey), cilt III, sayı 1, 1951. s. 147—151.

Romer, A. S. : Vertebrate paleontology. Chicaco, 1946.

Teilhard de Chardin, P. and Young, C. C. : Fossil mammals from the late Cenozoic of Northern China. Palaeontologia Sinica, seri C, cilt IX, fasikül 1. Peiping, 1931..

Tschachtli, B. C. : Küçük Yozgat civarında bulunan memeli hayvanat fosilleri (Fossile saeugetiere aus der Gegend von Küçükyozgat. östlich Ankara). M. T. A., sayı 2/27. Ankara, 1942. s. 322—324 ve 325—327.

Yalçınlar, I. : Eşme civarında Miosen'e ait bir omurgalılar fauna'sı (Une faune de vertebres miocenes aux environs d'Eşme), İstanbul Üniversitesi Fen Fakültesi Mecmuası (Revue de la Faculte des Sciences de l'Universite d'Istanbul), seri B, cilt XI, sayı 2, 1946. s. 124—130.

Yalçınlar, I. : Yukarı-Gediz vadisinde Miosen'e ait vertebre fosilleri (Les vertebres fossiles du Miocene dans la vallee du Gediz-Superieur). Türkiye Jeoloji Kurumu Bülteni (Bulletin of the Geological Society of Turkey), cilt I, sayı 1, 1947. s. 164—177.

Zittel, von K. A. (Revised by A. S. Woodward) : Text-book of palaeontology. Cilt III. London, 1925.

A NOTE ON GÖKDERE (ELMADAĞI) FAUNA

PRELIMINARY REPORT

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This year I decided to make the second[1] field trip of the Department of Anthropology of the University of Ankara to the region of the rivulet Gökdere vvhereDr. Oğuz Erol had, in 1948, collected some fossil bones[2], and to study the fossiliferous tertiary deposit at this place. We went to the region of Gökdere, with a bus provided by the Faculty of Languâge, History and Geography, of the University of Ankara, and remained there for only f ive hours [3]. During this brief visit we collected many fossil teeth and bones on the surface and in a very small pit (with a depth of about 25 cm.) which we dug ourselves.

The fossiliferous deposit of Gökdere is in the vicinity of the village of Evciler Ağılları, southeast of Ankara. As Dr. Oğuz Erol's note regarding the location and geology of this place is appended to this paper, I will not dwell further on the location of the place.

I have diagnosed a part of the fossil material I brought to Ankara and the results I have obtained are given below.

ORDER PERISSODACTYLA

Hipparion gracile KAUP

Hipparion gracile (Kaup sp.) is represented by 70 teeth belonging to animals of various ages. A part of these teeth are shown in Figs. 2 and 3. In addition, there are some extremity bones belonging to this species Figs. 3 and 7, A, B, C).

[1] The first field trip was made to the region of Gâvurkale.ü and Haymana.

[2] In 1948 Dr. Oğuz Erol, while preparing his doctorate dissertation had foıaıd at this place a horn--core fragment, an astragalus and a phalanx and had shown them to my former student, Mr. Fikret Ozansoy. Ozansoy has attributed the horn-core fragment to *Oioceros rothi* YVagner and the tvvo fossil bones to the genus Hipparion. (See Oğuz Erol, 1949). The material collected in 1948 is shown in Fig. 7 (B, C, ü). In additioıı to these Dr. Erol had found in 1948 a second astragalus, a part of which is broken. During this trip we found another fragment of a similar but ruıch larger astragalus. These tvvo astragali have not yet been diagnosed.

[3] Dr. M. S. Şenyürek, Mrs. E. Şenyürek, Dr. S. Tunakau, Dr, H. înalak, Dr. M. Özerdim, Dr. O. Erol, Dr. Ş. İnalcık, Dr. *H.* Özçörekçi, Dr. î. Tşıklar, Mr. O. Aydın, Miss M. Silemek; Miss R. Çiner, Miss P. Bayan and Miss B. Gürer have participated in this ield trip. At this time I wish to extend my thanks tc the office of the Dean of the Faculty of Languâge, History and Geography of the University of Ankara for providing a bus for this trip.

ORDER ARTIODACTYLA

Gazella sp.

