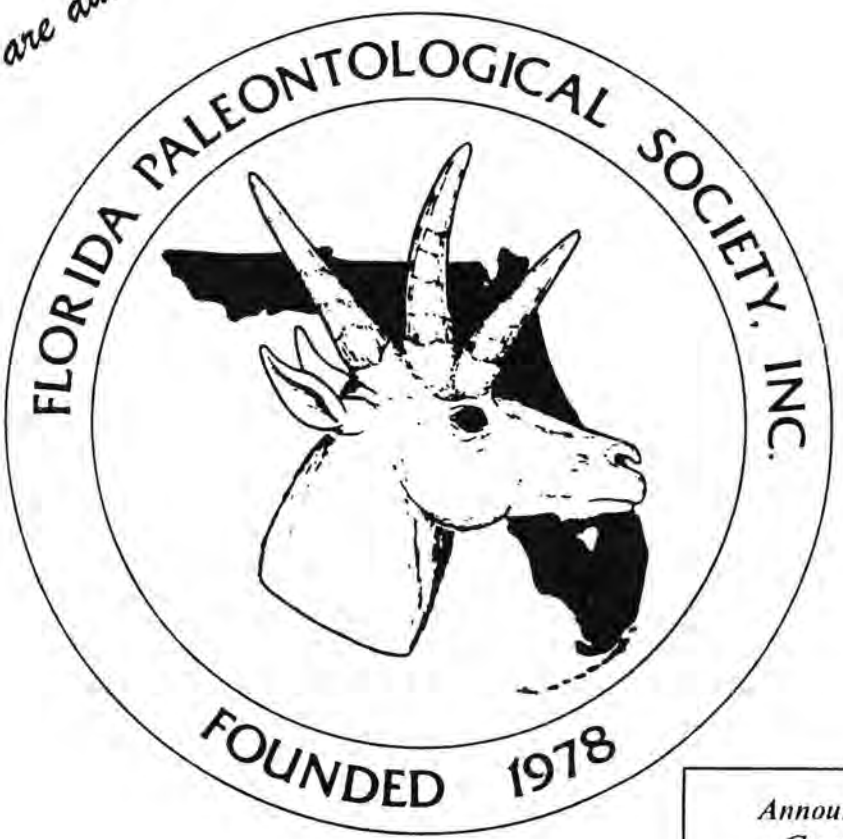
Florida Paleontological Society, Inc.

Newsletter

1997 Dues are due now!



Announcing the annual
Gary S. Morgan
Student Research Award
Competition
(see page 11)

Volume 13 Number 4 Fall Quarter 1996

FLORIDA PALEONTOLOGICAL SOCIETY, INC.

OFFICERS

President:	Gordon Hubble, 150 Buttonwood Drive Key Biscayne, Florida 33149 (305) 361-5890
President-Elect:	Terry Sellari, 5555 Pentail Circle Tampa, FL 33625 (813) 968-6820
Past President:	Sue Pendergraft, 17 Jeff Road Largo, FL 32544 (813) 555-2661
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Treasurer:	Phil Whisler, Fla. Paleo. Soc., Florida Museum of Natural History, Gainesville, Florida 32611 (352) 372-3790

BOARD OF DIRECTORS

Joyce Bode, Ft. Meade, 1998
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Douglas Dew, Palatka, 1997
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Dean Sligh, Orlando, 1998
Jim Toomey, Bradenton, 1997
Barbara Toomey, Sanibel, 1998

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Book Committee:	R. Portell, B. MacFadden
Nominations:	Susan Pendergraft
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By-Laws:	Eric Taylor, Robyn Miller
Honorary Members and Awards:	J. Pendergraft
Historical:	Eric Taylor
Board of Editors:	R. Portell, F. Rupert, A. Brown, E. Taylor
Resident Agent:	Bruce MacFadden

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Anita Brown Lelia and William Brayfield David Webb Gary Morgan Clifford Jeremiah

INFORMATION, MEMBERSHIP, AND PUBLICATION INFORMATION

Please Address: Secretary, Florida Paleontological Society, Inc.
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611

FLORIDA PALEONTOLOGICAL SOCIETY INC. NEWSLETTER

Volume 13, Number 4 Fall Quarter 1996

CONTENTS

1997 FPS Dues are due now!

Please complete the form on page 23 and return with your dues.

1997 FPS NEWSLETTER DUE DATES

Winter Quarter Issue - February 30th, 1997

Spring Quarter Issue - May 30th, 1997

Summer Quarter Issue - August 30th, 1997

Fall Quarter Issue - November 30th, 1997

We need Florida paleontology articles, stories, news events, and information on upcoming club activities.

Please send your submissions to:

Frank Rupert
Florida Geological Survey
903 West Tennessee Street
Tallahassee, FL 32304

FLORIDA PALEONTOLOGICAL SOCIETY
REVENUE AND EXPENSE REPORT
1 NOVEMBER, 1995 - 31 OCTOBER, 1996

REVENUE

Membership Dues			$4,342.35
Sales			
	Publications		
		Beach and Bank Collecting	$5,493.93
		Fossil Shells	$1,095.69
		Handbook of Paleo. Prep.	$ 651.75
		Plaster Jacket	$ 1.00
		Papers in Florida Paleontology	$ 14.00
		Leisey Volume	$ 150.00
	Butvar		$ 265.50
	Miscellaneous		
		Meetings	$ 209.00
		Auction	$1,077.20
		Other (voided check)	$ 126.00
		TOTAL REVENUE	$13,426.42

EXPENSES

	Publications		
		Beach and Bank Collecting	$0
		Fossil Shells	$0
		Handbook of Paleo. Prep	$0
		Plaster Jacket	$0
		Papers in Florida Paleontology (800 copies)	$1,311.08
		Newsletter	$2,591.41
		Hulbert Book	$ 30.00
	Postage		$ 531.57
	Butvar		$ 688.00
	Miscellaneous		
		Meetings	$ 522.68
		Office Supplies	$ 152.22
		Printing	$ 45.69
		State Filing Fee	$ 61.25
		Other	$ 52.50
		TOTAL EXPENSES	$5,986.40

STATEMENT OF ASSETS
31 OCTOBER, 1996

ASSETS

Cash			
	Checking		$12,067.64
	Savings		$19,536.96
		TOTAL CASH AND CREDIT	$31,604.60
Inventory			
	Beach and Bank Collecting (1353 @ $1.14 ea.)		$1,504.80
	Fossil Shells (839 @ $4.36)		$3,658.04
	Handbook of Paleo. Prep. (1328 @ $3.98)		$5,285.44
	Leisey (29 @ $10.00)		$ 290.00
	Papers in Florida Paleontology (835 @ $1.50 & 50 @ $2.50)		$1,377.50
	Plaster Jacket (2963 @ $ .50)		$1,481.50
	Butvar (130 lbs. @ $4.52/lb)		$ 639.60
		TOTAL INVENTORY	$14,236.88
		TOTAL ASSETS	$45,841.48

News Notes....

Paleofest96 is history, but what a fantastic show it was. The staff and volunteers of the Florida Museum of Natural History produced an outstanding weekend for all those fortunate enough to attend. Starting on Friday evening, 354 attendees crowded the lobby and exhibit halls of the museum to begin a weekend of fun, education, and paleo-comraderie. The museum made an ideal location, and attendees were able to browse the museum's superb fossil displays and enjoy the Paleofest activities at the same time. Interesting and informative highlights of the fest included the unveiling of the new fossil horse from Leisey, a variety of shortcourses and tours, talks, displays, and two great auctions. All were professionally orchestrated. Special thanks are due to the Paleofest Hosts and Co-sponsors: the Florida Museum of Natural History, the Florida Paleontological Society, The Paleontological Society, the Florida Museum Associates, and J.C. and Lucy Dickinson.

Paleofest was also made possible, in large part, by generous Sustaining Supporters, which include the Office of the Director, FLMNH, the Pony Express, and the Tampa Bay Fossil Club. In addition, the expenses of staging the event were defrayed by the 36 patrons of Paleofest, as well as the 12 corporate sponsors who contributed their time and services to make the weekend a success, and by a number of individual gifts. I am sure we all greatly appreciate the generous support of these individuals and groups, which allowed Paleofest to become reality.

Besides featuring a fascinating array of items from over 50 donors, Saturday evening's silent and verbal fossil auctions raised $5,600 of the total for the museum. Many thanks to Russ McCarty for helping with the auction arrangements. The FPS and the Paleontological Society each donated $1500 towards the expenses of the fest. The net proceeds for the entire weekend, which included gifts from individuals, totaled $13,500 and will be used for scholarships and paleontologic education.

