

AMERICAN MUSEUM NOVITATES

Number 328

Published by
THE AMERICAN MUSEUM OF NATURAL HISTORY
New York City

Oct. 26, 1928

56.9 (1183:75.9)

PLEISTOCENE MAMMALS FROM A CAVE IN CITRUS COUNTY, FLORIDA

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The mammals to be described in this paper were found in a cave in the Ocala Limestone (Eocene) on the property of Mr. D. J. Allen, one mile northwest of Lecanto, Citrus County, Florida. Murray Davis and some boy companions entered the cave several years ago and found a machærodont canine now in the collection of the Florida State Geological Survey. Through Mr. Herman Gunter, Mr. J. E. King, and Mr. D. J. Allen, Mr. Walter W. Holmes made arrangements for a thorough search of this locality. This work was done under the direction of Mr. Holmes in February and March, 1928, and the resulting collection deposited in the American Museum.

The field name, Saber-tooth Cave, may continue to distinguish this from the several other caves in the immediate vicinity. Entrance to it is through a broad sink terminating in two vertical shafts. Immediately under these the floor of the cave was from 25 to 40 feet below the shaft mouths and there apparently has never been an entrance practicable for large living mammals. On the floor below the sink and in pockets elsewhere was a deposit of red earth or clay in which were found numerous remains of Pleistocene animals, apparently representing a distinctive unit fauna. There also occurred in the cave a younger bed of sand and humus containing no extinct mammals but with numerous remains of the recent white-tailed deer of the region. All of the forms listed below came from the true Pleistocene cave earth.

The figures in this paper were drawn by Louise Waller and John Germann.

FAUNAL LIST

MAMMALIA

Marsupialia

Didelphiidæ

Didelphis virginiana. Lower jaws of about 12 individuals, upper jaws of two, a few limb bones.

Insectivora

Talpidæ

Cf. *Scalopus* sp. One lower jaw without teeth.

Rodentia

Leporidae

Sylvilagus floridanus. 6 lower jaws, skeletal parts.

Sylvilagus palustris. 6 lower jaws, skeletal parts.

Geomyidæ

Geomys floridanus. 4 lower jaws, 2 partial skulls.

Thomomys orientalis, new species. 1 partial skull.

Cricetidae

Sigmodon hispidus. About 40 lower jaws, 4 partial skulls.

Oryzomys palustris. 5 lower jaws.

Neofiber alleni. 21 lower jaws, one partial skull.

Synaptomys australis, new species. One lower jaw.

Hydrochoeridae

Hydrochærus holmesii, new species. 3 associated teeth.

Carnivora

Canidae

Canis (Enocyon) ayersi. 1 lower jaw, 1 upper jaw.

Canis cf. *ayersi*. Lower premolar, upper carnassial, limb bones.

Cf. *Urocyon* sp. Atlas.

Felidae

Lynx rufus. 1 lower jaw, 1 upper jaw.

Smilodon sp. 1 upper canine, 2 distal ends of humeri.

Mustelidae

Mephitis elongata. 1 lower jaw.

Xenarthra

Megalonychidae

Megalonyx cf. *wheatleyi*. 4 teeth, foot bones.

Chlamytheriidae

Chlamytherium septentrionale. 1 tooth, scutes, limb and foot bones.

Dasypodidae

Tatu, undescribed species. Scutes etc.

Perissodactyla

Equidae

Equus cf. *leidyi*. 2 incisors, 3 upper cheek teeth, 2 lower cheek teeth, bones.

Tapiridae

Tapirus cf. *haysii*. 3 teeth.

Artiodactyla

Cervidae

Odocoileus osceola. 2 lower jaws in cave earth, numerous remains in subrecent muck and sand.

Blastocercus extraneus, new species. 1 lower jaw.

Camelidae

Camelid, genus and species undetermined. 2 lower incisors, skeletal fragments.

Tagassuidæ

Mylohyus cf. *browni*. 2 lower jaws, 3 canines.**Proboscidea**

Mastodontidæ

Mastodon americanus. 1 tooth.**AVES**

(Identifications by Dr. A. Wetmore, who is elsewhere publishing more detailed notes on these remains.)

*Nyroca affinis**Caragyps urubu**Cathartes aura**Halæëtus leucocephalus**Falco sparverius**Colinus virginianus**Tyto alba**Strix varia**Otus asio**Meleagris gallopavo***REPTILIA**

Sparse crocodilian, chelonian, and ophidian remains, not studied in detail.

AMPHIBIA

A very few unidentified anuran bones.

FAUNAL ANALYSIS

In the following distributional and ecologic analyses the mammals alone are considered. Doubtful forms are mostly omitted.

