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## A fossil Giraffine from the Maragheh region in N. W. Iran

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### With 2 text figures

#### Summary

Remains of a fossil member of the subfamily Giraffinae, found in 1973 near the village of Aliābād, 13 km E. of Marāgheh in N. W. Iran, are identified as belonging to the genus *Decennatherium* Crusafont, 1952, hitherto only known from Spain. Some differences in size and in anatomy from the unique Spanish species *pachecoi* suffice for the proposition of a new species, *crusafonti*, for the Iranian form. The age of the Aliābād deposit, slightly less than 13 Ma, is most probably (early) Vallesian, which is in good accordance with the age of the species from Spain. It is suggested that more material may perhaps also be ascribed to *Decennatherium*, as this may thus far have been overlooked among specimens determined as *Giraffa attica* (GAUDRY ET LARTET, 1856) from other sites as well as from the Marāgheh region.

#### Résumé

Des os et une dent fragmentaire d'un Giraffiné fossile, trouvé en 1973 aux environs d'Aliābād, village 13 km à l'Est de Marāgheh (N. O. de l'Iran) sont identifiés comme appartenant à *Decennatherium* Crusafont, 1952, genre jusqu'à présent connu uniquement de l'Espagne. A cause de quelques différences anatomiques et d'une plus grande taille que celle de la seule espèce espagnole, *pachecoi*, une nouvelle espèce est proposée pour la forme iranienne : *crusafonti*. L'âge du dépôt d'Aliābād, un peu moins que 13 Ma, puisse être placé au vallésien, ce qui correspond avec l'âge de l'espèce espagnole. La suggestion est faite qu'il serait bien possible que du matériel jusqu'ici déterminé comme *Giraffa attica* (GAUDRY et LARTET, 1856), *pro partim*, et provenant d'autres localités fossilifères tant que de la région de Marāgheh, pourrait en réalité appartenir au genre *Decennatherium* aussi.

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#### Zusammenfassung

Reste eines fossilen Mitglieds der Unterfamilie Giraffinae, die 1973 beim Dorfe Aliābād gefunden wurden, ungefähr 13 km östlich von Marāgheh in N. W. Iran, werden hier als zum Genus *Decennatherium* gehörig identifiziert (bisher nur aus Spanien bekannt). Einige Unterschiede in Größe und Anatomie zu der einzigen spanischen Spezies *pachecoi* genügen, um für die iranische Form eine neue Spezies vorzuschlagen. Das Alter der Ablagerung von Aliābād, etwas unter 13 Ma, ist höchstwahrscheinlich (frühes) Vallesium, das mit dem Alter der spanischen Spezies gut übereinstimmt. Vielleicht könnte mehr Material auch dem *Decennatherium* zugeschrieben werden, da dieses möglicherweise unter Stücken, die von anderen Fundstellen sowie aus der Gegend von Marāgheh als *Giraffa attica* (GAUDRY et LARTET, 1856) bestimmt wurden, übersehen worden ist.

#### Introduction

In the course of a reconnaissance from August till October, 1973, a number of localities East of the town of Marāgheh in N. W. Iran was visited, where fossil vertebrate material was collected by a party consisting of Dr. N. SCHMIDT-KITTLER, of the Institute for Paleontology and historical Geology of Munich University, Mr. S. A. P. L. CLOETINGH, of the Vening Meinesz Laboratory for Geophysical Research of Utrecht University, and the author. Detailed information on the geology, stratigraphy and topography of the visited area may be found in BOSSCHA ERDBRINK et al. (1976).

One of the visited localities lies some 700 metres to the E. N. E. of the village of Aliābād (= Aliawa on the map in DE MECQUENEM, 1908). This site is a lenticular deposit of fossil bones in a matrix of relatively soft sandy grey secondary volcanic tuff some way up on the western slope of a gully with a N.-S. direction. Further to the North the gully is connected to a more impressive arroyo running N. E.-wards from the village of Aliābād itself, near the upper (northern) extremity of which another, minor, fossil locality, Çi Anne, is situated; no giraffid material was encountered there. The first site, which we called Aliābād, has provided a small number of giraffid specimens, together with remains of other mammals such as *Hipparion*, several antelopes, and some carnivora. The fossil bones from this locality are heavily mineralized and very dark in colour, almost black on the outside but whitish with some blue on freshly broken surfaces, and often very brittle.