Many individuals contributed their time and energy to making the weekend event the success it was. We extend them all our sincere thanks. Five hard-working people in particular deserve special mention for their time and efforts in planning the event and serving as the host committee. These are: **Marc Frank, Dr. Doug Jones, Dr. Bruce MacFadden, Roger Portell,** and **Carol Pooser.**

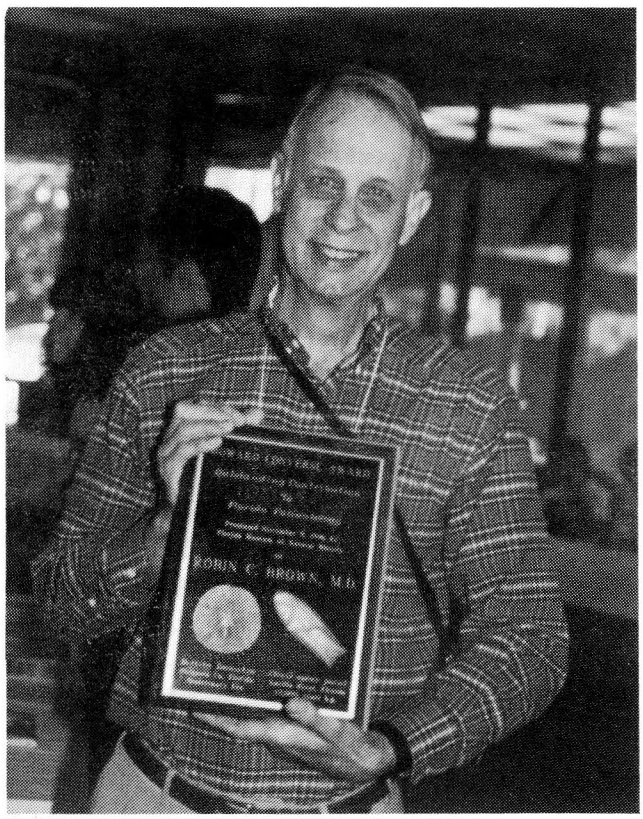
While the exhausted planners of Paleofest don't quite share my enthusiasm for doing this again next year, the success of this meeting will hopefully set the stage for more such events in future years. Following this section are photos of the people and events at Paleofest96.

Robin Brown receives '96 Converse Award...

Dr. Robin Brown of Ft. Myers, amateur paleontologist and author extraordinare, was presented with this year's Howard Converse Award. Dr. Bruce MacFadden presented the award to Robin during the Saturday morning meeting session at Paleofest96. Robin is recognized for his strong support of the museum and his numerous specimen donations. His most memorable gift was allowing the museum to collect the best known (to date) associated skeleton of *Balaenoptera* sp. (baleen whale) in Florida, from his property at Hickey Creek in Lee County. The specimen consists of a skull, parts of the mandibles, numerous ribs and vertebrae, and is Pliocene in age. His most outstanding contribution is, of course, his famous book on Florida's fossils, which is in its second edition, fourth printing, with over 10,000 copies sold.

The Converse Award is presented yearly to recognize an individual from the non-professional paleontological ranks who has made outstanding contributions to Florida paleontology. The award is named in honor

of the late Howard Converse, former preparator at the museum. Award recipients are selected by the museum paleontology staff and are presented with a personalized wall plaque. Their names are also inscribed on a large, permanent plaque which hangs in the museum.



Dr. Robin Brown with his Converse Award Plaque.

New FPS Officers elected...

The new Officers and Board of the FPS were announced at the Fall Business Meeting, held at the museum during Paleofest96. The Officers are:

President:	**Dr. Gordon Hubbell**
President-Elect:	**Terry Sellari**
Vice President:	**Tom Ahern**
Secretary:	**Eric Taylor**
Treasurer:	**Phil Whisler**

The new Board members are:

Joyce Bode, Ft. Meade
Janet Burton, Havana
Steve Hutchens, Old Town
Joyce Jackson Poulton, Ponte Vedra Beach
Dr. Bruce MacFadden, Gainesville
Roger Portell, Gainesville
Dean Sligh, Orlando
Barbara Toomey, Sanibel

Congratulations to all our new officers. We look forward to the next two years of their inspired leadership.

News from the Florida Museum of Natural History...

From the Invertebrate Paleontology Division...

During the fall semester, **Doug Jones** has been teaching GLY 6660 (Paleoecology) to 17 graduate students and a couple of undergraduates. In late October he attended the Annual Meeting of the Geological Society of America Meeting in Denver, Colorado where he presented a paper co-authored by **Stephen J. Gould** on the solution of a classic paleontological problem -heterochronic style in the evolution of the Jurassic oyster *Gryphaea*. **Irv Quitmyer** is assisting in this project which is supported by an NSF grant.

In December Doug will attend the fall meeting of the American Geophysical Union where he will report on work done with **Warren Allmon** of the Paleontological Research Institution (PRI) concerning Plio-Pleistocene productivity decline in the western Atlantic.

Doug organized and edited a special theme issue of the journal *Palaios* this fall, entitled: "Sketetal Records of Ecologic Change." The ten research papers published therein represent the state-of-the-art in this area of investigation, including geochemical and growth increment analyses of fossil vertebrates, invertebrates, and plants. Doug and **Roger Portell** also continue to make progress on their book, "Fossil Invertebrates of Florida".

Roger and **Amy Tobias** with the help of **Greta Murray**, undergraduate **students Delene**

Beeland and Alex Mouat, and volunteers Barbara Toomey, Kim Trebatoski, and **Jackson Derbish** continue curation and computerization of the Victor Zullo fossil barnacle Collection, the Muriel Hunter Collection, and the Florida Geological Survey Collection. Curation and computerization of these collections are supported by an NSF grant.

A major new addition to IP was received from **Richard (Dick) Petit** of North Myrtle Beach, SC. Petit, a collector and student of fossil and Recent mollusks for nearly forty years, generously donated his fossil collection from significant localities in South and North Carolina. Petit has published over fifty articles on mollusks and is a past trustee of the PRI and a member and Past President of the American Malacological Union.

Roger co-authored and published several IP collection-based papers recently: "Diversity of Pliocene-Recent mollusks in the western Atlantic: Extinction, origination, and environmental change" co-authored with **Warren Allmon, Gary Rosenberg,** and **Kevin Schindler** in "Evolution and environment in Tropical America" published by The University of Chicago Press. "A new species of *Rhyncholampas* (Echinoidea: Cassidulidae) from the Chipola Formation: The first confirmed member of the genus from the Miocene of the southeastern U.S.A. and the Caribbean" co-authored with UF graduate student **Craig Oyen** and published in Tulane Studies in Geology and Paleontology.

Amy is working on her Masters Thesis through Virginia Polytechnic Institute and State University in Blacksburg, Virginia, when she's not identifying or cataloguing fossil invertebrates. Her project is an evolutionary and morphologic study of the bivalve *Marvacrassatella* lineage which survived several habitat changes and extinction events over several million years. In the early Pleistocene, this genus became extinct for unknown reasons. Amy is looking at part of this lineage from the early late Pliocene Yorktown Formation to the late late Pliocene Chowan River Formation to the early Pleistocene James City Formation. *Marvacrassatella* was sampled over a wide geographical range at different time intervals in order to demonstrate the evolutionary pathway of this marine clam. Virginia Museum of Natural History and FLMNH collections are being used in this study and will be supplemented with additional specimens collected by Amy. About twenty-five variables will be measured on each specimen using digital calipers. Multivariate analyses are being used to determine its morphology through time and space to reveal environmental effects on the *Marvacrassatella* lineage and its evolutionary pathway. Other researchers involved in this study include **Richard K. Bambach** and **Gwen Daley** from the Virginia Polytechnic Institute and State University, and **Lauck W. Ward** from the Virginia Museum of Natural History.

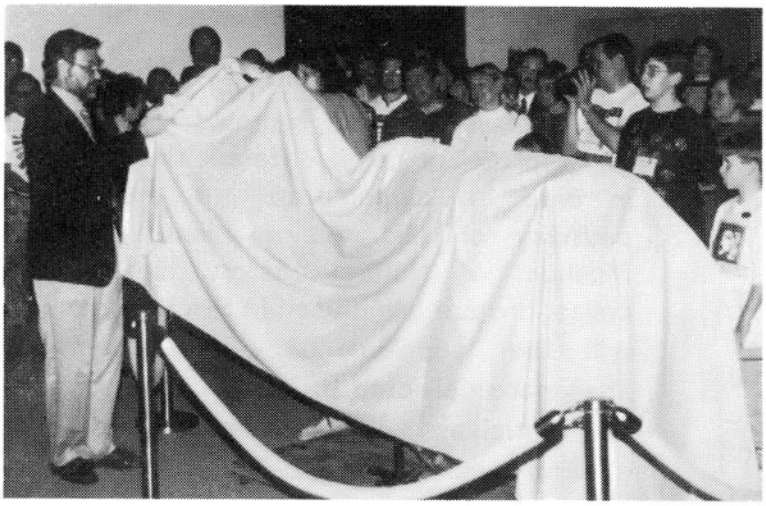
Wanted...

The Florida Museum of Natural History Library is missing numbers 40, 42, and 44 from its Plaster Jacket set. If anyone has copies of these issues and would like to donate them to the museum, please contact Marc Frank at the museum address, phone (352) 391-1721.

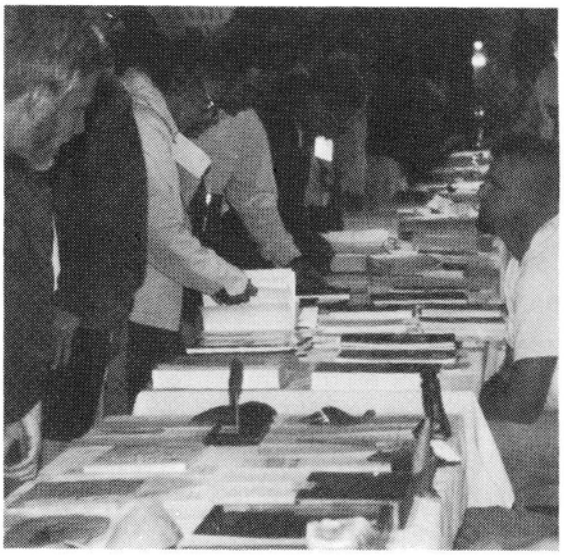
FPS Web Page...