The genus *Gazella* is represented by five horn-core fragments. Of these four are from the basal part and one from the apical part of horn-cores. The four horn-cores, of which the basal parts have been preserved are shovra in Fig. 4. On these horn-cores, with an elliptical cross-section, are observed considerably deep longitudinal furrows. The horn-cores are gently curved backward (Fig. 4). Like the basal fragments, the apical part also is straight when viewed from the front. But when seen from the side this too is seen to be slightly arched backvvard. The maximum antero-posterior and transverse diameters of the basal parts of these horn-cores are as follows :

	Antero-posterior Diameter	Transverse Diameter
Gökdere No. 1	23.00 mm.	17.50 mm.
Gökdere No. 2	24.00 mm.	18.00 mm.
Gökdere No. 3	22.50 mm.	18.00 mm.
Gökdere No. 4	23.00 mm.	18.00 mm.
AVERAGE :	23.12 mm.	17.87 mm.

Arambourg and Piveteau give the following measurements for the horn-cores of *Gazella gaudryi* Schlosser and *Gazella bailloudi* Arambourg and Piveteau from the Pontian of Salonica[4]:

	Antero-posterior Diameter	Transverse Diameter
Gazella gaudryi Schlosser	25.00 mm.	20.00 mm.
Gazella bailloudi Arambourg and Piveteau	27.00 mm.	23.00 mm.

The measurements of the horn-cores from Gökdere, although a bit smaller and relatively narrower, approach those of *Gazella gaudryi* Schlosser from the Pontian of Salonica region. The form of these horn-cores, their elliptical corss-sections and the deep grooves seen on their surfaces also recall those of *Gazella gaudryi* Schlosser[5]. But the fragmentary condition of the available horn-cores makes it difficult to determine with certainty the species represented. Intact horn-cores and skulls are needed for a def inite determination of the species to which these horn-core fragments belong.

[4] Arambourg and Piveteau, 19S9, pp. 102 and 105.

[5] For the horn - cores of *Gazella deperdita* and *Gazella gaudryi* see : Mecquenem, 1925, pp. 2-3 and Arambourg and Piveteau, 1929, pp. 99-100 and 101 - 103.

Oioceros rothi WAGNER

Oioceros rothi Wagner is represented [6] by the horn-core fragment found by Dr. Oğuz Erol in 1948 (Fig. 7 D) and by a second fragment (Figs. 5 and 6) collected during this new trip. Both fragments belong to the basal part of the horn-cores. These horn-cores, with oval cross-sections, show the torsion characteristic of *Oioceros rothi* Wagner. The maximum antero-posterior and transverse diameters I measured at the basal part of these horn-cores are as follows :

	Antero-posterior Diameter	Transverse Diameter
Specimen found in 1948	32.00 mm.	25.00 mm.
Specimen found in 1951	33-oo mm.	26.00 mm.

OTHER FORMS

In addition to the genera listed above, there are available, but stili not yet determined, a couple of vertebrae fragments, two astragali of which one was found in 1948, half a tooth of a carnivore (Fig. 8), and three pieces from the extremity bones of a large animal or animals (Proboscidea ?). One of the latter is a relatively well-preserved astragalus.

CONCLUSION

The fossiliferous deposit at Gökdere is of Pontian Age[7], that is Lower Pliocene[8]. This new study confirms Ozansoy's statement[9] that there is a Hipparion fauna here. At the same time the Gökdere fauna is similar to and contemporary with the faunas from îlhançayı[10], near Ayaş, and from Küçükyozgat[11] (Elmadağ)[12].

A fuller report on the Pontian fauna of Gökdere will be published after the excavations I intend to make in this region[13].

[6] it İG probable that a small apical fragment of a horu - core also belongs to this species.

[7] For the characteristic Pontian fossils see : Mecquenem, 1924-1925; Zittel, 1925, pp. 155 and 209-210; Arambourg and Piveteau, 1929 ; Boule and Piveteau, i935> PP- 654-655, 719 and 723 ; Romer, 1946, p. 567.

[8] Zittel (1925, p. 300), Lewis (1937, p. 194) and Romer (1946, Table 4) attribute the Pontian to the Lower Pliocene.

[9] See Ozansoy, 1951, p. 150. Ozansoy (1951) correctly attributes ali the Hipparion faunas of Turkey to the Pontian.

[10] See Kansu, 1937, p. 482.

[11] See Tschachtli, 1942, pp. 326-327.

[12] Kansu (1937, p. 485) also states that Hipparion teeth have been found in the vicinity of Karakeçili, in the District of Bâlâ.