All finds form part of the Bavarian State collection for Paleontology and historical Geology at Munich, and accordingly the numbering system has been followed prevalent in that collection.

The age of the deposit at Aliābād may be inferred from two series of K-Ar age determinations made at the Z. W. O. Laboratory for Isotope Geology at Amsterdam Free University under the direction of Professor Dr. H. N. A. PRIEM. Some 3.5 metres lower in a vertical (stratigraphical) sense, and at a distance of approximately 1 kilometre from the fossil locality, a series of samples was taken at our paleomagnetic site V. The age of these samples was determined at 14.4  $\pm$  0.7 Ma. Another age determination was made from a series of samples taken at paleomagnetic site III, which lies 37 metres higher in a vertical (stratigraphical) sense,

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nearly 5 kilometres from the Aliābād fossil locality. This age was fixed at 8.7  $\pm$  0.4 Ma. It follows that the Aliābād fossils, in the complex of horizontal and subhorizontal layers so typical for the entire region, must have an age in between 8.7 ( $\pm$  0.4) and 14.4 ( $\pm$  0.7) million years, most probably nearer to the oldest of the two dates but in any case (because of their association with *Hipparion*, see VAN COUVERING and MILLER, 1971) somewhat younger than 13 to 12.5 Ma. This means that their stratigraphic position is most probably (lower?) Vallesian.

#### Description

The giraffid material from the Aliābād locality consists of a complete astragalus of the left side (number 1973 XXI 76), a nearly complete calcaneum sin. without its sustentaculum astragali, of the same individual (1973 XXI 79), the distal part of the adjoining (left) tibia (1973 XXI 81), a proximal (incomplete) part of a metatarsale III/IV of the left side, having a length of some 13 cm (1973 XXI 77), and a distal fragment of that last bone on which only the pulley-like articulation at the distal side is still present (1973 XXI 78). Added to this bone material there is the central part (in which the middle portion of the mastication surface is included, with the central valley) of a P4 dexter (1973 XX1 198). Whereas the connection between the bones numbered 76, 79 and 81 is evident and cannot be doubted, that between these three and 77 and 78 is not, but it is very probable that these (equally, it should be pointed out, of the left side) also belong to the same individual specimen and that, in fact, the entire complex of fossils constitutes a single find, together with the fragmentary premolar. However, the always fortuitous arrangement of fossil bones in the lenticular deposits of the Maragheh region, due to their having been washed together into the former depressions of the landscape, is no guarantee for the truth of this supposition.

The distal fragment of a tibia (reconstructed from a number of separately recovered bone fragments) has a total length of some 18 cm. It is a rather heavily built bone with a trapezoidal outline of the horizontal section near its distal articulation. The crest between the two acetabular pits for the head of the astragalus is broad, heavy, and it runs straight in a sagittal direction. The prominent facette for the malleolar bone (the distal remnant of the fibula) is broad and lies in a straight line with the two already mentioned acetabular pits. This facette is single, as it appears to be in *Giraffa* and *Okapia*, according to DE MECQUENEM (1924/ 25, p. 25) and in *Samotherium* (= "Alcicephalus") neumayri, while it is stated to be double in *Palaeotragus microdon* and in the Chinese species of *Samotherium* described by BOHLIN (1927, p. 67) and in *Helladotherium gaudryi* (following DE MECQUENEM, 1924/25, p. 25). The fragment provides us with two measurements:

Maximum transversal width of the distal articulation: 90 mm.

Maximum sagittal width of the distal articulation: 72 mm.