Plans are in the works for an internet web page for the FPS. The page would describe the society and its functions, list its available publications and products, and provide information on joining. We have the expertise available to create the page, but are in need of a photograph or two (preferably 35mm slides) of FPS members out collecting in the field. If anyone has slides of fossilers in action taken during one of our trips, and would like to submit them, please contact Russ McCarty at the museum, (352) 391-1721.

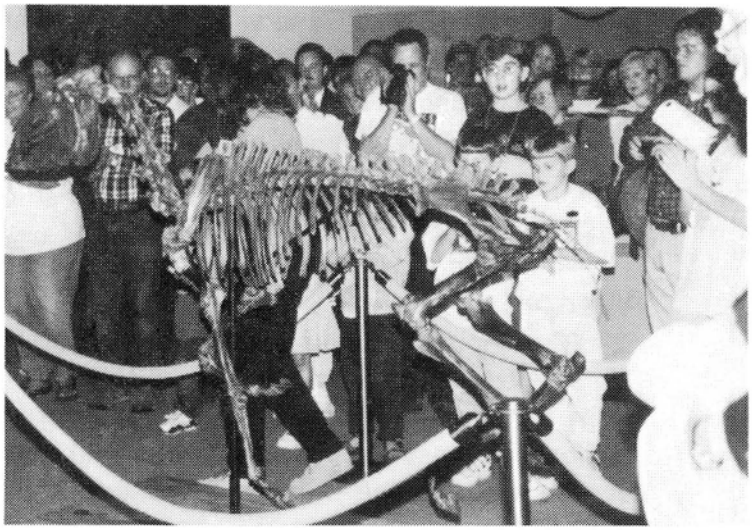
PALEOFEST96 HIGHLIGHTS



The crowd waits with excitement as the Leisey Fossil Horse skeleton is unveiled.....

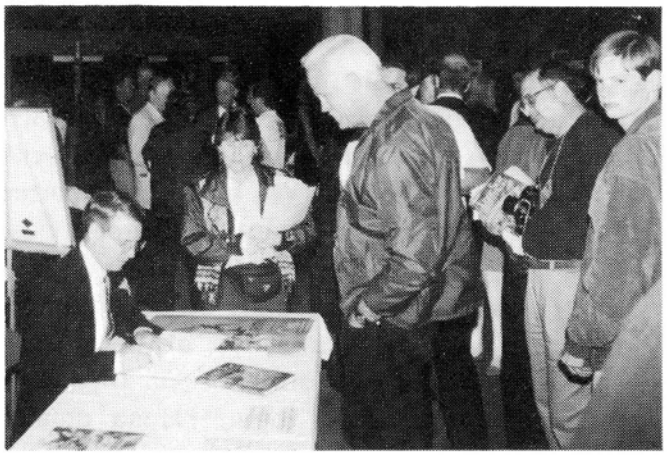


Paleofest attendees review the silent auction offerings

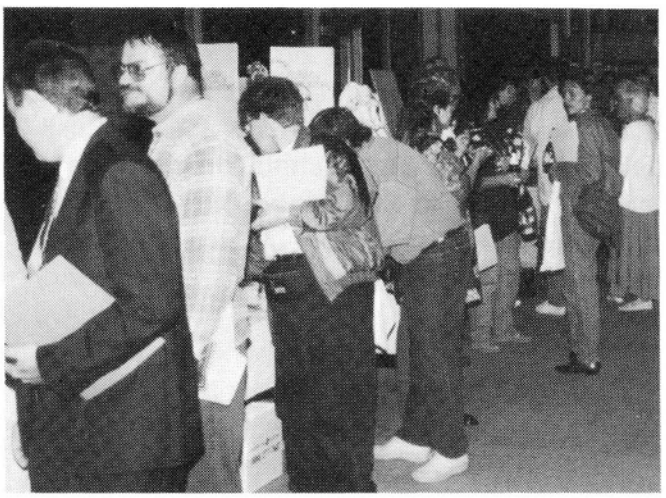


Attendees break into applause upon their first glimpse of the Leisey Horse.

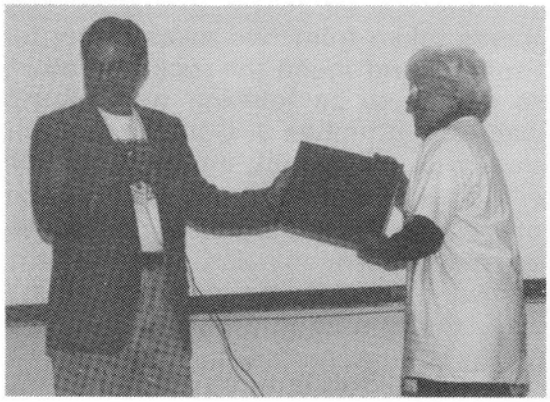
Phil Whisler once again served as auctioneer for the verbal auction.



Dr. Louis Jacobs, guest dinosaur lecturer, signs copies of his books for Paleofest96 attendees.



Attendees had the opportunity to view special displays setup by other clubs and organizations.

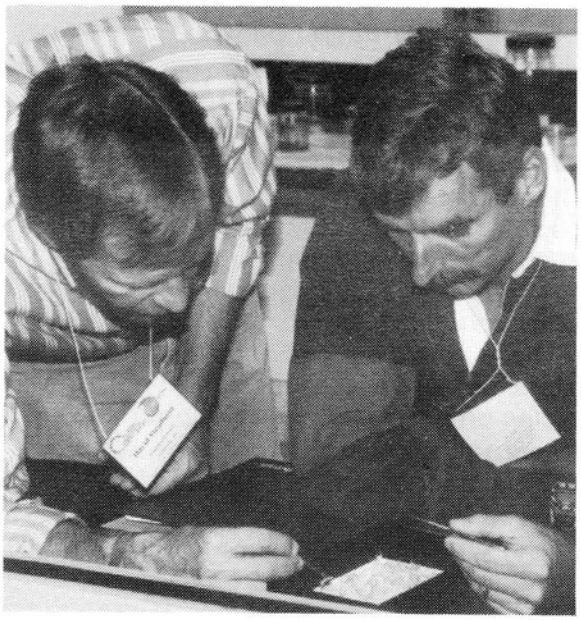


Anita Brown receives a plaque honoring her 20 years of service to the Museum. She was also given a brick to be inscribed with her name and placed on display in the new exhibition center.

Gary Morgan [R] traveled from New Mexico to join us.

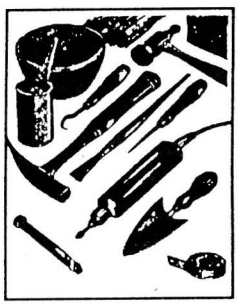
Dr. Bruce MacFadden presents a plaque of appreciation from the Museum to the owners of the Leisey Shell Pit, in recognition of their cooperation and support.

Attendees tank up on barbeque Saturday night.



Dr. David Steadman explains the finer points of microvertebrate identification to a workshop participant.

Behind the scenes tours of the Museum were part of the many fine workshops offered.



Prep Talk

by Russ McCarty

Greetings from the bone lab. Paleofest96 has come and gone, leaving in its wake a lot of good feelings. It was great to see so many old acquaintances, many of whom, I had not seen for several years. Thanks to the generous donations of club members and the paleo community in general, the auction was a smashing success. Paleofest96 achieved its goals of bringing Florida's fossil lovers together and of topping off several endowments, whose interest will be used to further Florida paleontology. The news from most quarters proclaims that Paleofest was an unqualified success, and great fun in the doing, too. For a first attempt, I think we did a pretty good job, but of course, hindsight, will probably reveal a few ways in which the next Paleofest can be improved.

The Martians Have Landed

According to the popular TV series, "X-Files", "...the truth is out there." In August, scientists released results of their study of a meteorite from Mars. They had found evidence, in the form of fossils, that life once existed on Mars. Unfortunately, for science fiction buffs, there were no bug-eyed monsters with tentacles, just microbes. The meteorite which contained half-micrometer long bacteria-like structures was blasted off the surface of Mars 3.6 billion years ago when another large meteorite struck Mars sending debris from the Martian surface flying into space.

When this news was first made public, many scientists greeted the claims of life on Mars with skepticism. Since then, another Martian meteorite examined by British scientist has shown similar microscopic lifeforms, adding strength to the initial claims.

Geologists have also recently examined drilling cores taken from two miles below the earth's surface and found the rock formations at those depths to be teeming with mineral eating bacteria. Stephen J. Gould stated that the biomass of these rock dwelling bacteria beneath the surface of the earth far exceeded that of all surface lifeforms (including bacteria, mosquitoes, whales and humans) put together. Now, that's amazing. But if Stephen J. Gould said it, I believe it. Such findings greatly increase our chances of finding life on (or **beneath**, as the case may be) other worlds. An additional result of this discovery, is that it will probably redirect our whole search mode for life on other planets from surface investigation of only planets with water and hospitable atmospheres, to subsurface searches of cold, airless planets and their satellites as well. If this evidence for extraterrestrial life proves valid, then fossil hunters of the future may have an entire universe in which to play.

MECHANICAL PREPARATION

At Paleofest, I gave two workshops in advanced preparation. Each workshop lasted an hour and a half, not really enough time for a hands on session. Instead, I chose to introduce my class of preparators to some of the advanced tools which fall under the category of mechanical preparation. I make the distinction here between 'hand preparation tools' and 'mechanical preparation tools'.

