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SABERTOOTH CAT, *SMILODON FLORIDANUS* (LEIDY), AND ASSOCIATED FAUNA FROM A TENNESSEE CAVE (40 Dv 40), THE FIRST AMERICAN BANK SITE

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ABSTRACT

A partial skeleton of an adult sabertooth cat, *Smilodon floridanus* (Leidy), and remains of 32 other species of vertebrates were recovered from building excavations in Nashville, Tennessee. Extinct forms include *Smilodon, Mammut, Mylohyus,* ovibovine. *Geomys* is recorded for the first time in the state, as a fossil. Four human burials, approximately 2,000 years old, do not appear to be associated with the Pleistocene component. C^{14} dates for the human burials and sabertooth cat are presented.

INTRODUCTION

Excavation for the foundations of the First American National Bank of Nashville, in the summer of 1971, resulted in the discovery of an unexpected cave fissure containing Pleistocene, late Prehistoric and Recent bones.

DESCRIPTION OF SITE

Designated the First American Bank Site (40 Dv 40, Southeastern Indian Antiquities Survey site no. 87), the site is located within the city limits of Nashville, Third to Fourth Avenues between Union and Deaderick Streets, Davidson County, Tennessee, 36° 11' N. lat., 86° 47' W. long.; elevation 133 meters. The small fissure or cave was partially destroyed by the excavation and is now under the bank building, but still accessible thanks to alterations of the building plan by the First American Bank. The site is in the northwestern portion of Tennessee's Central Basin on the southern bank of the Cumberland River, a northwestward-flowing tributary of the Ohio-Mississippi River system. Workmen for the Oman Construction Company encountered the fissure cave at a depth of approximately 10 meters from street level (Fig. 1). Bones were first noted as the contents of the cavity were being excavated. Most of the site had been disturbed and bones broken and scattered before a scientific investigation was begun by the Anthropology Department, Vanderbilt University, under the direction of Dr. Ronald Spores, and the Southeastern Indian Antiquities Survey, under the direction of Robert B. Ferguson. The collection is now stored in the Department of Anthropology, Vanderbilt University, Nashville, Tennessee. Abbreviations for before present (B.P.), upper and or lower molar ($M^{\frac{3}{3}}$), upper and lower premolar ($P^{\frac{4}{4}}$), and deciduous premolar (dP) are used in this manuscript.

RESULTS

The initial configuration of the fissure was largely destroyed by the excavating process, but the fissure appeared to have been connected to the surface by an open vertical shaft as late as Historic times. There appears to be no historic reference. The site had long since disappeared beneath city buildings and the excavators had no prior indication of its presence. According to notes supplied by Mr. Ferguson, construction excavation required removal of the dense Bigby-Cannon limestone, a fine to medium-grained gray to brown limestone with a thickness of from 15 to 30 meters. At a depth of approximately 10 meters from the surface, test drilling broke through the solid limestone and the presence of a subterranean cavity was indicated by yellow clay adhering to the drill bits. Subsequent blasting exposed the clay and rock-filled room. Two distinct bedding planes run through the limestone at the upper limit of the cavity. Water trickles through the bedding strata and narrow crevices extend downward into the cavern. The walls of the cavern were worn by solution to the usual appearance of a domed room. During the investigation, a site sketch was made by Mr. Ferguson (Fig. 2). A detailed excavation could not be made due to the construction timetable. However, the remains of the original deposit are still available for future study.

The types and distribution of bones indicate that at least three time periods were involved, viz., late Pleistocene, about 10,000 years ago; late Woodland, about 2,000 years ago; and Historic (post 1700 A.D.). It cannot be ascertained whether there was continuous deposition from one time period to another or whether distinct depositional episodes were involved.

The deposit consisted of at least two sub-sites; an upper site, Feature 9 (see Fig. 2), yielded the remains of four Indian burials and 16 species of vertebrates, all Recent and typical of the Nashville area up through the early Historic period (see Table 1, Faunal List). Two C^{14} dates, derived from the human skeletal material, date this association: 2,390 ± 145 years B.P. (UGA #334) and 1,690 ± 115 years B.P. (GX 2471).

The bones recovered from the lower Feature 1, in contrast to those from Feature 9, were for the most part those of extinct large mammals. The long-nosed peccary (*Mylohyus nasutus*), represented by teeth and bone fragments from at least three individuals, partial skeleton of an adult sabertooth cat (*Smilodon floridanus*), and partial skeleton of a colt (*Equus*, ?species) were recovered. A baby mastodon (*Mammut americanum*), represented by a single milk molar, and a large adult ovibovine, represented by one phalanx from the general cave area, may belong to this Pleistocene fauna as well. Two C^{14} dates from the *Smilodon* skeleton, one utilizing residual collagen in rib fragments, 9,410 ± 155 years B.P. (I-6125), the second utilizing bone apatite from the humerus, 10,035 ± 650 years B.P. (GX 2562), indicate a late Pleistocene age. This is the latest published date for *Smilodon* remains from North America and implies that the sabertooth cat may have been a contemporary of early man in the American midlands. The condition of the sabertooth cat bones is commensurate with this late date. When burned they readily charred, smoked and emitted the odor of burning organic matter. There obviously has been little mineral replacement or loss of organic constituents. Whether this date is applicable to the other extinct forms in the deposit is not known, but appears probable. The occurrence of sabertooth cat at this site, however, was not associated with the much later human remains from Feature 9. Several horse molars recovered from the general cave area may be from native Pleistocene horses rather than from Historic farm animals; but the presence of teeth of the domestic hog (*Sus scrofa*) from the general cave area indicates there was some surface connection during Historic times, making the horse remains suspect.