DISTRIBUTION

A. Genera and species recently living in this area or immediately contiguous regions:

Genera	Species
<i>Didelphis</i>	<i>D. virginiana</i>
<i>Sylvilagus</i>	<i>S. floridanus</i>
	<i>S. palustris</i>
<i>Geomys</i>	<i>G. floridanus</i>
<i>Sigmodon</i>	<i>S. hispidus</i>
<i>Oryzomys</i>	<i>O. palustris</i>
<i>Neofiber</i>	<i>N. alleni</i>
<i>Lynx</i>	<i>L. rufus</i>
<i>Mephitis</i>	<i>M. elongata</i>
<i>Odocoileus</i>	<i>O. osceola</i>

B. Genera still living but not in this region:

Thomomys. Now exclusively western, not ranging closer than about 900 miles away.

Synaptomys. Now northern, not ranging closer than about 400 miles away and only in the colder parts of its most southern range.

Hydrochærus. Now South American.

Tatu. Now southwestern, ranging into Texas and adjoining states.

Equus. Not now indigenous in the Western Hemisphere.

Tapirus. Now South American.

Blastocerus. Now South American.

C. Genera and species extinct before historic times:

Genera	Species
	<i>Thomomys orientalis</i>
	<i>Synaptomys australis</i>
	<i>Hydrochærus holmesi</i>
(<i>Ænocyon</i>)	<i>Canis (Ænocyon) ayersi</i>
<i>Smilodon</i>	
	<i>Equus</i> cf. <i>leidyi</i>
	<i>Tapirus</i> cf. <i>haysii</i>
	<i>Blastocerus extraneus</i>
Camelid	
<i>Mylohyus</i>	
<i>Mastodon</i>	
<i>Megalonyx</i>	
<i>Chlamytherium</i>	

Tatu, sp. ined.

Of the 24 species regarding the extinction or survival of which reasonable assurance is possible, 14, or 58%, are certainly extinct. The exact figure is of slight importance as the number of species is not large and many of the larger extinct animals known to have been contemporaneous with faunas of this type in Florida are absent. It is noteworthy that those genera which have survived in this region are represented in this Pleistocene fauna by the recent species.

From a geographic point of view the outstanding new facts are the occurrence of *Synaptomys*, *Thomomys*, and probably *Blastocerus* so far outside their present areas. The rodents suggest that when the Pleistocene microfauna is better known the smaller mammals, as well as the larger, will be found to have enjoyed a much wider range at that time than at present.

ECOLOGY

Mainly wet lowlands, swamps, streams, etc.:

Sylvilagus palustris
Sigmodon hispidus
Oryzomys palustris
Neofiber alleni
Hydrochærus holmesi

Mainly wooded lowlands:

Didelphis virginiana
Sylvilagus floridanus
Geomys floridanus
Lynx rufus
Megalonyx cf. *wheatleyi*
Mephitis elongata
Tapirus cf. *haysii*
Odocoileus osceola
Blastocerus extraneus
Mastodon americanus

Mainly open lowlands or meadows:

Canis ayersi
Equus cf. *leidyi*
Camelid

Far the most abundant forms numerically are the small water-loving rodents. Of the other mammals almost all usually live in wooded or marshy lowlands. Horses and camels are rare, while *Myiodon*, *Bison*, *Archidiskodon*, *Glyptodon* and other animals more typical of plains faunas are absent in the collection, although abundant elsewhere in the Florida Pleistocene. *Chlamytherium* and *Tatu* are present (possibly parts of only one of each) and may possibly have been plains forms. The general impression is that the fauna is of rather limited ecologic scope and indicates a wet lowland, with swamps, drier wooded areas, and a few open glades.

This is not a cave fauna from an ecologic point of view. The cave itself was unsuited for occupation by animals of any considerable size and none of the included mammals suggests spelean habits. The cave no doubt served as a trap and also as a sink catching the debris of floods. A few of the bones have been gnawed, but the rodents present are not particularly adapted for cave life and the gnawing may have occurred outside, before the bones were deposited.

There is no suggestion that the climate differed materially from that of the same region now. Many of the mammals indicate warm and moist atmospheric conditions. No boreal elements are present—*Synaptomys* is now boreal, but its associations seem to show that this was not the case with this distinctive fossil species.