Hand preparation tools, as the name implies, are hand-held tools such as dental picks, brushes, spatulas, pin vises---even hammer and chisel. Mechanical preparation tools are those powered by electricity or are pneumatic. I have placed mechanical tools in several different categories, each with its own advantages and special uses.

Air Abrasive Devices

These devices are scaled down sand blasters which eject a stream of grit-like particles propelled by pneumatic pressure. Air abrasive units are used for detail work when preparing micro-fossils. This type of tool is also good for cleaning up invertebrate fossils found in limestones and other hard matrices. As a general rule I use the air abrasive only after I have removed most of the matrix with other mechanical or hand tools. A little experience will validate this rule. Even with

the hardest grits and highest pressures, clearing away matrix with an air abrasive is slow work. It is also expensive to remove the bulk matrix with an air abrasive tool since the grits used in these devices are not cheap. For these reasons, I use the air abrasive for finishing work mostly, e.g., after I have removed most of the matrix from a nice fossil bear jaw, I will clean up the teeth, or any thin residual matrix with the air abrasive. You will have to experiment with them to find the uses best suited to your needs.

Two companies produce most of the air abrasive systems used by preparators, S.S. White and Crystal Mark. In my opinion, Crystal Mark makes a much more dependable machine, and their support staff for service, sales, and repair stands a quantum leap above S.S. White.

These devices remove matrix by emitting a stream of grit propelled by compressed air. Cutting by these tools can be varied by adjusting the air pressure, thus raising or lowering the velocity of the air stream, changing nozzles, thus altering the spray pattern of grit emitted, or using grits of different hardness. Grits range from the hardest grade of aluminum oxide, and in descending grades of hardness, through powdered dolomite, sodium bicarbonate, powdered walnut shell, even cork.

As the preparator soon learns with the first use of the air abrasive device, the stream of grit will take bone away as well as matrix, especially if the nozzle is kept in one spot for more than a few seconds. The trick is to move the nozzle around constantly. The new user should practice with an expendable specimen until the art of preparation with an air abrasive is mastered. For safety, the operator should use a grit recovery system, and wear a particulate mask, and of course use the nozzle in a work chamber. Air abrasive systems are expensive. A minimal system, in which you build your own chamber and grit recovery system will cost around $2000 for the air abrasive unit itself.

Miniature Air Hammers

Like many products developed for industry, fossil preparators quickly discovered that miniature air hammers were perfect tools for removing hard matrix from a fossil. These pneumatic tools operate with a reciprocal motion of a hard conical stylus, that cycles up to 40,000 motions per minute. The force applied by the stylus, and the number of cycles per minute can be adjusted to that which is required to accomplish the job. In this country there are three companies producing miniature air hammers: Chicago Pneumatic, which produces the air scribe CP 9361, and a newer model made expressly for preparation, the AERO, and the Ingersoll Rand EP50 Air Engraving Pen.

As with all mechanical tools, these devices will damage fossils as easily as they cut through matrix, so that care must be taken when learning to use these tools. I have used the Air Scribe CP9361 made by Chicago Pneumatic for more than 10 years and recommend it for its dependability and effectiveness. If you are working with hard matrix, this type of tool is a necessity. If you already have an air compressor, a miniature air hammer system can cost anywhere from $140 to $350 to set up. Since they are made for the metal working industry, oilers which feed a constant stream of oil into the air lines are pushed by the manufacturers, however, for fossil preparation, it is sufficient to add 6 to 8 drops of lubricating oil in the air lines each day you are using the tool. When using air hammers, the operator must wear eye protection at all times to protect from flying rock chips.

Electric Etchers or Engravers

Electric etcher/engravers, like the miniature air hammers use a reciprocating stylus to remove hard matrix. They have nowhere near the force of their pneumatic cousins, the air hammers, but with a few modifications they can provide an inexpensive substitute for the more expensive tools. To make them more effective at removing matrix, you must first remove the stylus that comes with the etcher and throw it away---it's useless. Now get a 1/8 inch drill bit and grind down the tip to a long, thin, tapering point. Just insert this newly made stylus into your etcher and you are ready to go. You will find it much more effective for removing matrix than the stock stylus sold with the etcher. Goggles or some form of eye protection must also be worn when using these tools.

Fragile or delicate specimens in the lab often require a gentler touch than can be provided by the pneumatic mini air hammers.

In my lab I use a Dremel etcher/engraver, available at most hardware and building supply stores for less than $30. I have made a number of different shaped styluses, each with a specific application. As with most power tools used for removing matrix, goggles, or some form of eye protection should be used to protect the eyes from flying rock chips. A number of other companies also manufacture this type of tool, including the Burless Vibrograver.

Pneumatic Rotary Grinders

Rotary grinders use a rotating bit, instead of percussion and vibration to remove matrix from fossils. Their use is indicated where excessive force or vibration would damage a specimen. The miniature air grinders such as the Starlite are close relatives of the drills used by dentists and rotate at speeds up to 340,000 revolutions per minute. Because of this high rate of speed, they can easily cause damage to bone. As with the Pneumatic Etcher/Engravers, it is best to use these tools to remove the bulk of overlying matrix, then resort to gentler mechanical tools or hand tools to finish the job. Cutting of matrix is controlled by the type of bit, or burr used, and the revolution speed, which is itself controlled by a foot pedal. If you already possess an air compressor, a Starlite system can cost in the neighborhood of $250 to $350 dollars.

Electric Rotary Grinders

There are two main types of electric rotary grinders, the self contained hand-held grinders such as the Dremel rotary grinders which can purchased at most hardware, hobby, or building supply stores, and the flexible shaft grinders which are usually found in specialty catalogs.

The hand held grinders are simple and easy to use. A large variety of burrs, grinding bits, and cutting wheels are available for them. The speed (revolutions per minute) are controlled by a switch which has variable positions for different speeds.

The flexible shaft grinders transmit power from the motor to the grinding head through a flexible metal shaft that is several feet long. The speed is controlled by attaching the flex cable to one end of the motor, or to the other geared end which produces a different speed. The flex shaft grinders also have optional foot pedal, variable speed controls that act much as an accelerator pedal.

Rotary grinders, whether pneumatic or electric, are very useful in a prep lab. I tend to use them more as a touch-up tool, that is, to remove an encrustation of calcite or some other hard matrix that prevents two pieces of bone from being glued together properly. I prefer the hand grinders to the flex shaft grinders, because you don't have to worry about kinking the cable, or having to grease the shaft frequently. In addition, the hand grinders seem to able to bet into spots where the flex cables won't reach. The hand grinders are also much less expensive, averaging about 1/5 the price of the flex shaft models. On the plus side for the flex shaft models, they do have larger, more powerful motors, so greater cutting pressure can be applied to the matrix, and the larger motor probably will outlast the smaller hand held grinders.

SUPPLIERS OF MECHANICAL PREPARATION TOOLS

Kingsley North, Inc.
Rotary grinders, hand held and flex shaft grinders. Call for catalog.
910 Brown St.
Norway, MI 49870 Tele: (1-800) 338-9280

Chicago Pneumatic Air Tools
Pneumatic engravers (Airscribe)
2200 Bleecker St.
Utica, NY 13503
also from:
Cameron & Barkley Co., P.O. Box 26789,
Jacksonville, FL 32218
(904)757-0211

Starlite Industries, Inc.
Pneumatic rotary grinders
1111 Lancaster Ave.
Rosemont, PA 19010 Tele: (215) 527-1300)

Home Depot, Lowes, Hardware Stores
Electric grinders

Crystal Mark, Inc.
Air abrasive systems
613 Justin Ave.
Glendale, CA 91201 Tele: (1-800) 659-7926

Questions, comments, and suggestions should be directed to Russ McCarty at the VP Prep Lab, Florida Museum of Natural History, University of Florida, Gainesville, FL 32611. Telephone: (352) 392-1721. Email: Cormac@flmnh.ufl.edu

Announcing the Florida Paleontological Society's

Gary S. Morgan Student Research Award

5TH ANNUAL COMPETITION

Prospectus and General Overview

The Florida Paleontological Society (FPS) is pleased to announce the fifth annual competition for its Student Research Award. The purpose of this award is to promote a better understanding of **paleontology and the ancient life of Florida** through new research discoveries. Eligible fields of relevance within Florida paleontology include invertebrates, vertebrates, microfossils and plants. This award is open to any **college student, undergraduate or graduate**, in good standing at a Florida college or university.

For this second competition, the FPS has allocated an award of up to $500. The purpose of this grant is for expenditures such as (but not restricted to) field work, museum research travel, laboratory analyses, research materials, etc. It is not intended to fund travel to scientific meetings, indirect (overhead) costs, or salaries and wages. The **deadline** for receipt of proposals is **1 March, 1997** .

Applications must be postmarked on or before the deadline and be sent to the Secretary at the address listed below. Applications will be screened by a committee and will be judged based on the following criteria: (1) merit of the proposed research, (2) feasibility of the project, (3) clarity of expression, and (4) a letter of recommendation from a faculty sponsor. The screening/award committee shall consist of professional and hobbyist paleontologists. In order to avoid potential conflicts of interest, students whose advisor serves on this committee are ineligible to apply. The Award will be announced on May 15th, 1997 and a check for the requested amount (up to $500) will be sent by the Treasurer to the recipient.

It is expected that, during or after completion of the research, the recipients will present the results of their discoveries and additions to knowledge in the form of (1) a short article of a non-technical nature to be published in the FPS Newsletter and/or (2) a talk presented at an FPS meeting. In the event of the latter, the student's travel expenses to the meeting will be paid by the FPS (but this does not have to be included in the originally requested budget).