Bone preservation was excellent. Complete skeletons of the sabertooth cat and the horse colt appear to have been present prior to building excavation disturbance. No evidence of bone damage due to carnivore or human activity was apparent. One small area of post-depositional rodent gnawing was present on a *Smilodon* ulna. The most likely explanation for the bones, other than human bundle burials, is that they represent the remains of animals which tumbled into an open sinkhole through a shaft no longer apparent and were trapped. This is not an uncommon occurrence even today. Many of the smaller vertebrates, snakes, small carnivores,

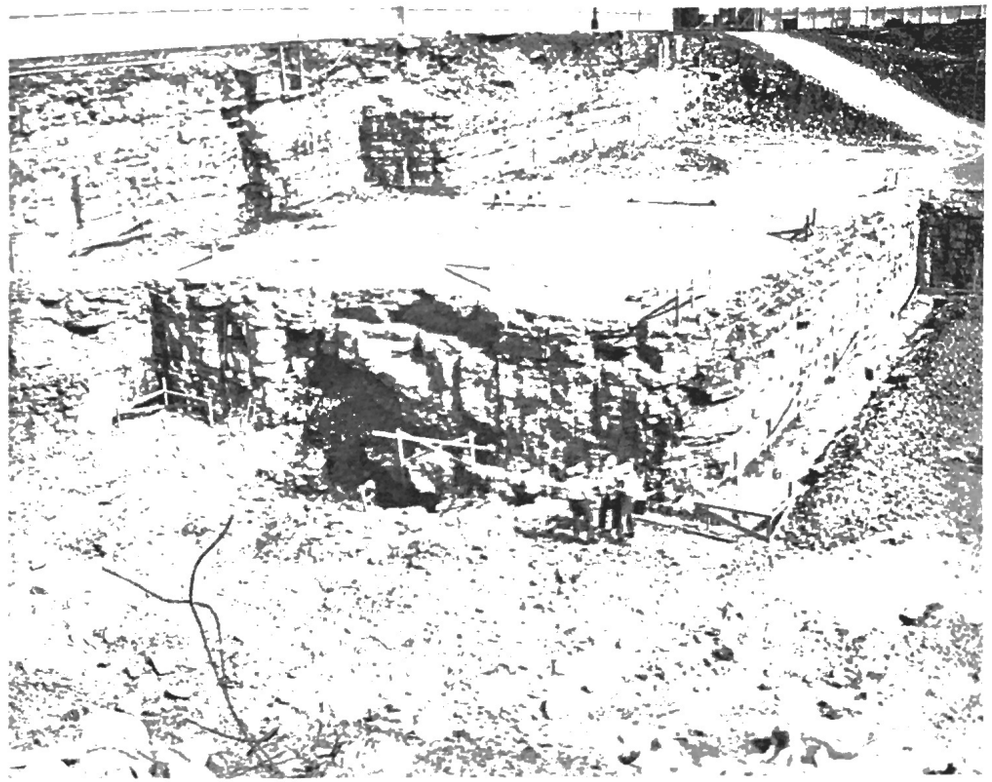

FIG. 1: *Overall view of excavation of the First American National Bank, Fourth Avenue and Union Street, Nashville, Davidson County, Tennessee, August 20, 1971. Note massive, even-bedded Bigby-Cannon limestone and central figure standing in remnants of original cavern. Cavern ceiling approximately 10 meters below street level.*

rodents and shrews, may enter or leave such caves at will and often live or den in them. Although the bank building is now on top of the site, construction changes made by the bank are such that what is left of the site is still accessible and future study of the deposit is possible.

TABLE 1: *Faunal List—First American Bank Site (40 Dv 40), Davidson County, Tennessee.*

Scientific Name	Common Name	Numbers of Recovered Fragments: Features (see Fig. 2) 1	2	6	7	9	General Cave Area (Including Dump)	Minimum No. of Individuals
Unidentified Fish Scales		1					2	
Bufo, sp.	toad					4	1	
Kinosternon, sp.	mud turtle						1	
Natricine	water snake					1		
Thamnophis cf. *sirtalis* (Linnaeus)	garter snake						1	
Carphophis, sp.	worm snake					1		
Coluber, sp.	racer	2	4	1	1	5	5	
Pituophis, sp.	northern pine snake	1	2			37	1	
Lampropeltis - doliata group	milk snake					1		
Agkistrodon, sp.	copperhead					2	1	
Crotalus, sp.	rattlesnake	1	3			13	3	
Unidentified snake			2			30	8	
Fulica americana Gmelin	American coot					1		
Didelphis virginianus Linnaeus	opossum				1	1		1
Cryptotis parva (Say)	least shrew					1		1
Blarina brevicauda (Say)	short-tailed shrew						1	1
Scalopus aquaticus cf. *machrinus* (Raf.)	eastern mole					3	5	2
Sylvilagus cf. *floridanus* (J. A. Allen)	cottontail rabbit	7		3		1	33	3
Sylvilagus cf. *aquaticus* (Bachman)	swamp rabbit				1		6	1
Sciurus Linnaeus, sp.	gray or fox squirrel?					1		1
Geomys cf. *bursarius* (Shaw)	pocket gopher						1	1
Peromyscus Gloger, sp.	deer mouse					1	4	2
Pitymys McMurtrie (or *Pedomys* Baird)	pine or prairie vole					2	1	2
Canis Linnaeus, sp.	dog?				1		2	1
Lynx rufus (Schreber)	bobcat						24	1
Smilodon floridanus (Leidy) #	sabertooth cat	29			2		88	1
Procyon lotor (Linnaeus)	raccoon		1		12		23	3
Mephitis mephitis (Schreber)	striped skunk						1	1
Mammut americanum (Kerr) #	mastodon						1	1
Equus Linnaeus, sp. #?	horse	30					62	2
Sus scrofa Linnaeus	domestic hog						2	2
Mylohyus nasutus (Leidy) #	long-nosed peccary	2	1		1		19	3
Odocoileus Rafinesque, cf. *O. virginianus*	white-tailed deer						12	2
Ovibovini, sp. #	musk ox	1						1