CORRELATION

From their preservation and from the absence of extinct species, the bones in the gray sand and muck are probably old historically but of Recent age geologically. The bones in the red cave earth

are strongly mineralized, with the rather chalky preservation characteristic of specimens from limestone caves. From the conditions of occurrence and from the faunal associations, these seem to represent a single phase of geologic time. Despite the limited scope and extent of the fauna, approximate equivalence with the much richer Pleistocene fauna of the Seminole area, Pinellas County, and hence with Stratum 2 of the East Coast, is probable. With the exception of *Thomomys orientalis*, *Hydrochærus holmesi*, *Blastocerus extraneus*, and possibly also *Mylohyus* cf. *browni*, all of the cave species also occur at Seminole. Aside from the latter doubtful case, these exceptions are rare forms and their apparent absence at Seminole is not necessarily significant. The faunal type is the same at both localities, with horse, camel, and tapir associated with species indistinguishable from those still living in the same area. The species of *Tatu*, although it is preferred not to name it on this cave material, is precisely identifiable and is the same as at Seminole.

Discussion of the broader and much more difficult question as to the real age of this deposit, of that of the Seminole Field, and of Stratum 2 at Vero and Melbourne is deferred until the description of the Seminole fauna, now in press.

DESCRIPTIONS

Thomomys orientalis, new species

TYPE.—A. M. No. 23441. Front part of skull with incisors and first two cheek teeth on each side. Collected by Carl Sorensen.

HORIZON AND LOCALITY.—Pleistocene, Saber-tooth Cave, Citrus Co., Florida.

DIAGNOSIS.—Sulcus of upper incisor shallow and inconspicuous; anteroposterior diameter of incisor slightly greater than transverse diameter. Post-incisive diastema about 12 mm. in type. Radius of arc formed by enameled incisive face about 7

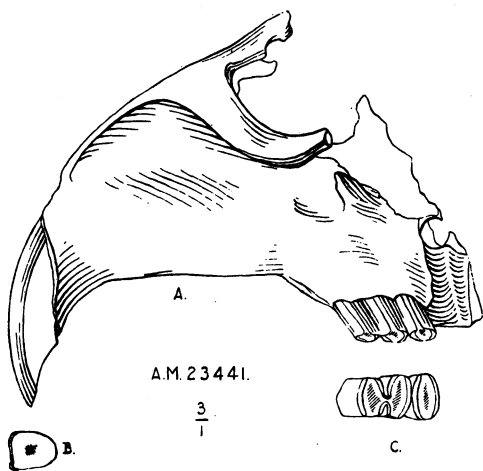


Fig. 1. *Thomomys orientalis*, new species. A, Left lateral view of anterior part of skull, type. B, Transverse section of incisor. C, Crown view of anterior cheek teeth of same. Three times natural size.

mm. Anterior lobe of first cheek tooth markedly broader than long; isthmus between lobes very narrow and short, internal to median longitudinal axis of tooth

series. Length first cheek tooth at alveolus, 2.6 mm.; second, 1.2 mm. Width anterior lobe first cheek tooth, 1.6 mm.; posterior lobe, 1.9 mm.; second cheek tooth, 2.0 mm. Breadth of muzzle below root of zygoma about 6.5 mm.

At the present time *Thomomys* is purely western, not extending east of about 100° W. longitude in the latitude of Florida. In the central and southeastern states its place is taken by *Geomys*, but in this Pleistocene fauna both genera occur. Although the type is fragmentary, generic assignment is not in doubt as upper incisors with a single shallow sulcus on the internal side and P¹ and M¹ with complete posterior enamel plates are shared by no other geomyid genus.

***Synaptomys australis*, new species**

TYPE.—Amer. Mus. No. 23440. Right lower jaw with all cheek teeth. Collected by Carl Sorensen.

HORIZON AND LOCALITY.—Pleistocene, Saber-tooth Cave, Citrus Co., Florida.

DIAGNOSIS.—Pattern of lower cheek teeth as in *S. cooperi*, but enamel relatively thinner and size much larger (about 35%). Total length of molars on surface of wear 8.4 mm. in type.

The most southern members of this genus at present range into North Carolina and Tennessee, but only in the coldest parts of these states. The typical subgenus of *Synaptomys* is hardly distinguishable from *Lemmus* in the lower cheek teeth alone, but the presence of *Lemmus* would be even more remarkable and the pattern is almost identical with that of *S. cooperi*. Confirmation of generic reference is seen in the wholly lingual incisor, terminating opposite M₃; the rootless cheek teeth; the short outer angles in the molars; the presence of cement; M₁ with three truncated outer salients, four inner salients and three closed triangles between the terminal columns.

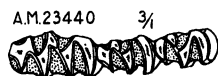


Fig. 2. *Synaptomys australis*, new species. Crown view of lower cheek teeth, type. Three times natural size.

***Hydrochoerus holmesi*, new species¹**

TYPE.—Amer. Mus. No. 23434. Left lower incisor, M₁, and M₃ of one individual. Collected by Carl Sorensen.