An index of 0.8 is obtained by dividing the second measurement by the first one. Comparable measurements in mm from literature are:

Max. transv. width, distal articulation, of: Samotherium sinense (BOHLIN, 1927, p. 67): 99, 91 (juvenile), 108; S. eminens (ibid.): 112; S. boissieri (ibid.): 95 ?; Palaeotragus microdon (ibid., p. 17): 55, 63, 65; Helladotherium gaudryi (DE MECQUENEM, 1924/25, p. 25): 110.

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Text fig. 1: Decennatherium crusafonti n. sp. — a. type specimen, the complex of a distal part of a tibia sin. (1973 XXI 81), with astragalus (1973 XXI 76) and (incomplete) calcaneum (1973 XXI 79), seen from the inside; b. crown view of fragment of P<sup>4</sup> dext. (1973 XXI 198); c. rear view of astragalus sin. (1973 XXI 76); d. rear view of distal part of tibia sin. (1973 XXI 81).

Max. transversal × sagittal widths, distal articulation, of: Decennatherium pachecoi (CRUSAFONT, 1952, p. 91):  $86 \times 64.5$  (providing an index, see above, of 0.75); Honanotherium schlosseri (BOHLIN, 1927, p. 117):  $94 \times 72$  (ind.: 0.77); Giraffa (ibid.):  $93 \times 75$  (ind.: 0.8); Giraffa camelopardalis, recent (SINGER and BONÉ, 1960, p. 505):  $126 \times 86$  (ind.: 0.68),  $121 \times 83$  (0.69),  $110 \times 75$  (0.68),  $102 \times 75$  (0.74),  $104 \times 75$  (0.72),  $108 \times 73$  (0.68).

The astragalus is a relatively slender, long and high bone. The internal border of the articular surfaces for calcaneum and naviculocuboid (= centrotarsale) on the posterior facette of the astragalus has the form of a straight line; it is not interrupted in a steplike manner as it is in *Honanotherium* (BOHLIN, 1927, p. 117, textfig. 180). As in the latter genus, always according to Bohlin, loc. cit., a prolongation of the deep notch for a mesial outgrowth on the posterior edge of the naviculocuboid, apparently typical for *Giraffa*, is almost entirely absent. The width of the posterior surface appears to be relatively less than in *Honanotherium* and *Giraffa*; the lateral external surface is higher and more slender than it is in the astragalus of the latter two genera, while the lateral internal surface is more slender as well. The caput astragali is less prominent than in *Giraffa* and *Honanotherium*. The following measurements have been taken from the Aliābād bone:

(A)	Maximum height on the mesial side	80 mm
(B)	Maximum height on the lateral side	94 mm
(C)	Lateral-mesial width at distal end	61 mm
(D)	Lateral-mesial width at proximal end	63 mm
(E)	Maximum sagittal thickness (approx. in central part of bone )	56 mm

From the second (B) and fourth (D) measurements CRUSAFONT'S (1966, p. 67) "Indiche de anchura" can be computed at 0.67. Some comparable measurements have been gathered from literature:

Palaeotragus microdon	A	A: 56 -	- 63					
(3 sp., BOHLIN 1927,	B: — 6	9? 71						
p. 18)	C	C: 38 4	10 45-	-				
	Ε	E: 34 -	- 39					
Samotherium sinense	A:	104	105	103	103	102	94	93
(ibid., p. 69; 7 sp.,	B:		120	112	117	114	110	103
the first still	C:	69	77	68	75	72	70	66?
juvenile)	E:	56	58	62	67	64	61	58
Honanotherium schlosseri	A:	90	97	84	92	86?		
(5 sp., Bohlin 1927,	B:	_	115	99	_			
p. 117	C:		74	64	75	64?		
	E:	59	62	54	61	—		
Giraffa A 84 G. camelo	parda	lis	В:	99?	93?			
(ibid.) B 98 (Recent, 2	2 sp.,		C:	72				
C 67 Singer and	d Bong	é	D:	73	81			
E 60 1960, p. 5	06)		ind.:	0.3	74 0.8	37		

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Decennatherium (pachecoi, and sp.)	B:	91	89	86.5	88.5	84.5	90.5		
(Crusafont, 1952, p. 92; 1966,	C:	60	60	56.5	58.5	51.5	63		
p. 67; 6 sp. from 3 localities)	D:	60	60	59	60	55	66		
	ind.:	0.65	0.67	0.68	0.67	0.65	0.72		

As a final remark on this bone it should be pointed out here that there exists an extraordinary resemblance between the second figure from the left in fig. 18, p. 127, of CRUSAFONT (1952) (*Decennatherium*) and the Aliābād astragalus.