# denotes extinct organisms

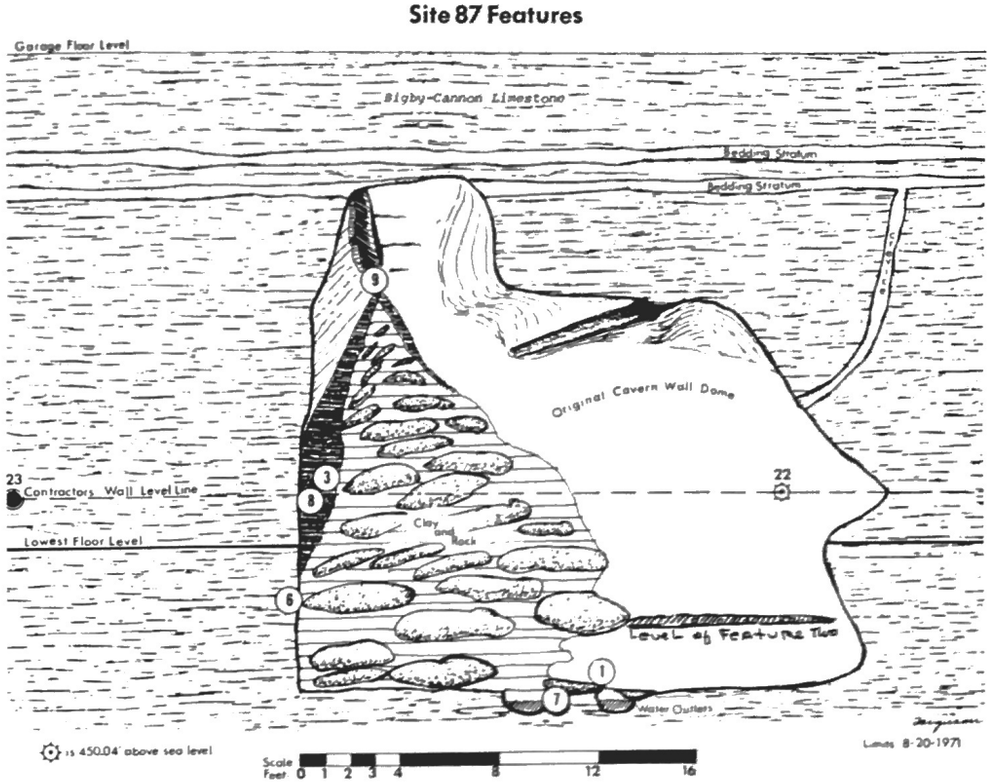

FIG. 2: *Field sketch, First American Bank Site excavation. Vertical view as of August 20, 1971. Numbers 22 and 23 correspond to lines in the architect's plan, as does the "wall level-line." 1. Location scattered Smilodon bones, including radius and ulna, excavated from presumed original matrix. 3. Site of small test excavation. 6. Bone fragment dropped from earth removal equipment. 7. Disturbed Smilodon bones. 8. Human femur in dark brown matrix. 9. Crevice yielding skeleton remains of four humans (skeletons discovered six days after this sketch had been made). A dark brown mantel, which covered the clay and rock fill of cavern area, is indicated trailing downward from 9 to 8. Subsequent rock removal by construction company has altered the vertical profile. Sketch by Robert B. Ferguson.*

SPECIES DISCUSSION

Numbers in parentheses are First American Bank Site (FABS) numbers assigned by the excavators. Some numbered fragments were subsequently fitted together in the laboratory. (° = sacrificed for dating.)

OPOSSUM — *Didelphis virginianus* LINNAEUS

Specimens: Left maxilla with P^5 and P^{6-4} (1216); lumbar vertebra (381).

Remarks: The opossum was represented by a maxilla from Level 9, an isolated vertebra from Level 7. Despite the fact that the majority of specimens from Level 7 are believed to be of Pleistocene age, the presence of the opossum at that time has not been established. It is notably absent from faunas of that time period in eastern North America north of Florida and was apparently a post-glacial migrant from the south. The vertebra may have originally derived from younger sediments. Continued excavations may clarify the situation.

LEAST SHREW — *Cryptotis parva* (SAY)

Specimens: Mandible from F9 siftings, no number.

Remarks: The least shrew, one of the smallest North American mammals, is a common old-field shrew of the central United States.

SHORT-TAILED SHREW — *Blarina brevicauda* (SAY)

Specimens: Mandible (449).

Remarks: Represented by one lower jaw of unknown provenience; the short-tailed shrew is a common woodland mammal.

EASTERN MOLE — *Scalopus aquaticus* CF. *machrinus* (RAFINESQUE)

Specimens: Molar (619); right mandible, no dentition (441); 4 humeri (376, 619, 989, 1009); scapula (1051), iliosacrum (376).