Application Process and Requirements:

The application process is intended to be short - thus, items 1-4 below are limited to two pages (minimum 10 point type, standard 1" margins). The application must include:

1. Title of research project
2. Name, address, and phone number of applicant
3. Current college status (where enrolled, major, degree program, anticipated graduation date).
4. Project description written in **general**, i.e., **to the extent possible, non-technical**, terms to include a description of what he/she plans to study, why it is interesting or important, how and when it will be done, and a short budget of proposed expenditures.
5. Appended to this proposal there must be a letter from a faculty sponsor who will vouch for the qualifications of the applicant as well as the importance of the project, and a statement that he/she will supervise the research.

Applications should be submitted by 1 March, 1997 to:

Eric Taylor, Secretary
Florida Paleontological Society
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611-2035

WHOSE TOOTH IS THIS?

The Artiodactyla

by David Thulman

In the Pleistocene of Florida, the order Artiodactyla included the families Tayassuidae (peccaries), Camelidae (llamas), Cervidae (deer), and Bovidae (bison). In addition to discussing the teeth of these families, this installment of *Whose Tooth is This?* also includes Antilocapridae (pronghorn antelopes) which were only present in Florida in the Miocene and Pliocene.

Artiodactyl means "even numbered toes," and although they may share a family propensity for toes in multiples of two, their teeth can be very dissimilar. The deer, llamas, bison and antelopes are called selenodonts, meaning the cusps of their premolars and molars have coalesced into crescent-shaped crests, while their cousins the peccaries and pigs have cheek teeth with more or less rounded cusps and canines large enough to be called tusks.

As always I've relied on the *Checklist of the Fossil Vertebrates of Florida*, (Hulbert, 1992), This time the usual bone-dry recitation of tooth dimensions for each photo are listed at the end.

Tayassuidae (peccaries)

Two peccary genera roamed and rooted around Florida in the Pleistocene: *Mylohyus* and *Platygonus*. *Mylohyus* had rounded, lower crowned (bunodont) teeth (Figure 1) compared to the angular, higher crowned teeth of *Platygonus* (Figure 2). The teeth of *Playtgonus* can also be described as bilophodont, which means the cusps form two parallel ridges. The unworn molars of *Platygonus* look like miniature mastodon molars in profile (Figure 3). This difference in crown profile make the genera easy to distinguish in unworn specimens. However, once worn this distinction is lost and differentiating the genera is problematic. Figure 4 (*Mylohyus*) and Figure 5 (*Platygonus*) demonstrate the problem. The premolars of *Mylohyus* have four cusps while the premolars of *Platygonus* have three. (Arrows in Figures 4 and 5.) Figure 6 is an upper (arrow) and lower canine of *Mylohyus*.

There are not striking size differences between the genera and the dimensions vary between these samples by a few millimeters. This observation is borne out by the samples reported in Tayassuidae of the Irvingtonian Leisey Shell Pit Local Fauna, Hillsborough County, Florida, (Wright, 1995). This article has some very good photographs of both *Mylohyus* and *Platygonus*.

I've also included some examples of a small modern pig (*Sus*) for comparison. These teeth are bunodont and generally smaller than *Mylohyus*, however, modern pigs come in all sizes as does their dentition. In addition, the premolars do not have four cusps. Figure 7 depicts mandibular dentition and Figure 8 depicts maxillary dentition.

Antilocapridae (pronghorn antelopes)

These small selenodonts (*Capromeryx arizonensis*) capered about at the end of the Pliocene. Their teeth are remarkably small. Figure 9 shows individual molars and premolars. For comparision, a dime has a diameter of 18mm, while the largest molar in Figure 9 is 17mm wide. Figure 10 shows a right maxilla with p2 -m2. As much as 80% of the crown of the teeth are below the jawbone.

Cervidae (deer)

The white tail deer (*Odocoileus virginianus*) is a common find in the rivers I dive. It apparently was not as ubiquitous at the end of the Pleistocene as it is today, and undoubtedly most of the jaws, teeth and antlers that turn up in my screen are from Holocene hunting seasons. Figure 11 depicts maxillary dentition. Figure 12 depicts mandibular dentition of a specimen from Devil's Den. Since the occlusal surface is slanted, the crown height varies up to 3 mm on the lingual and buccal sides.

Camelidae (llamas)

Just as with Tayassuidae, two genera of Camelidae grazed and browsed across Pleistocene Florida. *Hemiauchenia macrocephala*, a mixed browser and grazer, was larger than *Palaeolama mirifica*, a browser. There is a good discussion and discrimination between *Hemiauchenia* and *Palaeolama* in Webb and Stehli (1995).

As the photos substantiate, the teeth are not easily distinguished by size. Figure 13 is a maxillae of *Hemiauchenia* and Figure 14 is a maxillae of *Palaeolama*. In comparing these specimens it seemed to me that *Hemiauchenia* is generally more robust, but exactly why is difficult to articulate. In any event, this is only apparent in comparison of a number of known specimens.