The calcaneum, when compared to that of *Giraffa*, is a long and slender bone too. The tuber calcanei is symmetrically formed; according to BOHLIN (1927, p. 70), this feature is asymmetrical in *Samotherium* and *Giraffa* but symmetrical in *Honanotherium* (op. cit., p. 117). CRUSAFONT (1952, p. 87) maintains that it is symmetrical in *Giraffa* and in *Honanotherium*, as it is in *Decennatherium* too.

Although the sustentaculum astragali has broken off, the low value for the astragalar width (measurements C and D) indicates a comparatively low value for the width of this part of the calcaneum as well. The rather broad, somewhat helicoidal facet on the distal lower side for the naviculocuboid faces the internal side of the calcaneum in its entirety, as in *Giraffa* (according to BOHLIN, op. cit., p. 70), while at its internal border this facet adjoins another, small facet, also for the naviculocuboid, again as in *Giraffa* (but smaller) and opposed to the situation in *Samotherium*, always following Bohlin. In front of the relatively small articular facet for the malleolar bone the edge of the calcaneum curves downwards to end in a parrotlike beak; this edge is not a comparatively thin flange, as in *Samotherium*, but it remains practically as broad as it is below the malleolar articulation itself, thereby resembling the situation in *Giraffa*. The articular facet for the malleolar bone, already mentioned, does not stand out much above the anterior surface of the calcaneum as a whole.

The following measurements have been taken from this bone:

(A)	Maximum overall length	191 mm
(B)	Sagittal length of the upper side of the tuber calcanei	55 mm
(C)	Transversal length of the upper side of the tuber calcanei	50 mm
(D)	Maximum lateral-mesial width (at broken-off sustent. astrag.)	> 51 mm
(E)	Greatest height (directly in front of fibular articulation)	71 mm

Literature sources provide some comparable measurements:

Giraffa camelopardalis	A:	184	184	177	186	-
(recent, 5 sp. in Leiden	B:	49	55	49	50	
Museum, Hooijer, 1963,	D:	58	55	56	57	55
p. 62)	E:	86	84	83	87	80
Giraffa A:		187				
Bohlin, 1927 B:	51					
p. 70, D:		53				
p. 118) E:		83				



Text fig. 2: Decennatherium crusafonti n. sp. — a. proximal view of (incomplete) metatarsale III/IV sin. (1973 XXI 77); b. inner view of (incomplete) calcaneum sin. (1973 XXI 79); c. the distal fracture of the incomplete metatarsale III/IV, pictured in a, seen head-on; d. the nearly symmetrical tuber calcanei of the calcaneum sin., pictured in b, seen head-on.

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Decennatherium pachecoi	A:	175	-				
(CRUSAFONT, 1952, p. 91)	B:		- 52				
(, , , , , , , , , , , , , , , , ,	C.		40				
	D.	5.0	2				
	D:	50					
C 1 · ·	Δ		20(2	217	210	221	225
Samotherium sinense	A:	_	206?	216	219	221	225
(Bohlin, 1927, p. 70,	D:	58	—	60	60	59—	61?
6 sp.)	E:	96	93	98	96	102	100
- 1 /							
Palaeotragus microdon	A:	130		_	_ 1	139	
(BOWIN 1927 p 18	D.	33		41	40	40	
(DOHLIN, 1727, p. 18,	D.	55		TI	40	40	
5 sp.)	E:		57?			58	
Honanotherium schlosseri	A:	200	)? —				
(Bohlin, 1927, p. 118,	D:		. 59				
2	Г.	003					
2 sp.)	E:	00:					