HORIZON AND LOCALITY.—Pleistocene, Saber-tooth Cave, Citrus Co., Florida.

DIAGNOSIS.—Cheek teeth slightly larger, M₃ larger relative to M₁, and incisor relatively smaller than in *H. capybara* or *H. xosopi*. Plate number of known teeth as in *H. capybara*. Cheek teeth much smaller than in *H. pinckneyi* or *H. robustus*. Length M₃ at right angles to axis of growth, 20.5 mm. Width of second plate, 16 mm.

¹The species is named for Mr. Walter W. Holmes, active and successful explorer of the Pleistocene of Florida.

The cheek teeth are slightly larger than those of an unusually robust recent capybara with which they were compared. The incisor is smaller than in the recent form, both absolutely and relatively, and is distinctly less compressed anteroposteriorly. The sulcus is less definite, more rounded, without an angulate bottom. On M_1 the posterior enamel lamina of the second plate is almost plane, rather than concave.

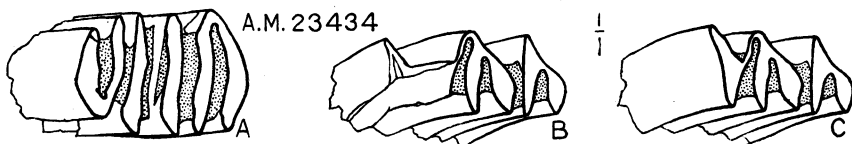


Fig. 3. *Hydrochaerus holmesi*, new species. A, Crown view of M_3 . B, Crown view of M_1 . C, Restoration of M_1 . Natural size.



Fig. 4. *Hydrochaerus holmesi*, new species. Anterior view and transverse section of lower incisor. Natural size.

The most posterior enamel plate of this tooth, on the contrary is concave in section rather than convex. Aside from the size and these slight points, the tooth hardly differs from the recent form. In M_3 the first plate is nearly as wide as the second, joining the latter at its most external point. The third and fourth plates are not arched forward and the internal junction of the last two (fifth and sixth) is unusually strong. The posterior surface is not grooved vertically.

Among described North American fossil species, *H. æsopi* Leidy from the Ashley River, South Carolina, is the closest. The type is a fragment of an upper incisor, but parts of three lower teeth, topotypes but not of quite certain reference, were later described. As Leidy recognized, the known parts do not adequately reveal the distinctions from the recent form. Based on an inadequate type and on doubtfully referred specimens and described in a non-diagnostic way, the status of this species is in doubt. It differs from *H. holmesi* in some of the same particulars as does the recent species—the incisors are larger, the cheek teeth smaller, M_3 smaller relative to M_1 . There are various differences in the minor details of plate structure as figured by Leidy, but these are of doubtful significance.

H. pinckneyi Hay was based on a left M^3 from near Charleston and more complete referred material from Texas later led Hay to erect the new genus *Neochaerus* for this species. The teeth are over 30% larger

than in a robust recent capybara and the plate number of M^3 is said to be larger than in the latter. *H. robustus* Leidy, based on a left P_4 from Nicaragua, is comparable in size to *H. pinckneyi*.

MEASUREMENTS

Lower incisor	Width.....	9.5 mm.
	Anteroposterior diameter.....	9.0 mm.
	Length on grinding surface.....	ca. 19 mm.
M_1	Length at right angles to growth axis.....	ca. 18 mm.
	Width of second plate.....	11.0 mm.
M_3	Median length on grinding surface.....	23.0 mm.
	Median length at right angles to axis of growth.....	20.5 mm.
	Width of second plate.....	16.0 mm.

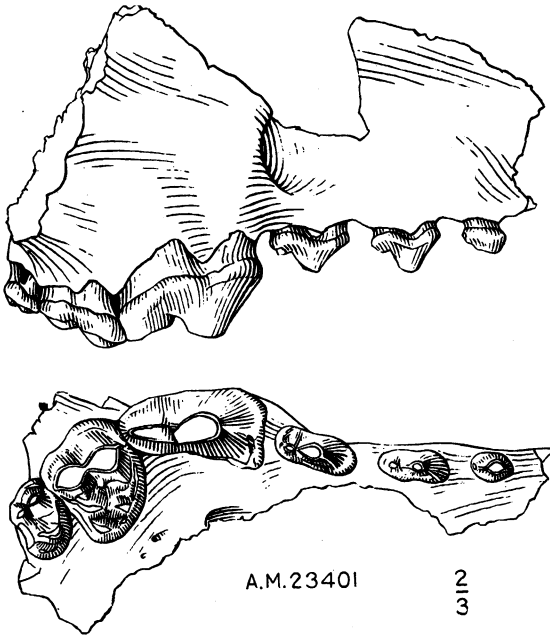


Fig. 5. *Canis ayersi* Sellards. Lateral and crown views of right upper cheek teeth. Referred specimen, Amer. Mus. No. 23401. $\frac{2}{3}$ natural size.

