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Anchitherium from the middle Miocene hominoid locality of Çandır (Turkey).

1 plate

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Abstract.- There is only one species of *Anchitherium* at Çandır. It is slightly larger than the most common species from İnönü 1, but the larger species present in this latter site is lacking at Çandır. Thus, although the few morphological differences with other Turkish Middle Miocene populations are of unknown polarity, this suggests that Çandır is earlier than the late Middle Miocene.

Key-words.- Middle Miocene, Turkey, Equidae, *Anchitherium*

Introduction

Anchitherium is not a common component of the Çandır fauna. This is often the case in other Middle Miocene faunas, and is usually explained by the fact that *Anchitherium* was a forest dweller, living in small groups rather than in herds like most equids. At Çandır, there

are only a few more or less complete tooth-rows, and some isolated teeth and fragmentary limb-bones. All ontogenic ages are represented and the few available specimens do not suggest a bias towards juvenile or senile individuals.

Material and Methods

Most of the material is housed in the MTA Museum, Ankara; other specimens are in the Department of Anthropology, Dil ve Tarih Coğrafya Fakültesi, Ankara, and in the Izmir Museum. However we could not locate the maxilla illustrated by ATALAY (1981). Other notices on the Çandır material can be found in SONDAAR & STAESCHE (1976), and FORSTÉN (1991), but a systematic description has never been provided. Uppercase letters are for upper teeth, lowercase is for lower teeth.

Systematic description

Anchitherium MEYER, 1844

Anchitherium aurelianense (CUVIER, 1834)

Anchitherium aurelianense hippoides (LARTET, 1851)

We follow FORSTÉN (1991) in referring the Çandır *Anchitherium* to this subspecies.

Teeth

It is well known that the dentition of *Anchitherium* provides little morphological clues for its phylogeny and taxonomic distinctions, being almost identical throughout the late Early and Middle Miocene. We compared the Çandır *Anchitherium* with that of other Miocene Turkish localities, and with that of Sansan. Morphological differences can be sought, on upper teeth, in the connection of the transverse loph to the ectoloph, frequency of the crochet, shape

of external wall, shape of hypostyle, expression of cingulum, and development of the third lobe of m3. All these features seem to be rather variable, even within a single site.

On the whole, the cingulum is better expressed at Sansan than at Çandır (or İnönü 1). None of the teeth from Çandır or İnönü 1 has a crochet, but there are too few specimens to imply that this is a difference with Sansan, where it sometimes occurs. On the P2 from Çandır, in early wear, the protoloph and metaloph are connected to the ectoloph. On the P2 from İnönü the protoloph and metaloph are not connected to the ectoloph, and it might seem more primitive by this character. However, according to Forstén (1990 : 474), it is not certain that this state is primitive. Her opinion is confirmed by the fact that a P2 from Alcitepe - Nebisuyu, of late Miocene age (KAYA, 1989) and of very large size, also has the transverse lophs unconnected to the ectoloph. This is also the case at Wissberg, an early Upper Miocene site of Germany (WEHRLI, 1938). Thus, this character is probably derived, or at least variable. Connection of the transverse lophs to the ectoloph may be parallel to the transverse extension of the hypostyle, greater at Sansan and Çandır than at İnönü 1.

At Çandır, the third lobe is present on two isolated unnumbered m3s (probably from the same individual) as it is on some m3s from İnönü, but there is also a mandible from this latter site which has no hypoconulid on m3. Lack of hypoconulid on m3 is therefore more likely to be individually variable than reflective of an evolutionary trend.

Measurements of the most complete tooth-rows (AKI stands for Ankara-Kazan-Inönü)

Upper teeth

	P2-P4	P2-M2
ACH-186	65.0	105.2
AKI 3/13	60.6	97.6
Sansan	59-64.5	

Lower teeth

	dp2-dp4	p2-p4	p3-m2	m1-m3	p2-m3
CA 93-1A/73	71				
ACH-1988	67				
Candır (Izmir) *		61	80		
2419 (Inönü)		53.5	69	54.2	108.2
2418 (AKI 3/12)		56.2	73	53.1	107
AKI 3/770		55.1	69.7	53	108.8
Esmе-Akçaköy (cast)		77		83	

* right counterpart of ACH-187 (2415)

Thus, the *Anchitherium aurelianense* of Çandır is larger than that of Inönü 1.

Furthermore, among the few isolated teeth, CA1207, an upper P3 to M2, is larger than any of the teeth in toothrows (basal labial length = 23.1; ant. W = 26.3).

At Inönü there is also, as mentioned by FORSTÉN (1991), a larger species (represented by a single specimen, AKI 3/375, a mandible with p4-m2, the length of which is 73.5) approaching in size that of the Upper Miocene forms, from Alcitepe-Nebisuyu or Esmе-Akçaköy. The biochronological implications of *Anchitherium* for the relative position of Çandır and Inönü 1 are therefore ambiguous, but since no large *Anchitherium* is known in Eurasia before the late Middle Miocene, we believe that this genus rather speaks in favor of a more recent age for Inönü.

Postcrania

There are two astragali of *Anchitherium*, of which one is well preserved, in the MTA, and another specimen that was mentioned by SONDAAR & STAESCHE (1976). On the plantar

side, both calcaneal facets are separated on the MTA specimen, while they are in contact on the specimen described by SONDAR & STAESCHE, as well as on the specimen from the Vallesian of Soblay (SONDAAR 1971). However, again, this feature is variable at Tung Gur (COLBERT 1939) and Steinheim (WEHRLI 1938). Overall size is similar to that of Sansan (see measurements), but the proportions are different, the bone being clearly broader compared to height at Çandır.

Measurements:

	ACHÜ-2421	ACH-2422	Çandır	Sansan	Tire	Tung Gur
	MTA	MTA	S. & S.	SONDAAR	KAYA 1987	COLBERT 1939
Dist.artic.W	36.4	(31.9)		30-39		
Dist.max.W	47.3	(40)	45	38-42.5	41	38-43
Medial H	44.1	43.3				
Lateral H	46.3	46.1	46.5	43.1-50.2	43.9	41-47.5

The only other post-cranial remains are two proximal fragments of metatarsals, the dimensions of which are:

ACH-1096	max.prox.W	32.6	W of cuneiform facet	29.7	Min. W shaft	22.8
ACH-1286		31.5		29.4		

Conclusions

As pointed out by FORSTÉN (1990 ; 1991), size increase occurred only during the late Middle Miocene, but is diachronic in the various areas. Differences between pene-contemporaneous populations also suggests that most of these differences are due to

geographic isolation, rather than to evolutionary trends. This is perhaps not unexpected of animals living in closed habitats scattered among a generally more open environment.

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Captions to plate

Fig.1. AÇH-186 (2416). Maxilla with P2-M2 on both sides. x 1.

Fig.2. AÇH-1988. Mandible with dp2-m1. x 3/2.

Fig.3. AÇH-187 (2415). Mandible with p3-m2. x 3/2.

Fig.4. AÇHÜ-2421. Astragalus in anterior (4A) and plantar (4B) views. x 1.