In "Orasius atticus" (recte, Giraffa attica), according to BOHLIN, 1927, p. 118, measurement (A) in a specimen from Pikermi is 185 mm, (D) 55 mm and (E) 82 mm. In this latter species the tuber calcanei appears to be relatively compressed (see BOHLIN's fig. 206) and asymmetrical, the facet for the naviculocuboid is facing a more plantar (or backward) direction as compared to the inward (mesiad) one of the calcaneum from Aliābād, although in both cases the surface of the facet is somewhat helicoidally curved (see BOHLIN's textfig. 205), and the anteriormost extremity of the bone ends bluntly, not in a sharp parrot-beak.

The proximal and distal parts of the metatarsale III/IV of the left side (numbers 77 and 78, respectively) will be described together. A long sliver of bone. approximately 3 cm thick at its upper end, is missing from the anterior side of the proximal fragment, which has been reconstructed from a number of closely fitting separately recovered pieces. Notwithstanding this deficiency it is possible to observe that the proximal surface of the proximal fragment shows three articular facets, a small one for the first tarsal at the inner posterior side (lower left of figure 2a), which is kept separate from the adjoining facet for the tarsalia II and III by a narrow and shallow incision. The two facets, and the third one on the lateral side of the proximal surface (for the naviculocuboid), all lie more or less in one plane. Owing to the absence of the mentioned piece of bone it is no longer possible to observe with certainty how the facet for the tarsalia II and III has been kept separate from that for the naviculocuboid, but if this was effected by a groove it appears unlikely that such a furrow was very marked or deep. On the other hand a faint trace can be seen against the point of contact between the facets for tarsal I and tarsalia II and III, of the beginning of a shallow step or shelf, thus indicating the possibility that this shelf has formed the border between the facets for naviculocuboid and tarsalia II + III. A rudimentary second metatarsal bone, grown together with the third metatarsal, can be discerned.

A marked and broad but shallow fluted groove runs in a vertical direction on the posterior side of the bone. A horizontal section (figure 2c, the broken end of the proximal fragment at its distal side) shows a great likeness, but for the shallowness of this groove in the fossil from Aliābād, with BOHLIN's textfigure 188 (depicting the comparable situation in *Honanotherium schlosseri*). Biodiversity Heritage Library, http://www.biodiversitylibrary.org/; www.zobodat.at

	The following mea	suren	nents ha	ve been	taken f	rom the	two be	one fra	gment	s:
(A)	Maximal sagittal diameter of proximal surface of proximal fragment									
	(approx.)								75	? mm
(B)	Maximal transverse diameter of proximal surface of proximal									
	fragment									mm
(C)	approximately)									? mm
(D)	Maximal sagittal width of remaining distal pulleylike articulation								47	mm
(E)	Diameter (transv	ersal	imes sagit	tal) of s	haft, 10	cm from	m dista	1		
	extremity							5	$6 \times 41$	mm
	These measuremen	ts ma	ay be co	mpared	l with t	he follo	wing o	ones gl	eaned	from
liter	ature:									
Sam	otherium sinense	A:	90	94	96	88	95	84	90	86
(6 s	p.), S.eminens	B:	84	87	87	71	87	80	91	77
(1 s]	p.), S.boissieri	C:	85	—	—	83	83	98	94	91
(1 s]	р.; Bohlin 1927,									
p. /	2)									
Pala	eotragus microdon		A:	52		54	52	53		
(Bo	HLIN 1927, p. 19,		B:	46		48	51	50		
5 sp	ecimens)		C:	—	53	50	22	—		
Dec	ennatherium pachec	oi	A:	67	60.5					
(2 s)	p., Crusafont 1952	2,	B:	66	59					
p. 9	2)									
Hor	<i>anotherium</i> and		A:	81?	—	82?	80			
Gira	affa (3 and 1		B:	74?	—	78?	72			
sp.,	sp., resp., Bohlin C: — 91 — 89									

1927, p. 120)