[13] In a second visit which I made with Mrs. Şenyürek to the region of Gökdere, after the above report was vvritten, we found teeth and some extremity bones of *Hipparion gracile* and a molar tooth belonging to Suidae. This right lower molar, found in a pit vvhich we dug, belongs to *Sus erymanthius* Rotlı and VVagner. Thus the number of genera determined so far in the Gökdere fauna has risen to four.

APPENDIX

THE MAMMALIAN FOSSIL BED OF ELMADAĞI - EVCİLER AĞILLARI

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The place where the fossils were discovered is about 200 meters west of the willow grove at the point where the Gökdere stream leaves the narrow valley it has dug in the hard rocks of Elmadağı and about one kilometer to the east of the village of Evciler Ağıllan. If one goes by following the Ankara-Bâlâ highway and turns off the highway onto a cart road at the 49th kilometer, the village of Evciler Ağılları is about 60 kilometers southeast of Ankara.

The village of Evciler Ağılları is on the line ofjunction of the slopes of Elmadağı mountain with the plain of Balaban Ovası (Balaban plain), stretching southeast of this mountain. At this place, the older rocks of Elmadağı emerge from under the Miocene-Pliocene deposits of Balaban ovası and begin to form the slopes of Elmadağı mountain.

The upper part of the deposits of Balaban ovası consist of gravels, sand, ete. The deeper lying lacustrine limestones, marls, ete, outcrop only with the older foundation rising on the edges of the plain. Between the village of Evciler Ağılları and Gökdere stream, the fossiliferous part of this lower series is found leaning against the hills made of nummulitic limestone and conglomerates of Lutetian Age. The surface of junction betvveen the fossiliferous series and the Lutetian series northwest to it is considerably steep. There seems to be a fault at this place.

The dips of this series, composed of coarse lacustrine limestone, marl and brown elays, are quite steep at this line of contact. But as one goes further away the dip decreases and at about 200—300 meters southwest this series begins to disappear under the upper series of the plain consisting of gravels and sands.

LİTERATÜRE

Andree, J. : Neue Cavicornier aus dem Pliozân von Samos. Palaeontographica, vol. **LXVII,** 1926.

Arambourg, C. and Piveteau, J. : Les vertebres du Pontien de Salonique. Annales de Paleontologie, vol. **XVIII,** 1929. pp. 59—138.

Boule, M. and Piveteau, J. : Les fossiles. Elements de paleontologie. Paris, 1935-

Chaput, E. and Nafiz, H. : Nouvelles observations sur les terrains Neogenes de l'ouest d'Istanbul. İstanbul Üniversitesi Geologie Enstitüsü neşriyatından (Publications de l'Institut de Geologie de l'Universite' de Stamboul), No. 9. İstanbul, 1934.

Davies, A. M. : Tertiary faunas, 2 volumes. London, 1934—1935.

Erol, O. : Ankara güneydoğusundaki Elma dağı ve çevresinin jeoloji ve jeomorfolojisi üzerinde bir araştırma. Ankara, 1949 (Doctorate dissertation. Not yet published).

îzbırak, R. and Yalçınlar, I. : Kayserinin kuzeyinde üst Miosene ait omurgalılar (Les vertebres du Miocene superieur au nord de Kayseri). Türkiye Jeoloji Kurumu Bülteni (Bulletin of the Geological Society of Turkey), vol. III, No. 1, 1951. pp. 153—154 and 155—157.

Kansu, Ş. A. : 1936 yılında Ankara ve yakınlarında meydana çıkarılan paleontolojik ve prehistorik vesikalar hakkında ilk bir not. Ülkü, vol. VIII, No. 48. Ankara, 1937. pp. 482—488.

Lewis, G. E. : A new Siwalik correlation. American Journal of Science, vol. XXXIII, 1937. pp. 191—204.

Malik, A. and Nafiz, H. : Küçükçekmece fosil fıkralı hayvanlar mecmuası (Vertebres fossiles de Küçükçekmece). İstanbul Darülfününu Geologie Enstitüsü neşriyatından (Publication de l'Institut de Geologie de l'Universite de istanbul),' No. 8. istanbul, 1933.

Mecquenem, R. De : Contribution a l'etude des fossiles de Maragha. Annales de Paleontologie, vol. XIII (1924), pp. 135—160 and vol. XIV (1925), pp. 1—34.