Remarks: The common mole of the area today. Its remains were recovered *in situ* only in Feature 9.

COTTONTAIL RABBIT — *Sylvilagus* CF. *floridanus* (J. A. ALLEN)

Specimens: Two left, 1 right partial mandibles (380, 432, 498); basioccopotal (570), lower incisor (522); upper molar (187); left maxilla with P^3-^{5}, juvenile (187); 3 left ilia (126, 156, 60 & 490, 2 right ischia (384, 612), 2 left, 2 right femurs (133, 293, 136 & 165); 4 right, 2 left, 3 unassigned tibia fragments (384, 433, 673, 339, 985, 139, 365, 366); 3 left partial humeri (140, 142, 192), 5 radii (169, 187, 287, 561, 574); ulna (385); navicular (673), fifth metatarsal (603); 6 lumbar vertebrae (187, 228, 361, 409, 436, 514); 2 left, 1 right calcanea (159, 449, 472).

SWAMP RABBIT — *Sylvilagus* CF. *aquaticus* (BACHMAN)

Specimens: Right humerus, distal half (364); radius (523 & 558), ilium (355); left and right femur (8, 352); tibia, distal end (185).

Remarks: Both cottontail and swamp rabbits are found in western Tennessee at the present time. The ubiquitous cottontail is the common upland rabbit of woods and fields. The swamp rabbit is more characteristic of lowlands, marshy ground and cane breaks. Diagnostic skull parts were not present. Postcranial remains of the two species were differentiated on the basis of size. The swamp rabbit is a larger, heavier animal. The cottontail rabbit would appear to have been a contemporary of the extinct fauna, judging from its high numbers in Feature 1.

GRAY OR FOX SQUIRREL — *Sciurus* LINNAEUS

Specimens: One incisor from F9 siftings, no number.

Remarks: A single incisor recovered from Feature 9 indicates the existence of a large tree squirrel. Both the gray and the fox squirrels are common in Tennessee at the present time, but these two species cannot be differentiated without additional material.

POCKET GOPHER — *Geomys* CF. *bursarius* SHAW

Specimens: Distal one-third of lower right incisor (521).

Remarks: It is unfortunate that the original position of this specimen in the deposit is not known. It was discovered in a matrix that had been disturbed by building excavation. *Geomys bursarius* is a large pocket gopher of the central prairie regions of North America, ranging roughly from the 150th meridian east to, but not including, the Mississippi Valley, and from Texas north to southern Manitoba. Its present range does not lie east or south of the Mississippi-Ohio system. Its range in southern Missouri approaches to within 200 miles northwest of the First American Bank Site. This is the first record of *Geomys bursarius* from Tennessee, although it has been recovered from Pleistocene deposits at Welsh Cave, Kentucky, 200 miles northeast (Guilday et al., 1971), and Savage Cave, Kentucky, 50 miles north of 40 Da 40 (Carnegie Museum collection). A closely related species, *Geomys pinetus*, from southern Alabama, Georgia and Florida, is found approximately 200 miles to the south, in central Alabama, but does not range into Tennessee. It is unfortunate that the pocket gopher evidence recovered to date from Kentucky and Tennessee in the area of pocket gopherless 400-mile corridor between the two species is so fragmentary. The Plains pocket gopher and the southeastern pocket gopher are distinguishable by cranial characters not preserved in the fragmentary fossil material. Future discoveries and more complete specimens may help to unravel the Pleistocene history of these two modern species, obviously closely related, but now distinct both morphologically and geographically. No matter what the specific affinities of the First American Bank Site form, however, its presence at the site is indicative of nearby open country.

DEER MOUSE — *Peromyscus* GLOGER, ?SPECIES

Specimens: Four mandibles (27, 376, 619, 952); femur (619).

PINE OR PRAIRIE VOLE — *Pitymys* MCMURTRIE OR *Pedomys* BAIRD

Specimens: Two right, 1 left mandible (449, 973, and F9 siftings).

Remarks: Small mice common in the Tennessee mammal fauna of today.

DOG? — *Canis* LINNAEUS, ?SPECIES

Specimens: Incisor (671); partial left premaxilla (427); left calcaneum (386).

Remarks: On the basis of the few fragments recovered to date, it is not possible to state further than that a member of the dog family was present; whether domestic dog, wolf, or coyote remains to be demonstrated.

BOBCAT — *Lynx rufus* (SCHREBER)

Specimens: Right ectocuneiform (175); right calcaneum (116); right astragalus (131); right navicular (163); right metatarsals II, III, IV, V (138 & 149, 141 & 135, 129 & 144, 145 & 151); right tibia, distal end (115); right metacarpal I, proximal end (160); 4 metapodials, distal end (128, 134, 136, 148); first phalanges (157, 158, 162, 168, 170); distal phalanges (166, 172, 173); right P_4 (363); canine (77).

Remarks: It appears that all 24 fragments are the partial remains of one animal, of which only the right hind foot and several isolated teeth were recovered, none in their original position in the cave.

SABERTOOTH CAT — *Smilodon floridanus* (LEIDY)

(Figs. 3 and 4)

Specimens: Scattered and fragmented remains of one adult skeleton as follows.

Cranium: right C^1 (1); right P^4 (74) premolar? root (609); anterior one-third lower jaw with symphysis, I_1 alveolus, I_2, I_3, C, diastema, partial alveolus P_3 (71 & 75); posterior one-third left lower jaw with M_1 (72 & 328); cranial fragments (probably *Smilodon*) (45, 88 & 317, 107 & 424, 113, 119, 333, 342, 353, 358, 360, 424, 482, 485, 487, 488, 489, 491, 497, 500, 511, 545, 549, 589, 607, 615, 617).