What is left of the P<sup>4</sup>dexter (1973 XXI 198) shows a remarkable resemblance to the corresponding parts in the figures 4 and 5 of Pl. XX in Crusafont (1952). As cnly mesial and distal fragments of the vertical rugose enamel enclosure of the premolar have been preserved, a maximum length of the tooth cannot be given; it must have exceeded the 25.4 mm which is still measurable. CRUSAFONT (op. cit., table, p. 89) gives lengths varying between 30 and 25 mm. A lucky circumstance is formed by the fact that the central valley of the mastication surface has remained intact in its entirety, so that CRUSAFONT's description (op. cit., p. 80) is seen to fit the fragment from Aliābād: "Es bastante profundo el valle medio y está cerrado por ambos lados (Diferencia con *Honanotherium* y *Giraffa*)".

#### Discussion; determination

While describing the bones from Aliābād, the description of the same bones in *Decennatherium*, given by CRUSAFONT (1952, pp. 87—88) has been followed as far as possible. Comparison with descriptions of the bones in other Giraffid genera, mainly those given by BOHLIN (1927), shows that the greatest amount of resemblance between individual anatomical features in each of the bones of those genera with those of the find from Aliābād exists, when members of the subfamily <sup>O Biodiversity Heritage Library http://www.biodiversitylibrary.org/.www.zobodat.at Giraffinae are considered. Following the systematical arrangement by SIMPSON (1945), this means that the genera Giraffa, Honanotherium and Boblinia (= Orasius) may be considered as the nearest allied forms, while the genera Palaeotragus and Samotherium, in the subfamily Palaeotraginae, show more differences. Members of the subfamily Sivatheriinae, all of gigantic size and heavily built, should not be considered at all; their corresponding bones are much more massively built and have much larger dimensions. Only Helladotherium (and, perhaps, Hydaspitherium) might theoretically be considered here, these being the only Sivatheriine forms known or expected from the Marāgheh region, next to the comparatively common Palaeotragine Palaeotragus and Samotherium from the same localities.</sup>

The systematical arrangement proposed by CRUSAFONT in 1952 (pp. 186-209). although somewhat differing from Simpson's system, agrees with it in that Palaeotragus and Samotherium are placed in the subfamily Palacotraginae, while Bohlinia is placed, with the recent Okapia, in a subfamily of its own, the Okapiinae and while the subfamily Giraffinae consists of three genera: Giraffa, Honanotherium and Decennatherium. It is this last genus, at present uniquely known from Spain and characterized by CRUSAFONT, 1952, on p. 98, with which the finds from Aliābād show most resemblance, both anatomically and when relative comparisons of separate measurements are made. In general, however, the Iranian find has slightly larger dimensions while there are a few minor points of anatomical difference. I is interesting to note the circumstance that Decennatherium appears to occur in Spain (either its sole species there, pachecoi, or as a find which could not be specifically determined, see CRUSAFONT, 1966) in deposits in which Hipparion begins to make its appearance (the Vallesian) and only slightly later (the very lowest part of the Turolian). In the beginning of this paper a Vallesian age for the deposits at Aliabad was considered to be most probable.

One may wonder why earlier descriptions of Giraffid finds from fossil localities in the Maragheh region, such as those by RODLER and WEITHOFER (1890) or DE MECOUENEM (1924/1925) have not mentioned any Giraffine specimens which might be identified with Decennatherium. RODLER and WEITHOFER are responsible for the descriptions of the two commonly occurring Giraffid species in the Maragheh region: Samotherium (= "Alcicephalus") neumayri and Palaeotragus (= "Alcicephalus") coelophrys. They did not describe other Giraffids from there, although they thought Urmiatherium polaki RODLER, 1889, to be a Sivatheriine; as is known today, this curious form should be ranged among the Ovibovini. In 1924/1925 DE MECQUENEM described additional finds of S. ("Alcicephalus") neumayri and P. ("Achtiaria") coelophrys, and also two more species: a new one, Helladotherium gaudryi (which he had already provisionally named Maraghatherium gaudryi in 1908), and Camelopardalis attica GAUDRY et LARTET, 1856, a form known already from Pikermi in Greece. According to his description this last Giraffid has a size which is intermediate between S. neumayri and P. coelophrys. His material of it consisted of only the posterior part of a skull, an atlas, and several bones of the extremities (in a table these latter specimens are summed up as the distal part of a humerus, a first carpal and a first tarsal phalanx, a second tarsal phalanx, and a metatarsal bone). The description is so very summary and generalized that it is not possible to draw any conclusions beyond that of agreeing with DE MECQUENEM that the material does indeed belong to a Giraffine. Identification