***Canis ayersi* Sellards**

Two specimens seem surely referable to this species, which is the southeastern representative of the large canids generally now referred to *Canis dirus*. One of these specimens, an upper jaw with all the cheek teeth, reveals the characters of M^2 for the first time. The other is a

lower jaw with the canine and P_{1-3} , all much worn. Both specimens are figured and measurements are here given:

Amer. Mus. No. 23401.			Amer. Mus. No. 23400		
P^1	{ Length	8	C—Maximum diam. of alveolus—13.5		
	{ Width	5.5			
P^2	{ Length	13.5	P_1	{ Length	5
	{ Width	6		{ Width	4
P^3	{ Length	16	P_2	{ Length	14
	{ Width	7		{ Width	6
P^4	{ Length	29	P_3	{ Length	15
	{ Width	15		{ Width	6.5
M^1	{ Length	18.5			
	{ Width	22.5			
M^2	{ Length	10.5			
	{ Width	15.5			

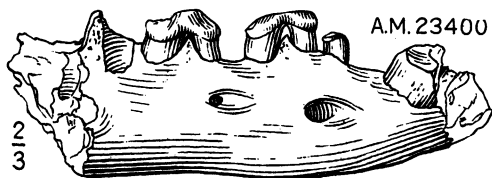


Fig. 6. *Canis ayersi* Sellards. External view of part of right lower jaw. Referred specimen, Amer. Mus. No. 23400. $\frac{2}{3}$ natural size.

A left upper carnassial and jaw fragment in the collection. Amer. Mus. No. 23402, is slightly smaller than in typical *C. ayersi*, the anterointernal heel less prominent and slightly more anterior, the enamel smoother, the diastema between P^3 and P^4 shorter, the infraorbital foramen nearer the alveolar border. Its specific reference is not certain, but separation from *C. ayersi* is not warranted by this material. The carnassial measures 26 mm. in length by 13 in width.

***Lynx rufus* (Güldenst.)**

Dissociated upper and lower jaws, Amer. Mus. No. 23405, are referred to this species. These individuals are slightly smaller than the living *L. rufus floridanus*, but do not differ appreciably in morphology.

The lengths of the preserved teeth are as follows:

P_3 — 7.5	P^3 — 9.0
P_4 — 9.5	P^4 —13.5
M_1 —10.0	

***Smilodon* sp.**

The first fossil found in this cave and that from which it derives its name, Saber-tooth Cave, is an isolated left upper canine, now the property of the Florida State Geological Survey and kindly lent for

inclusion in this study by Herman Gunter, State Geologist. This tooth agrees closely with the fragment from Vero reported by Sellards (Fla. Geol. Surv., 8th An. Rept., p. 152) and referred by Hay (Proc. U. S. Nat. Mus., LVI, p. 106) to *Trucifelis floridanus* Leidy. The type of the latter species is a partial skull, without teeth, from a fissure near Ocala. In the type the maximum diameter of the canine alveolus is given by Leidy (Trans. Wagner Free Inst. Sci., II, p. 15) as 40 mm. Assuming the angle of insertion of the present tooth to have been as in *Smilodon californicus*, its alveolus would have a maximum diameter of about 35 mm. The difference from the type of *T. floridanus* is too great for assurance of specific identity, but not sufficient to contradict the probability.

Like the Vero specimen, the present tooth is relatively slender, strongly compressed, with sharp, serrated edges both anteriorly and posteriorly, and it tapers more rapidly than the corresponding tooth of *Smilodontopsis conardi* Brown.

Two distal ends of humeri were also found. They differ in detail, one being slightly larger, with the entepicondylar foramen more elongate, higher, covered by a more slender bridge of bone, but they may represent the same species. They do not agree exactly with any remains previously described, differing from *Smilodon californicus* chiefly in their smaller size, less expanded distal ends, less projecting entepicondyles—but their minor morphological features are of little interest until specific association may be established.