Vertebral column: atlas fragment (84); fourth cervical (251); sixth cervical (252); anterior thoracic (278); fourth thoracic (263); thirteenth? thoracic (381); thoracic centrum (103); thoracic neural spine (98, 99, 288); fourth lumbar (321); lumbar centrum (479); sacrum (292); vertebral fragments (300, 367, 481, 495, 496, 502, 510).

Sternum: manubrium (273); sternebra (256*, 272).

Ribs: (86 & 94, 90*, 93*, 105* & 108, 112*, 257 & 271, 265 & 281, 266*, 275*, 277*, 318*, 195).

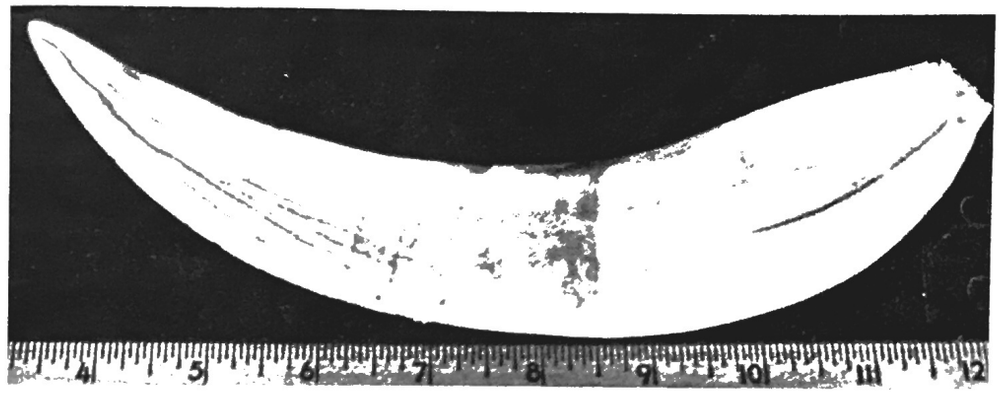

FIG. 3. *Sabertooth cat*, Smilodon floridanus *(Leidy), right upper canine labial view. First American Bank Site, Davidson County, Tennessee. FABS No. 1. Scale in inches. Photo by Bill Preston*, The Nashville Tennessean, *August 14, 1971.*

Forelimb: scapula (20, 246, 248, 254); clavicle (101); humerus, proximal end (276 & 282*); ulna (247, 322); radius (196 & 253); scapholunar (87, 279); right metacarpal III (3); right metacarpal IV, proximal end (295); metacarpal I, proximal end (285).

Hindlimb: innominate (123, 316 & 319; 323*, 347); left femur, proximal end (85); right femur, head (96); left tibia (475); right fibula, proximal three-fourths (91); right fibula, distal end (330); left fibula, distal end (320); right navicular (590); left calcaneum (97); metatarsal III, proximal end (464); left metatarsal V (294); phalanges (117, 124, 154, 207, 348, 379, 428); left ectocuneiform (199).

Miscellaneous fragments: (249*, 302 & 368, 337, 345 & 583, 407, 220, 227).

Remarks: One partial skeleton of the sabertooth cat was represented by 119 fragmented bones and teeth. Aside from the breakage due to talus churning and power machinery, preservation was good. Elements of all major portions of the body were present and there was no duplication of parts. The initial bone discovery was heralded by the finding of the upper canine. By that time, however, the remains had been so scattered that restoration is not feasible. Measurements are presented in Table 2 and are compared with those of a series from the tar pits at Rancho La Brea, California. The Nashville specimen is slightly smaller than the average La Brea specimen. The skeletal elements averaged 3.3% and dentition .3% smaller than the La Brea sample.

Sabertooth cats of the genus *Smilodon* apparently increased in size throughout the Pleistocene (Kurtén, 1965). Those from Rancho La Brea, in addition to being the largest population sample known, are also the largest in overall body size. They are of late Pleistocene age. The somewhat smaller size of the Nashville specimen is of no taxonomic significance, due to the high individual variation shown by these animals. The gradual increase in size during the Pleistocene is expressed in increasing averages of successive population samples. Isolated individuals cannot be assigned to such populations solely on the basis of size.

The presence of P_3, a primitive trait, unfortunately cannot be ascertained. The left mandible anterior to M_1 is missing. The right mandible is broken at the posterior end of the diastema. A trace of the anterior wall of an alveolus, which appears to be well developed, may be seen at this point. It seems likely that it may be the anterior wall of the alveolus for the anterior root of P_3, and that P_3 is indeed missing. M_1 has no accessory anterior cuspule, considered to be a late evolutionary innovation in *Smilodon* and present in "nearly all cases" in the Rancho La Brea population (Merriam and Stock, 1932). It is not possible to make categorical statements concerning the presence or absence of characters when dealing with only one individual, since individuals almost surely will not meet mean values in all instances.

To summarize, this individual is identified as *Smilodon floridanus* (Leidy). Its size (Table 2), apparent lack of P_3, and a C^{14} date of 9,410 ± 155 years B.P. place the animal late in the evolutionary sequence of the genus.