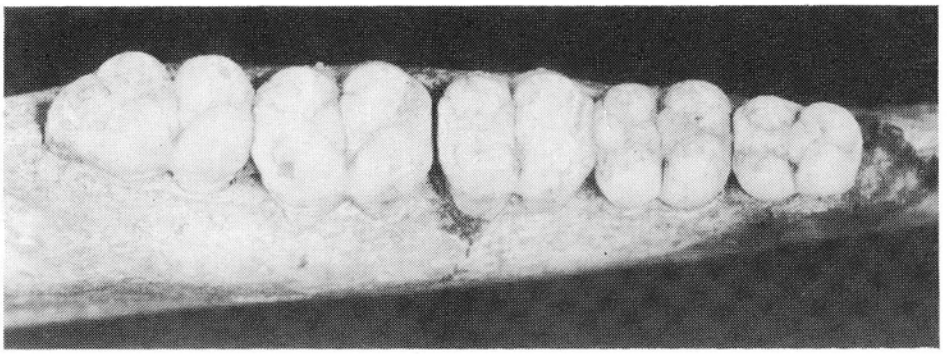


Figure 1

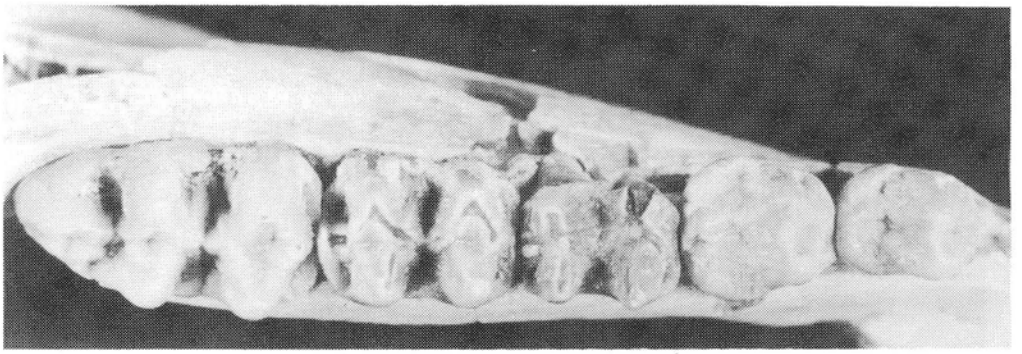


Figure 2

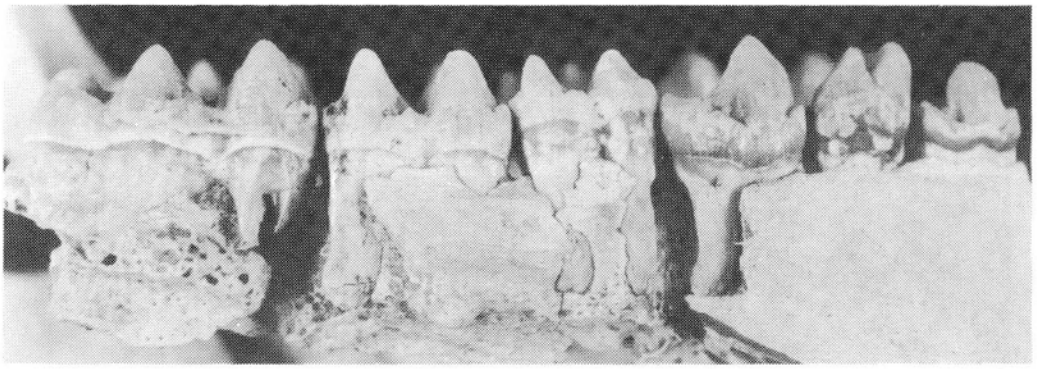


Figure 3

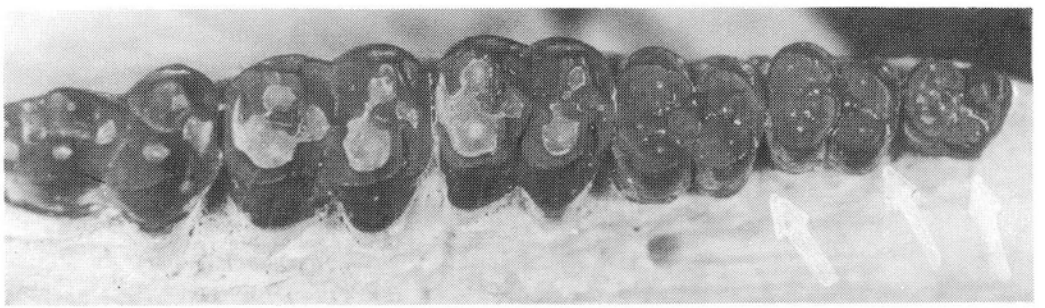


Figure 4

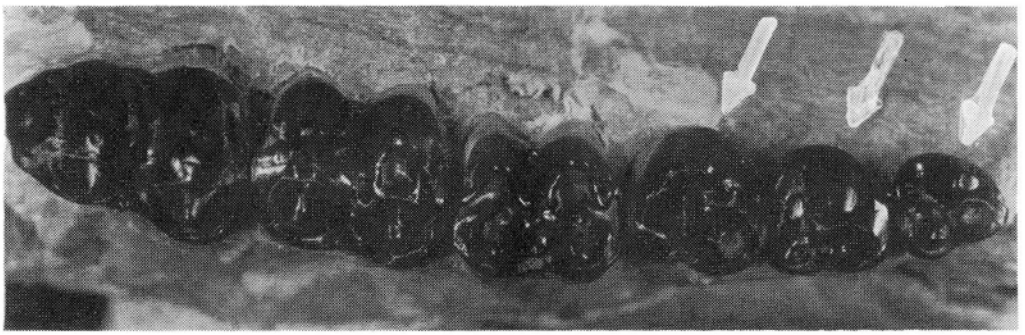


Figure 5

Figure 6

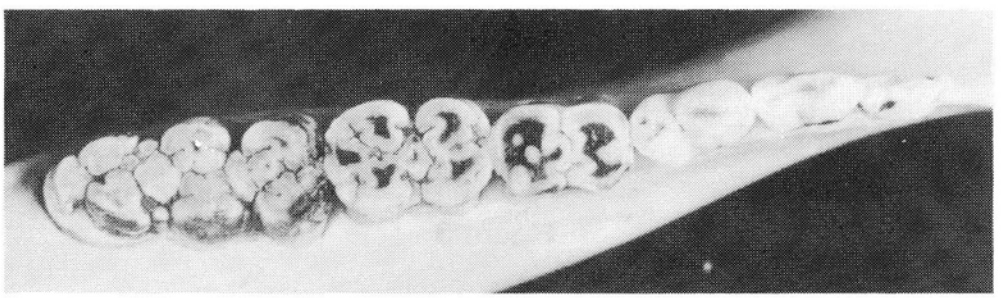


Figure 7

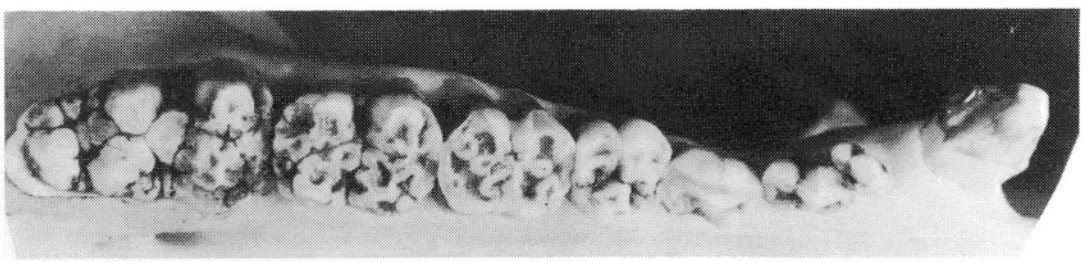


Figure 8

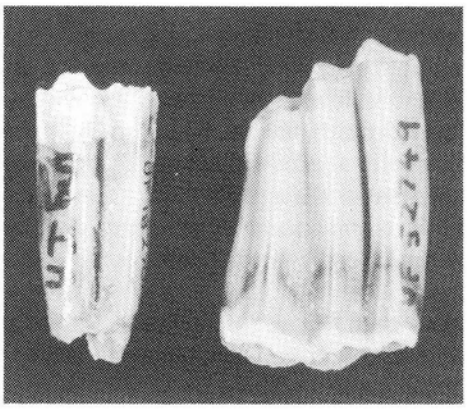


Figure 9.

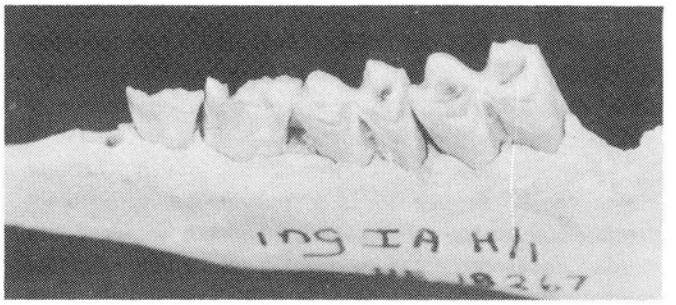


Figure 10

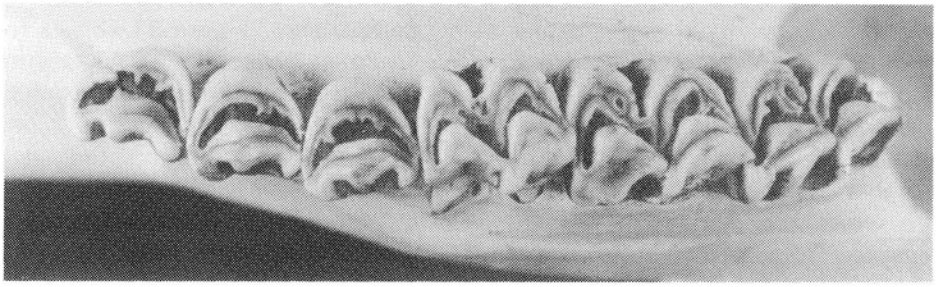


Figure 11

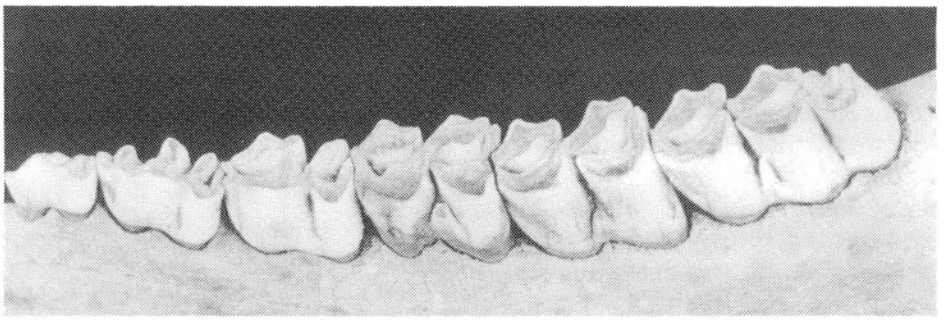


Figure 12

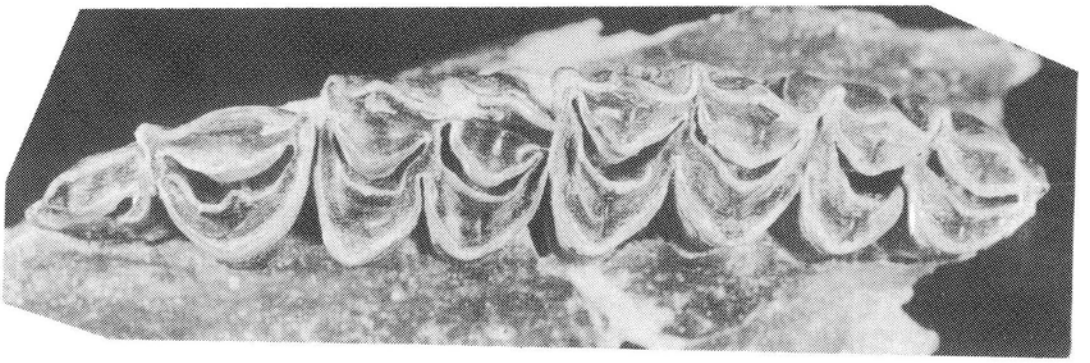


Figure 13

Figure 15 depicts a labial view of the specimens from Figures 13 and 14. *Palaeolama* is on the bottom. From these two specimens it appears, like *Capromeryx*, the crown of *Hemiauchenia* extends below the jaw line.

Figure 16 is a mandible of a female *Palaeolama*. Figure 17 is a mandibular symphysis from *Palaeolama*. Figure 18 is a side view of the same specimen. Figure 19 is a mandibular symphysis of *Hemiauchenia* showing the caniniform (canine-like) first premolar. Figure 20 depicts the mandibles from *Palaeolama* (upper) and *Hemiauchenia*. The differences are subtle but *Hemiauchenia* seems more robust. Now for the problems. Figure 21 shows molars from two *Palaeolama*. The upper teeth (left m1 and m2) are hardly worn, while the lower teeth (right m2 and m3) are very worn. They look dramatically different. The differences are even more apparent by comparing the profiles of these teeth in Figure 22. Relatively unworn cheek teeth can be distinguished because the crown height in *Hemiauchenia* is higher than in *Palaeolama*, but once the teeth are worn, the distinction is lost. On the teeth I measured from Leisey, none of the crowns from *Palaeolama* cheek teeth exceeded 24mm, so this may be another way to distinguish the species.

Figure 23 depicts five canines. The first and third from the left are identified as *Palaeolama*. The rest are identified as Camelidae.

A much better way to distinguish these teeth is by the presence of cementum on their surfaces. Webb and Stehli point out that *Hemiauchenia* had a heavy external coating of cementum over the entire tooth while *Palaeolama* did not. Figure 24 depicts from left to right, right upper molars from *Hemiauchenia* and *Palaeolama*. The cementum is visible on the tooth on the right as black, crenulated interlacing. Figures 25 and 26 depict the differences between the two species based on the crenulation. In Figure 25 the *Hemiauchenia* teeth are crenulated and the crowns extend below the jaw line, while in Figure 26 the *Palaeolama* teeth are clean and the crowns start at the jaw line.