***Megalonyx* cf. *wheatleyi* Cope**

A species of *Megalonyx* is represented in the cave by several teeth and limb bones. They differ from the common *M. jeffersonii* (Desmarest) in their uniformly smaller size and also, at least as regards the foot bones, in various specific morphological characters. The teeth agree in size with some specimens referred by Cope to his *M. wheatleyi*. The Florida specimens may well represent a new species, but so many dubious species of this genus have already

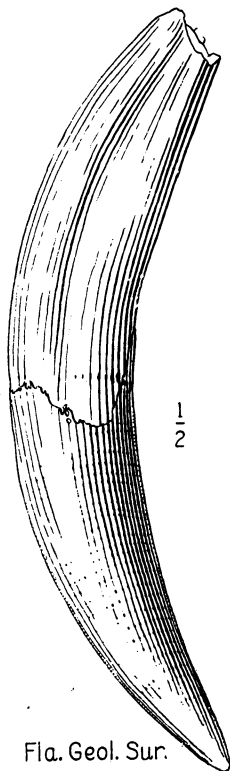


Fig. 7. *Smilodon* sp. External view of left upper canine in collection of Florida State Geological Survey. $\frac{1}{2}$ natural size.

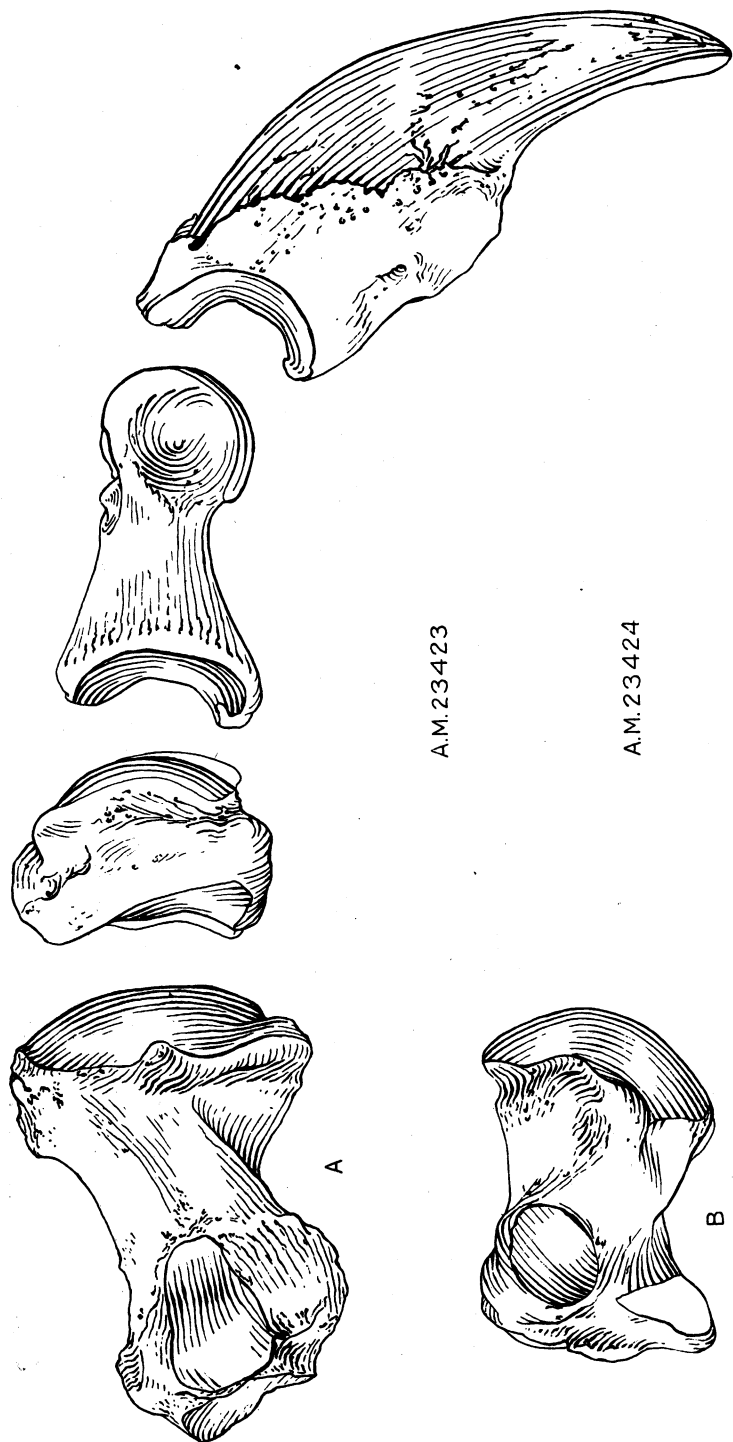


Fig. 8. *Megalonyx* cf. *whealeleyi* Cope. A, Left fourth metatarsal and phalanges, internal view. B, Left second metatarsal, internal view. $\frac{2}{3}$ natural size.