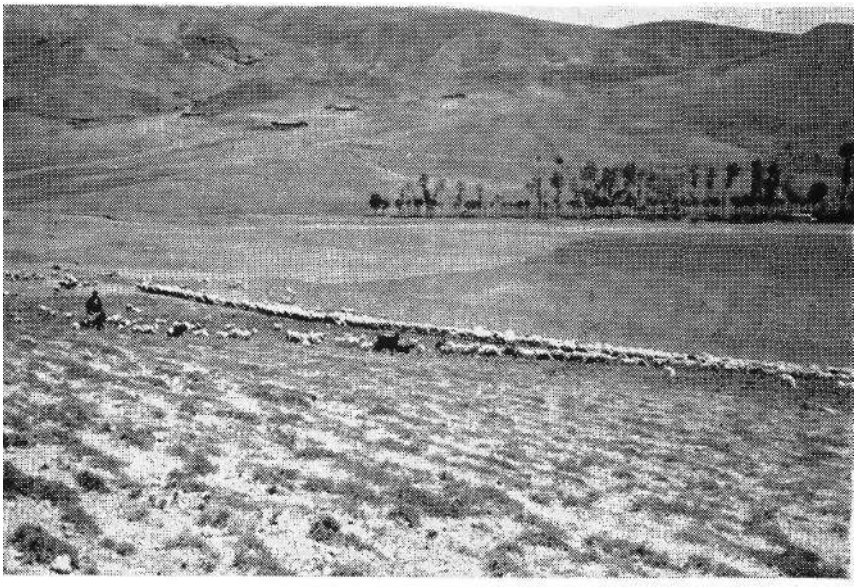
Ozansoy, F. : Preliminary report on a Pontian mammalian fauna from Muğla. Türkiye Jeoloji Kurumu Bülteni (Bulletin of the Geological Society of Turkey), vol. III, No. 1, 1951. pp. 147—151.

Romer, A. S. : Vertebrate paleontology. Chicago, 1946.

Teilhard de Chardin, P. and Young, C. C. : Fossil mammals from the late Cenozoic of Northern China. Palaeontologia Sinica, Series C, Vol. IX, Fascicle 1. Peiping, 1931.

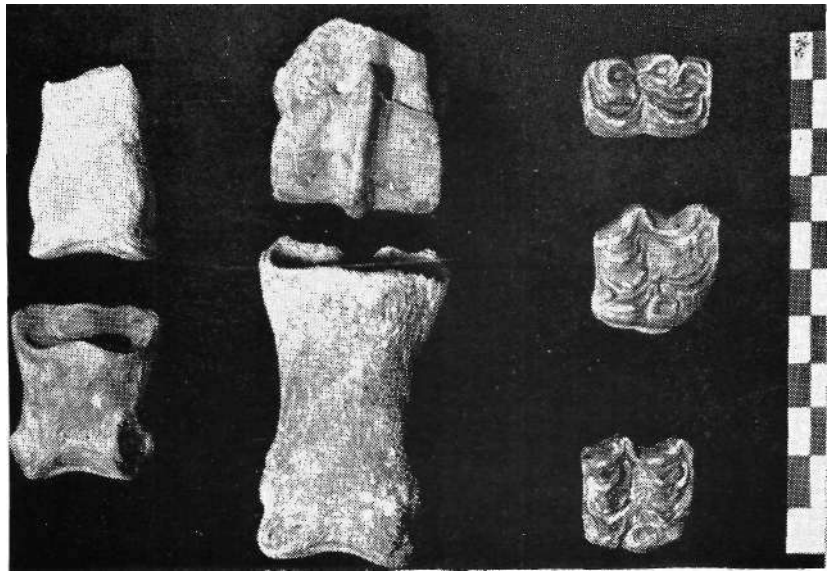
Tschachtli, B. C. : Küçük Yozgat civarında bulunan memeli hayvanat fosilleri (Fossile saeugetiere aus der Gegend von Küçükyozgat. Östlich Ankara). M. T. A., No. 2/27, Ankara, 1942. pp. 322—324 and 325—327-

Yalçınlar, İ. : Eşme civarında Miosen'e ait bir omurgalılar fauna'sı (Une faune de vertebres miocenes aux environs d'Eşme). İstanbul Üniversitesi Fen Fakültesi Mecmuası (Revue de la Faculte des Sciences de l'Universite d'Istanbul), series B, vol. XI, fascicle 2, 1946. pp. 124—130.