Bovidae (Bison)

Two Bison species inhabited Florida during the Pleistocene. *Bison latifrons* is found in the middle Pleistocene and *Bison antiquus* is found in the late Pleistocene. These species are distinguished by horn size and are indistinguishable on the basis of their dentition. Figures 27 and 28 are maxillary dentition from *Bison antiquus*. Figure 29 is a mandible from *Bison latifrons*.

Modern cows apparently are very clumsy and frequently trip and fall into rivers and drown and so their bones and teeth are fairly common finds. Figure 30 compares a modern cow (*Bos taurus*) with the jaw of a small *Bison antiquus*. The jaw of *Bison antiquus* is significantly larger than *Bos* but the size of the dentition is surprisingly comparable. Apparently there is great size variation between individuals in Bovidae. Figure 30 belies the rule of thumb is that modern cow teeth are significantly smaller than bison teeth.

Final Thoughts

The best way to distinguish the selenodonts, at least to the subfamily level, is a size comparison. Figure 31 shows four teeth from the Thulman collection. The largest tooth is clearly from a *Bison* since it iss so much larger than the others. The second tooth is Camelidae, and because it is crenulated it must be from *Hemiauchenia*. The third tooth is slightly smaller but too large to be Cervidae. Since it is crenulated with cementum, it must be also be *Hemiauchenia*. The third tooth has the same selenodont form as the other three but is so much smaller it must be *Odocoileus*.

Vital Statistics

All figures are listed left to right and measured in millimeters, Length of crown x labial-lingual Width of crown x Height of crown.

Figure 1: (UF 3224) crowns are 5-6mm; m3 17x11, m2 15x12, m1 13x12, p4 12x11, p3 11x9.

Figure 2: (UF 62700) m3 26x11x15, m2 18x11x14, m1 15x11x12, p4 13x12x13, p3 12x9x9

Figure 3: (UF 62700)

Figure 4: (UF 12265) crowns are 5-7mm; m3 22x16, m2 19x17, m1 15x15, p4 13x14, p3 12x11, p2 9x8

Figure 5: (UF 48000) m3 25x10x14, m2 21x8x18, m1 18x5x16, p415x7x15, p3 12x9x13, p2 12x7x10

Figure 6: upper canine (UF 63541) 100 total length, crown length 52, ovate cross-section 18x12; lower canine (UF63315) 105 total length, 48 crown, ovate cross-section 15x18.

Figure 7: (no number) crowns are 7-8mm; m3 28x15, m2 17x12, m1 15x10, p4 13x7, p3 12x5, p2 10x4