with the finds from Aliabad are not possible from the description alone. The probability certainly exists that too much dependence on descriptions of forms known from Pikermi has led De Mecquenem astray and that a revision of his material of "Camelopardalis" (recte: Giraffa) attica may prove its identity with the Decennatherium from Aliābād. What is more, a critical evaluation of known finds from Pikermi, hitherto ascribed to Giraffa attica (GAUDRY et LARTET, 1856), with which BOHLIN (1927, p. 123) identifies Camelopardalis vetusta WAGNER, 1861, Camelopardalis speciosa WAGNER, 1861, Orasius eximius WAGNER, 1861, and Orasius speciosus PILGRIM, 1911, might perhaps also result in the discovery of a Decennatherium among the Pikermi material.

With respect to this problem BOHLIN's opinion may perhaps be mentioned (op. cit., p. 93) regarding DE MECQUENEM's description of "Camelopardalis attica": according to him this material should be relegated to Samotherium neumayri. CRUSAFONT (1952, p. 209) places WAGNER'S C. speciosa in MATTHEW'S genus Bohlinia, so that it becomes Bohlinia speciosa, known from Pikermi, Thessaloniki, Küçükçekmece near Istanbul, and the Vallés-Penedés in Spain, and places it in the subfamily Okapiinae.

While it will be clear that it is my opinion that the fossil bones found at Aliābād should be ascribed to the genus Decennatherium CRUSAFONT, 1952, the species to which they belong differs from the diagnosis of CRUSAFONT'S species pachecoi (op. cit., p. 98) on five points: first, by being somewhat larger in all (known) dimensions; second, in that the distal part of its tibia appears to be somewhat heavier in a transverse sense (resulting in an index of 0.8 as opposed to 0.75 in D. pachecoi); third, in that the facet for the malleolar bone on the calcaneum, although small as in D. pachecoi, appears to stand out slightly more above the anterior surface of the bone than in the Spanish species (see CRUSAFONT, 1952, Pl. XXIX, fig. 4a); fourth, in that the metatarsale III/IV of the Iranian form possesses a relatively smaller facet for the first tarsal bone (see CRUSAFONT, 1952, Pl. XXIX, fig. 1); and fifth, in that the vertical fluted groove in the metatarsale III/IV, although shallow, is somewhat more marked than in D. pachecoi.

These five points (the one concerning the larger dimensions being the most important) suffice, in my opinion, for the provisional accordance of a separate specific name to the described find from Aliabad. In honour of his specialized knowledge of fossil and recent Giraffidae I propose naming the species crusafonti after Professor Dr. M. CRUSAFONT PAIRÓ. If further, more complete finds from the Maragheh area as well as from other sites bridging the geographical distance between Iran and Spain may perhaps lead to the conclusion that the differences between the species D. pachecoi and D. crusafonti should, in future, prove to be gradual ones only, the name crusafonti should be retained in a subspecifical sense (the name of the species then being, of course, *pachecoi*); there may very well have existed a situation comparable to that to be found nowadays among the several subspecies of Giraffa camelopardalis, in which G. c. reticulata, for instance, has a maximum height of 530 cm, but G. c. rotschildi or G. c. tippelskirchi may reach 580 cm.

The type specimen for the species crusafonti consists of the numbers 1973 XXI 76, -79 and -81, while the numbers 1973 XXI 77, -78 and -198 should be considered cotypes. These specimens belong to the collection of the Bayerische Staatssammlung für Paläontologie und historische Geologie at Munich.

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