Remains of sabertooth cats are not common cave finds. Crevice Cave, Missouri, 200 miles northwest (Oesch, 1969) and Conard Fissure, Arkansas, 400 miles west (Brown, 1908) of the First American Bank Site are the only two sites from which *Smilodon* has been reported in the American midlands. Large Pleistocene cats have been reported from seven Tennessee caves. Five of these sites, located east of the Central Basin of the state in the Cumberland Plateau and Great Valley area, have produced the remains of seven jaguars, *Panthera onca augusta*, summarized in Guilday and McGinnis, 1972. Two sites, the First American Bank Site and the Gassaway Fissure (Whitlatch and Arden, 1942), lie west of the mountain country and have produced remains of machairodontine cats—*Smilodon floridanus* from the First American Bank Site and the scimitar cat (*Homotherium* = *Dinobastis*, reported as "sabertooth tiger" in Barr, 1961, p. 28) from Gassaway. Although evidence is inadequate, the apparent restriction of jaguars to the mountainous eastern portions and of machairodontine cats to the more western portions of the state may indicate an ecological break that resulted in the differential distribution of preferred prey species.

It is possible that *Smilodon* lingered on for some time after the extinction of its primary herbivorous prey. The demise of thick-skinned forms such as elephants, mastodons, etc., for which *Smilodon* was apparently adapted, must have thrown it into increasing competition with other large predators. If forced to feed on game for which it was not especially adapted (such prey being more efficiently harvested by other carnivores) it would be at a competitive disadvantage, its numbers gradually dwindling, and its range reduced ultimately to the vanishing point. The Nashville *Smilodon* may well have been one of the last of its breed, if its associated C^{14} dates are accurate.

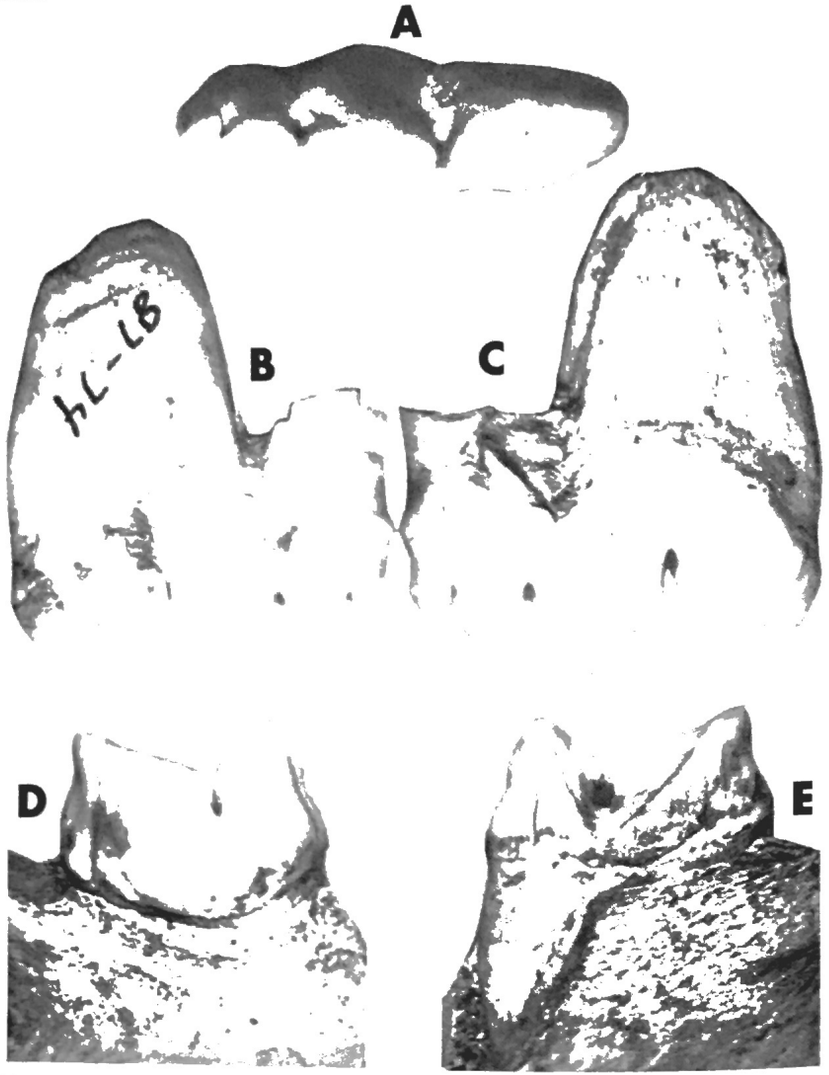

FIG. 4. *Sabertooth cat,* Smilodon floridanus *(Leidy), First American Bank Site, Davidson County, Tennessee. A. Right upper fourth premolar, occlusal view anterior to left. FABS No. 74. B. Labial view FABS No. 74, anterior to right. C. Lingual view, FABS No. 74, anterior to left. D. Right lower first molar, FABS No. 73, labial view, anterior to right. E. Right lower first molar, FABS No. 73, lingual view, anterior to left.*

TABLE 2: *Measurements (in mm).* Smilodon floridanus *from First American Bank Site, Nashville, Tennessee.*