Resim 1: Fosillerin bulunduğu yerden Gökdere'ye bakış.
Fig. 1: View of Gökdere from the place where the fossils were found

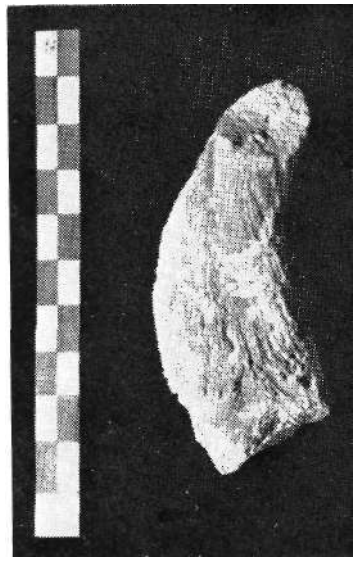
Resim 2: Hipparion gracile Kaup. Dişler.
Eig. 2: Hipparion gracile Kaup. The teeth.



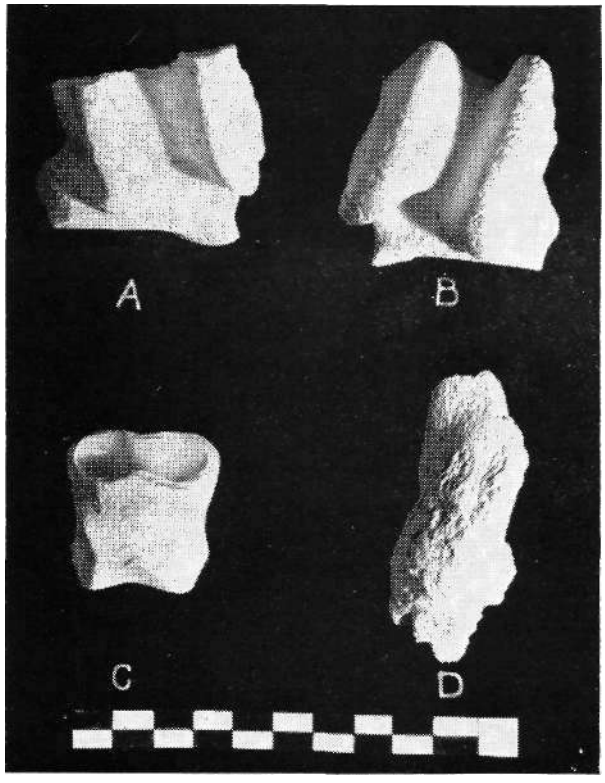
Resim 3: Hipparion graeile Kaup. Etraf kemikleri ve dişler.
Fig. 3: Hipparion graeile Kaup. Extremity bones and teeth.

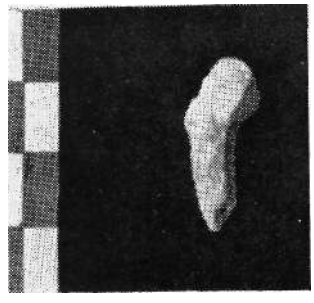
Resini 4: Gazella sp. Boynuzların yandan görünüşü.
Fig. 4: Gazella sp. Horn-cores seen from the side.

Resim 5: Oioceros rothi Wagner. Boynuz parçasının önden görünüşü.
Fig. 5: Oioceros rothi Wagner. The fragment of horn-core seen from the front.



Resim 6: Oioceros rothi Wagner. Boynuz parçasının yandan görünüşü.
Fig. 6: Oioceros rothi Wagner. The fragment of horn-core seen from the side.





Resim 8: Bir Carnivor'a ait yarım bir diş.
Fig. 8: Half a tooth of a Carnivore.

Resim 7: (A) Hipparion gracile Kaup, 1951 de bulunan aslragalus.
(B) Hipparion gracile Kaup, 1948 de bulunan astragalus.
(C) Hipparion gracile Kaup, 1948 de bulunan phalanx.
(D) Oioceros rothi Wagner, 1948 de bulunan boynuz parçasının önden görünüşü.

Fig. 7: (A) Hipparion gracile Kaup, Astragalus found in 1951.
(B) Hipparion gracile Kaup, Astragalus found in 1948.
(C) Hipparion gracile Kaup, phalanx found in 1948.
(D) Oioceros rothi Wagner, fragment ,of horn-core found in 1948 seen from the front.

Yalçınlar, I. : Yukarı-Gediz vadisinde Miosen'e ait vertebre fosilleri (Les vertebres fossiles du Miocene dans la vallee du Gediz-superieur). Türkiye Jeoloji Kurumu Bülteni (Bulletin of the Geological Society of Turkey), vol. I, No. 1, 1947. pp. 164—177.

Zittel, von K. A. (Revised by A. S. Woodward) : Text-book of palaeontology. Vol. III. London, 1925.