been established on fragmentary remains that the application of a new name would be unjustified. The teeth, similar in form to those of *M. jeffersonii*, have the following dimensions:

First upper tooth.....	{ Maximum diameter.....	32.5 mm.
(Amer. Mus. No. 23421)	{ Maximum transverse diam.....	16.0 mm.
First lower cheek teeth.....	{ Maximum diameters.....	30, 31
(Amer. Mus. No. 23422)	{ Maximum trans. diams.....	16, 15.5
Fourth (?) upper tooth.....	{ Anteroposterior.....	13.5
(Amer. Mus. No. 23420)	{ Transverse.....	19

The foot bones may be compared with those of *M. jeffersonii* described by Leidy from Kentucky (Memoir on the Extinct Sloth Tribe, etc., 1855; pp. 42-5, Pl. XIII). The proximal end of a second metatarsal from the cave is relatively deeper than in Leidy's specimen, its inferior angle more produced; the tarsal articular surface emarginate inferoexternally, extending farther above and superoexternally; the shaft relatively deeper and less concave anteroposteriorly above. On metatarsal IV the shaft is relatively stouter than in Leidy's material; the process for metatarsal V less projecting, that for metatarsal III somewhat less elongate. The preserved phalanges do not appear to be very distinctive save in dimensions. Measurements follow:

Left metatarsal II, Amer. Mus. 23424:

Length.....	67 mm.
Breadth of shaft.....	34 mm.
Depth proximal end.....	46 mm.
Depth distal articulation (obliquely).....	49 mm.

Fourth metatarsal and digit, Amer. Mus. No. 23423:

Metatarsal IV: Minimum circumference of shaft... ca. 106 mm.

Length.....	91 (slightly broken)
Depth distal end.....	52 mm.
Maximum diameter distal end.....	59 mm.

	Phal. 1.	Phal. 2.	Phal. 3.
Maximum length	35	69	128
Maximum width	42		
Maximum depth	51		47 (without sheath)
Prox. end { width		35	
{ depth		40	
Shaft { width		29	
{ depth		20	
Dist. end { width		24	
{ depth		30	



Fig. 9. *Chlamytherium septentrionale* (Leidy). Lateral and crown views of anterior tooth, Amer. Mus. No. 23427. Natural size.

***Blastocerus extraneus*, new species¹**

TYPE.—Amer. Mus. No. 23457. Part of right lower jaw with P_2 — M_2 . Collected by Carl Sorensen.

HORIZON AND LOCALITY.—Pleistocene, Saber-tooth Cave, Citrus Co., Florida.

DIAGNOSIS.—Tooth pattern and proportions of type similar to *B. dichotomus*, but P_2 somewhat more elongate; P_3 — P_4 relatively shorter; P_4 with heel relatively longer externally and with anterointernal infold open to base, not forming a closed lake with advancing wear; posterointernal crests of premolars directed more internally; anterior lobe of M_1 of nearly the same basal width as the posterior lobe.

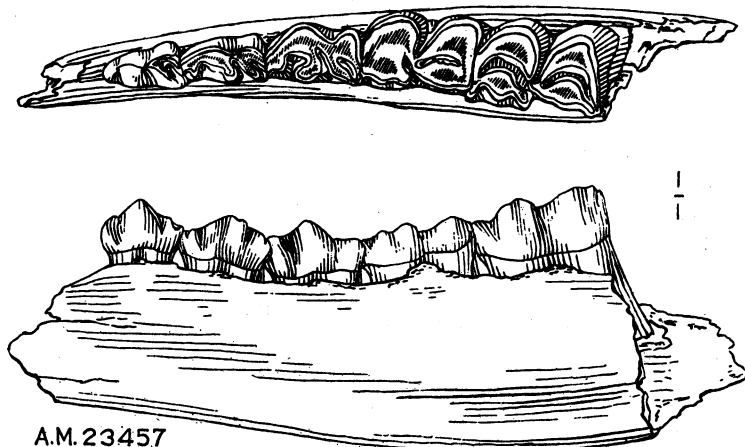


Fig. 10. *Blastocerus extraneus*, new species. Crown and internal views of type lower jaw. Natural size.

The younger gray sand and humus contained very numerous remains of deer, the common *Odocoileus osceola*. In the older cave earth there were only three cervid jaws, the present specimen and two belonging to *O. osceola*.