Definition of Measurement	FABS Field No.	Measurement (mm)	La Brea* X	La Brea* O.R.	La Brea* N	Nashville La Brea
DENTITION[1]						
Upper						
Length, upper diastema post. C - P^3	488	10.4	16.1	7.8- 23.6	24	65%
Canine, anteroposterior diameter	1	42.7	41.6	36.0- 46.1	24	103%
Canine, transverse diameter	1	19.8	20.6	16.6- 24.1	24	96%
P^4, length	74	40.3	40.5	37.3- 46.0	21	99%
P^4, length metacone	74	15.7	14.4	11.5- 16.9	19	109%
Lower						
Symphysis length	71-75	61.9	65.6	48.7- 76.8	25	94%
Depth ramus at diastema	71-75	31.1	33.9	27.3- 40.4	25	92%
Depth ramus below M_1	72-328	37.3	40.3	36.0- 45.6	25	92%
Thickness of ramus below M_1	72-328	18.5	21.4	18.7- 23.9	25	86%
Height, angle to condyle	72-328	35.5	37.8	30.7- 44.0	25	94%
Height, angle to coronoid process	72-328	62.3	68.9	58.0- 75.8	25	90%
I_2, transverse diameter	71-75	6.2	6.8	6.1- 7.7	19	91%
I_3, transverse diameter	71-75	8.2	8.4	7.5- 9.2	20	97%
Canine, transverse diameter	71-75	10.5	10.5	9.7- 12.2	22	100%
Canine, anteroposterior diameter	71-75	15.7	14.7	13.0- 16.6	22	107%
M_1, anteroposterior diameter	72-328	29.3	28.7	25.0- 32.1	25	102%
M_1, transverse diameter	72-328	13.6	14.3	12.4- 17.6	25	95%
M_1, length protoconid	72-328	15.0	15.3	12.8- 18.0	23	98%
SKELETAL ELEMENTS[2]						
Scapula						
Anteroposterior diameter, articulated end	20-246, 248-254	75.0	76.8	67.0- 87.1	10	98%
Greatest transverse diameter, articulated end	248-254	48.4	48.9	40.8- 57.9	10	99%
Humerus						
Greatest transverse diameter, proximal end	276-282	86.5	83.6	75.4- 98.0	10	103%
Greatest anteroposterior diameter, proximal end	276-282	100.1	103.2	92.0-118.2	10	97%
Sternum						
Manubrium, greatest width	273	48.2	49.3	36.7- 56.5	10	98%
Manubrium, greatest depth	273	38.1	39.7	27.0- 46.1	10	96%
Ulna						
Anteroposterior diameter of shaft at proximal end of tendon scar	247	34.7	39.8	30.8- 47.6	10	87%

Definition of Measurement	FABS Field No.	Measurement (mm)	La Brea* X	La Brea* O.R.	La Brea* N	Nashville La Brea
Radius						
Width, distal end	253	55.8	58.0	49.4- 67.3	10	96%
Length, measured along internal border	196-253	241.0	266.0	235.0-295.0	10	91%
Long diameter, proximal end	196-253	46.9	47.0	41.3- 55.5	10	100%
Greatest diameter taken at right angle to long diameter of proximal end	196-253	34.8	37.4	32.2- 44.0	10	93%
Scapholunar (left and right average)						
Greatest transverse diameter	87-279	54.5	55.8	45.5- 63.1	large series	98%
Greatest dorso-palmar length	87-279	40.8	38.2	31.6- 42.5	large series	107%
Proximal-distal diameter	87-279	27.8	31.3	25.3- 35.4	large series	89%
Metacarpal III						
Length	3	93.9	96.0	83.0-109.6	large series	98%
Metacarpal IV						
Transverse diameter	295	24.2	22.2	18.9- 26.6	large series	109%
Femur						
Transverse diameter, proximal end	85	91.1	95.5	82.7-108.9	10	97%
Tibia						
Greatest length	475	256.0	274.0	239.0-305.0	10	93%
Calcaneum						
Greatest length	97	93.1	94.3	79.4-106.8	large series	99%
Ectocuneiform						
Dorso-plantar length	199	39.9	41.7	33.1- 48.9	4	96%
Proximal-distal diameter	199	15.8	15.9	12.8- 19.1	4	99%
Width across metatarsal facet	199	27.3	26.3	22.0- 29.7	4	104%
Navicular						
Dorso-plantar length	590	40.1	42.8	37.0- 48.0	4	94%
Metatarsal III						
Transverse diameter, proximal end	464	25.9	26.3	24.9- 27.4	6	98%
Metatarsal V						
Greatest length	294	76.6	82.5	70.8- 94.8	6	93%
Vertebral Column						
4th cervical, greatest length	251	75.0	79.1	63.1- 89.8	10	95%
6th cervical, greatest length	252	59.1	62.9	54.9- 69.0	10	94%
4th thoracic, greatest length	263	54.9	56.4	-	1	97%

[1] Dentition of Nashville *Smilodon* averages 99.7% of size of La Brea sample.
[2] Skeletal elements of Nashville *Smilodon* average 96.7% of La Brea sample.
* Measurements defined and data from Merriam & Stock, 1932.

RACCOON — *Procyon lotor* (LINNAEUS)

Specimens: Partial skull (288, 382, 383, 387, 390, 392, 393, 394, 395, 396, 397); right premaxilla (373); fragment right mandible, no dentition (493); left M_1 (520); 3 partial left mandibles (447, 351 & 374, 66 & 341 & 673); right mandible (73, 81, 147); 3 canines (79, 474, 519); left, right femur (3 & 6, 466, 500); 2 left, 1 right partial tibia (122, 371, 637); fragments of 3 left ulnae (137, 372, 496); right calcaneum (383); partial right humerus (465).

STRIPED SKUNK — *Mephitis mephitis* (SCHREBER)

Specimens: Partial left mandible (518).

MASTODON — *Mammut americanum* (KERR)

(Fig. 5)

Specimens: Right lower deciduous molar (176).
Remarks: The mastodon is represented at the First American Bank Site by an isolated lower milk tooth. The crown is unworn and the roots had not yet begun to form. The tooth had not erupted through the gum at the time of the animal's death. More of this baby mastodon is yet to be found, judging from the excellent condition of the tooth, which indicates that it had not been subjected to post-depositional abuse.

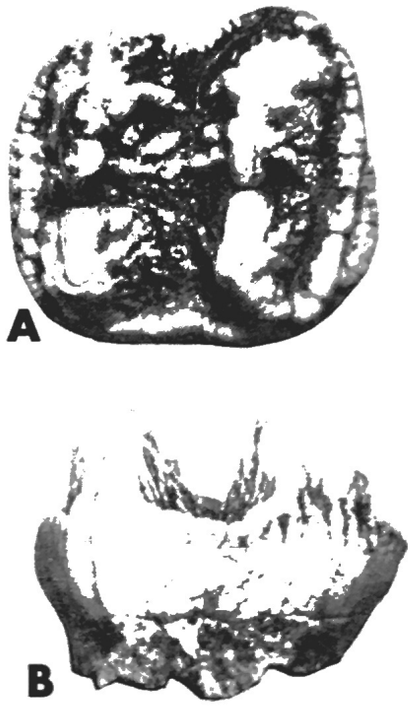

FIG. 5. *Mastodon*, Mammut americanum *(Kerr), FABS No. 176, deciduous right lower molar. A. Occlusal view, anterior to left. B. Lingual view.*

HORSE — *Equus* LINNAEUS, ?SPECIES

Specimens: Left lower molar (444); unerupted left upper molar (177); cheek tooth fragments (33, 41, 56, 446); one partial colt skeleton as follows: radius, distal end (293); tibia, distal end (497); two partial metapodials (88, 324); diaphysis, left humerus (89); partial atlas (250); axis odontoid process (258); partial left scapula (106 & 109); partial left ischium (274); diaphysis, humerus, proximal end (307); diaphysis, radius, distal end (325 & 327); tibia shaft fragment (315 & 334 & 340); diaphysis, radius (83); ribs (4, 5, 7, 9, 15, 16, 17, 28, 34, 35, 40, 181, 191, 193, 197, 205, 212, 215, 218, 260, 328, 584, 596); humerus, deltoid crest (308 & 309); humerus, diaphysis fragment (335); vertebral epiphyses (12, 13, 22, 23, 24, 26, 44, 49, 50, 51, 62, 65, 66, 152, 153); thoracic vertebral fragments (2 & 211, 6, 18, 19, 30, 31, 37, 267, 269); cervical fragment (268); lumbar veterbra spine (36); vertebral spine (29); cervical vertebra centrum (10 & 11); partial phalanx (349); vertebral centra (190, 203, 630, 634, 638, 648); vetebral epiphyses (623 & 639, 208, 214, 230, 234, 626, 631, 641); post thoracic neural arch (621 & 627); partial thoracic vertebra (200); vertebral fragments (217, 229, 231, 625, 628, 629, 633, 635, 640, 642, 644, 645, 647); anterior caudal vertebrae (187, 198); radius diaphysis, proximal end (643); jaw fragment (226); bone fragment (188, 206).
Remarks: Although at least two animals are represented, one adult and one immature, none of the individual teeth or fragments were found *in situ*. Thirty bones from Level 1 and 59 bones from the general cave area, when brought together, were found to constitute a single skeleton of a very young colt. Although bits of almost every other portion of the body were present, the skull and dentition were missing. Domestic hog and possibly dog remains were also recovered from the cavern, so the horse remains may represent those of domestic animals rather than extinct native species.

DOMESTIC HOG — *Sus scrofa* LINNAEUS

Specimens: P_4 fragment (478); M_3 (476).
Remarks: From the general cave area. These domestic pig teeth date from no earlier than the 18th Century.

LONG-NOSED PECCARY — *Mylohyus nasutus* LEIDY

Specimens: Left dP^3 (80); premaxilla of juvenile (569); left M^3, unerupted (466); right M_3 (362); lower left canine (178); upper right canine (76); upper incisor (82); palate fragments (304, 525); incisor (1238); lateral metapodial (376); partial phalanx, peccary? (284); two diaphyses, left and right humerus (649, 326 & 354 & 356 & 499 & 483); right unciform (235); diaphysis, left tibia, proximal one-half (329); diaphysis, left radius, distal (410); vertebral fragments (310, 530); cranial fragment? (389); occipital condyle (438).
Remarks: Remains of the extinct long-nosed peccary were common in the deposit. A minimum of three individuals was represented. They did not, however, occur in Feature 9, the human burial level. *Mylohyus* remains (CM 12972, 12973) have also been recovered from Savage Cave, Logan County, Kentucky, about 50 miles north of Nashville.

DEER — *Odocoileus* RAFINESQUE, ?SPECIES

Specimens: Right mandible, anterior end, no dentition (95); sternebra (299); right calcaneum fragment (343); first phalanges (114, 121, 359); second phalanx (378); upper molar (477); petrous temporal (673); thoracic centrum? (503); fragmentary metapodials (probably deer) (651 & 652 & 653 & 655 & 656 & 658 & 659 & 660 & 661 & 663 & 664 & 666 & 668 & 670 and probably 672).
Remarks: These fragmentary remains, none of which were found *in situ*, are probably those of the white-tailed deer, *Odocoileus virginianus*, but the material is too fragmentary for specific identification.