Unlike *Odocoileus*, P_4 of this specimen has almost the same structure as P_3 , the chief difference, aside from proportions, being that the metaconid or second internal pillar projects farther forward. If constant, the structure of P_4 might be a generic distinction, even from *Blastocerus*, but this tooth varies considerably in recent deer. *Blastocerus* may approach this type very closely and is normally much more similar to it than is any of a large series of *Odocoileus* dentitions which have been compared. A small median external style is present on M_1 but absent on M_2 . This again may be individual, but exactly the same condition is seen in recent *Blastocerus* teeth used for comparison.

The small posterior mental foramen is distinct and is beneath the anterior root of P_2 . The jaw is slender for a mature animal, measuring 23.5 mm. in depth below the middle of M_2 internally.

¹The nomenclature of the South American cervids is rather confused. *Blastocerus* is used to imply relationship with the marsh deer. The same generic term is sometimes used for the Pampas deer, which is apparently not so closely related.

The presence in this fauna of a deer apparently related to one hitherto known only in South America is a very striking feature, although it has long been recognized that a strong South American element occurs in the Florida Pleistocene.¹ The nature of the available material, which is suggestive but not at all conclusive, should discourage theorizing. Nevertheless, while recognizing the strong factor of individual variation, some specimens of *Odocoileus* approaching this jaw in character and some of *Blastocerus* diverging from it more than others, it yet seems improbable that all of the points of difference from *Odocoileus* and of resemblance to

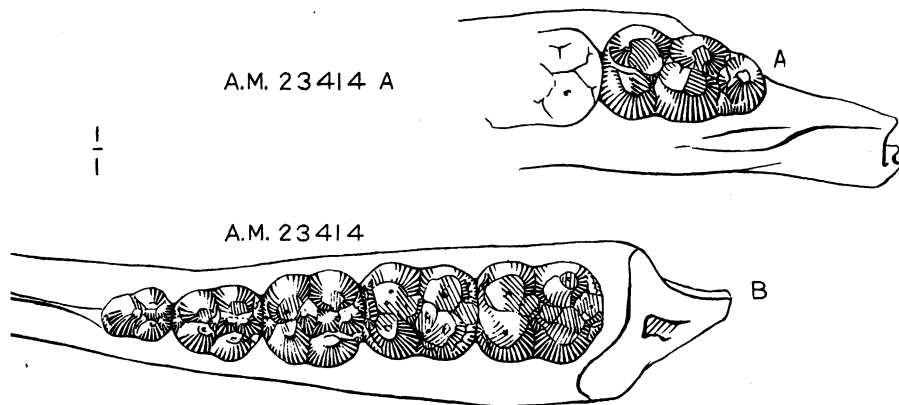


Fig. 11. *Mylohyus* cf. *browni* Gidley. A, Crown view of M_3 , from Amer. Mus. No. 3414A. B, Crown view of left P_2 - M_2 , from Amer. Mus. No. 23414. Natural size.

Blastocerus are misleading. Among these may be stressed the large P_2 with the lobe anterior to the main apex relatively distinct and elongate; the rather open anterior fossette of P_4 , opening internally well back of the anterior end of the tooth; the distinctly bifid anterointernal column of P_4 ; the metaconid of this same tooth without vertical internal grooves, little compressed laterally, and projecting only anteriorly from the loph to the protoconid; and the relatively large molars.

Measurements follow:

P_2		P_3		P_4		M_1	
Length	Width	Length	Width	Length	Width	Length	Width
11	6	11.5	7	12	8	16	10
M_2							
Length	Width						
18	11						

¹"South American element" is a phrase often loosely used. It has been made to include (1) animals indigenous in South America and introduced into North America (e.g., glyptodonts), (2) others autochthonous in North America but with their nearest surviving relatives now mainly South American (e.g., tapirs), and (3) possibly also some instances of races derived in South America from rather recently introduced northern stocks and reintroduced in altered form into North America (no cases certainly known, but possibly true of several animals usually considered as examples of the second sort).

***Mylohyus* cf. *browni* Gidley**

Aside from isolated canines, peccaries are represented in the cave by two lower jaws of a single species of *Mylohyus*, Amer. Mus. Nos. 23144 and 23144A. The Pleistocene peccaries are not as yet very well understood, but of described forms these agree most closely with *Mylohyus browni* from Arkansas. The chief differences, all of doubtful value, are the shorter distance between the end of the symphysis and the cheek teeth, smaller P_2 , and slightly shorter cheek tooth series. The length of M_{1-3} is 52 mm., as against 54 in *M. browni*, that of P_{2-4} is 34 mm., 37.5 in *M. browni*, and the greatest transverse dental width, across the anterior lobe of M_2 , is 14 mm. in the cave specimen and 15 mm. in *M. browni*. As in the latter species, the heel of M_3 consists essentially of a single cusp, and the dental structure, in general, is almost identical.