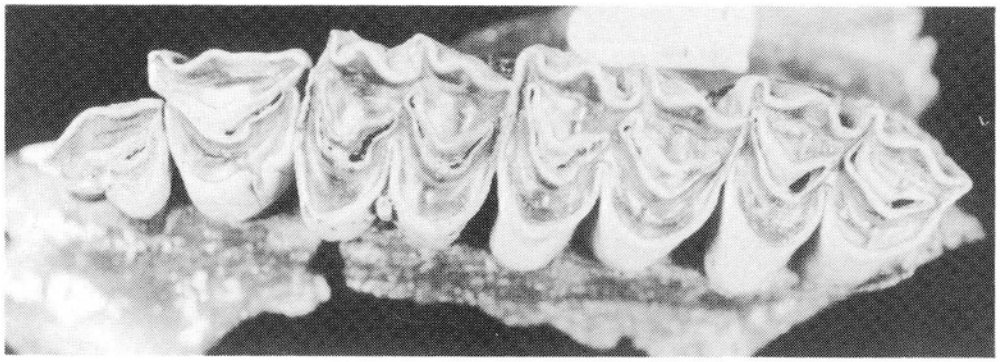


Figure 14

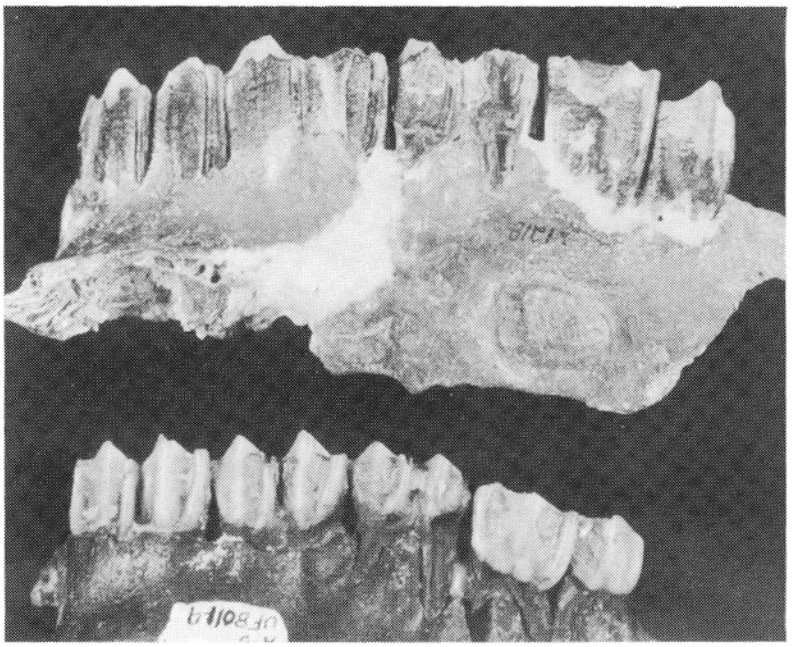


Figure 15

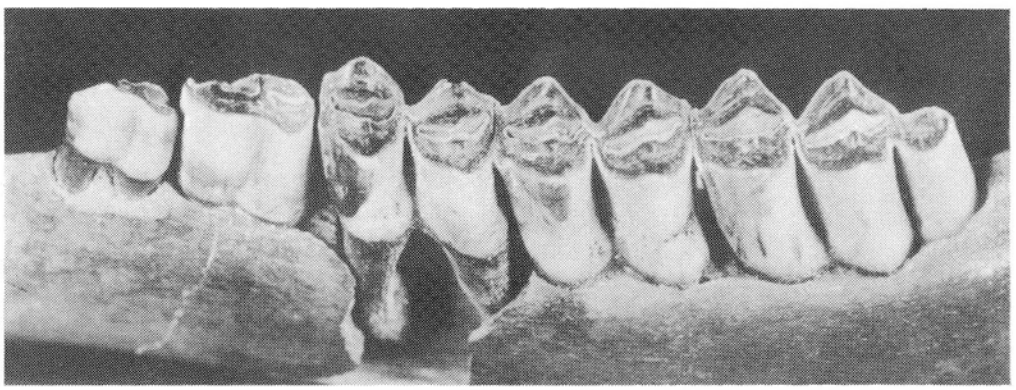


Figure 16

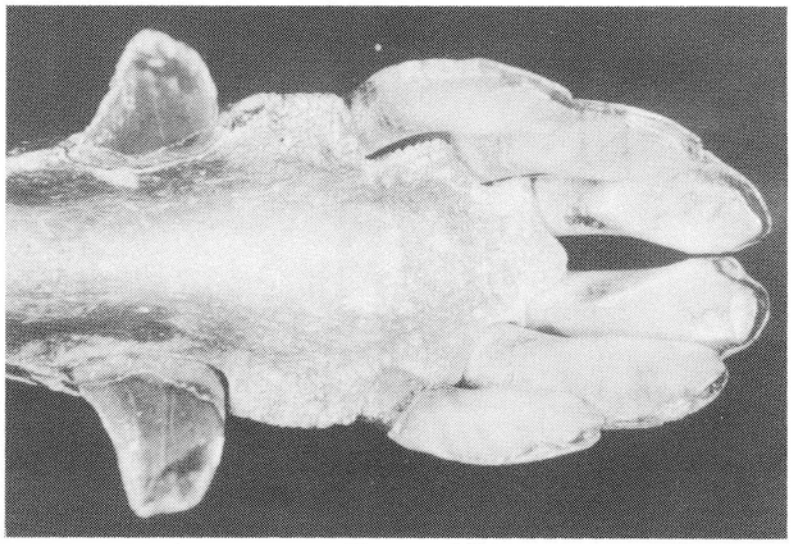


Figure 17

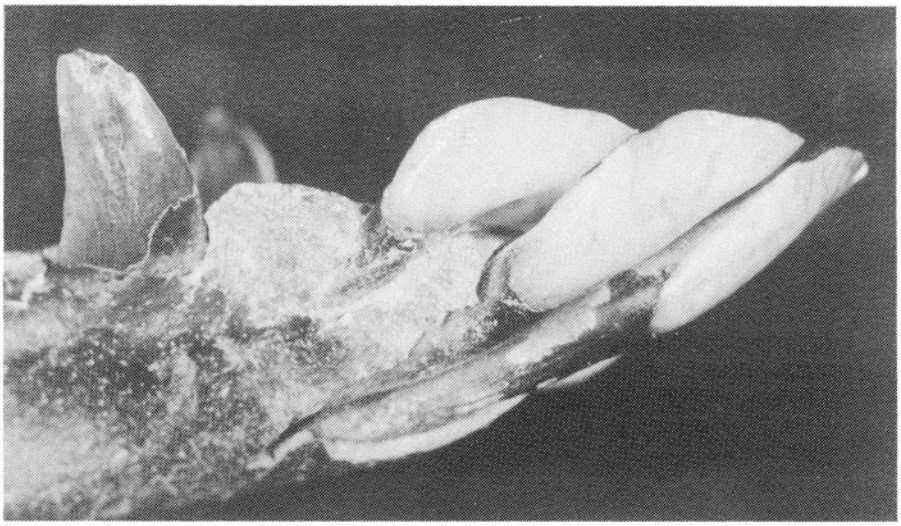


Figure 18

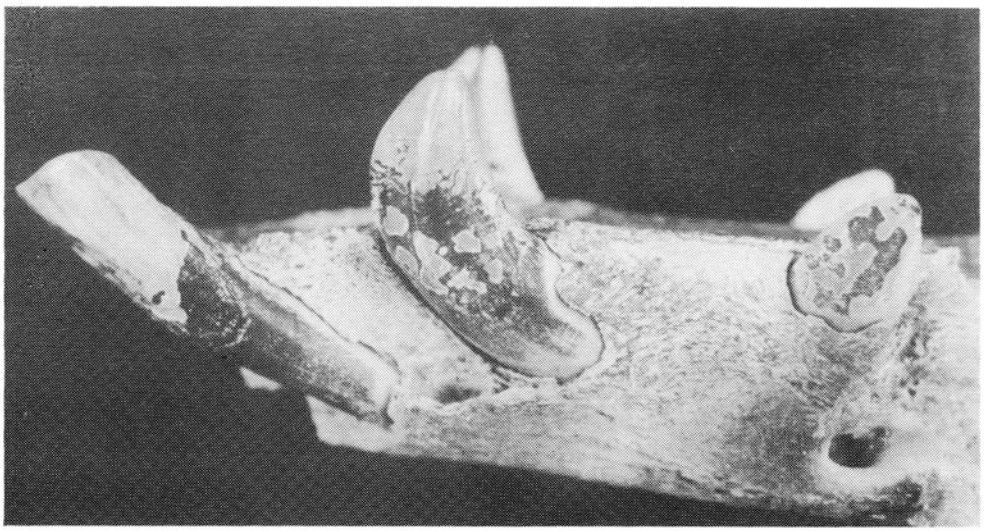


Figure 19

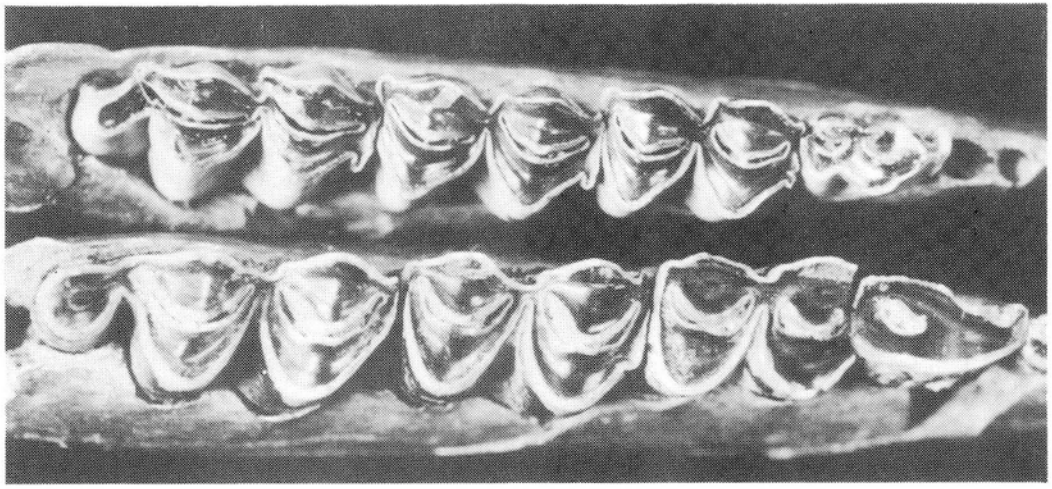


Figure 20

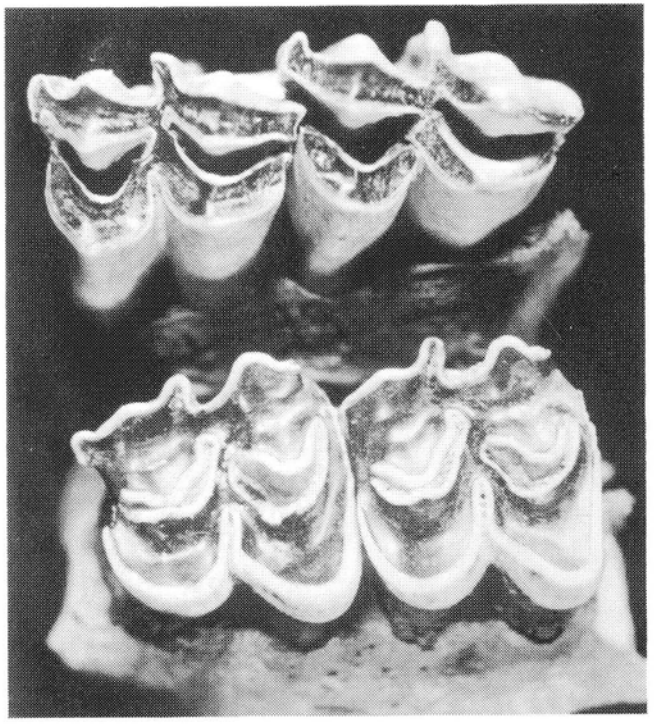


Figure 21

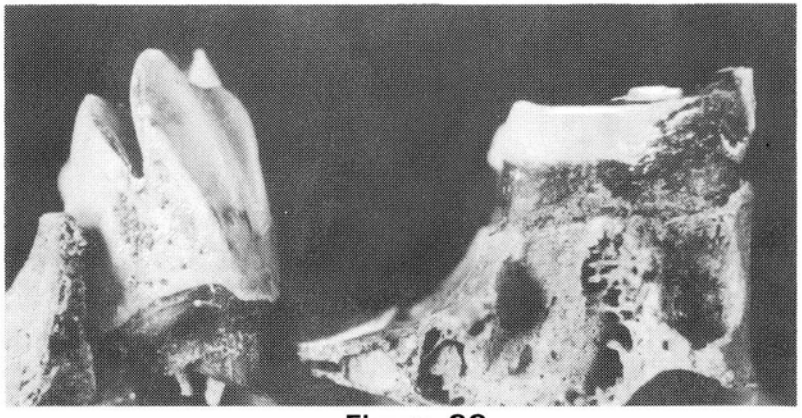


Figure 22

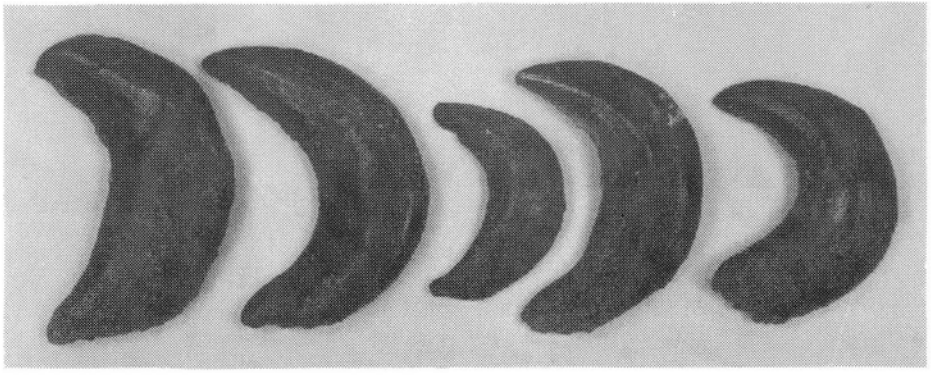


Figure 23

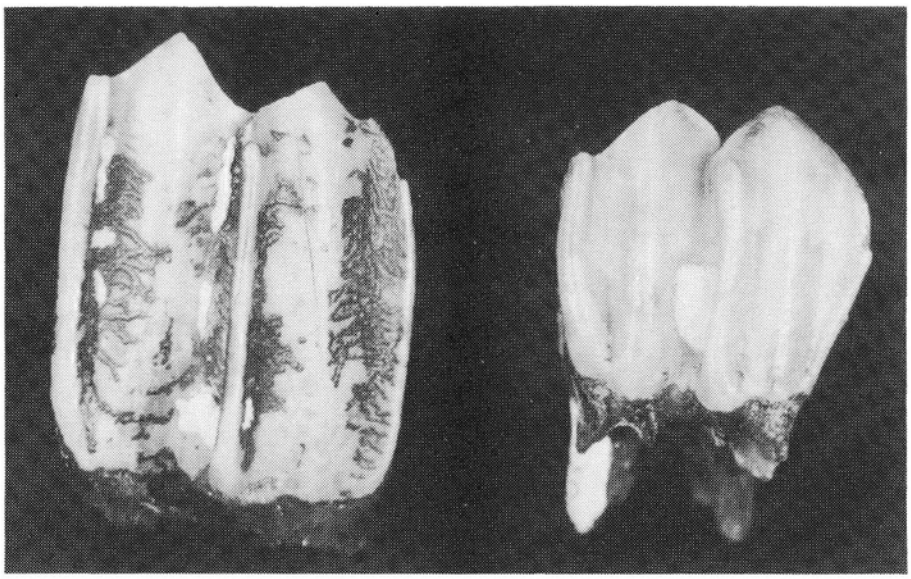


Figure 24

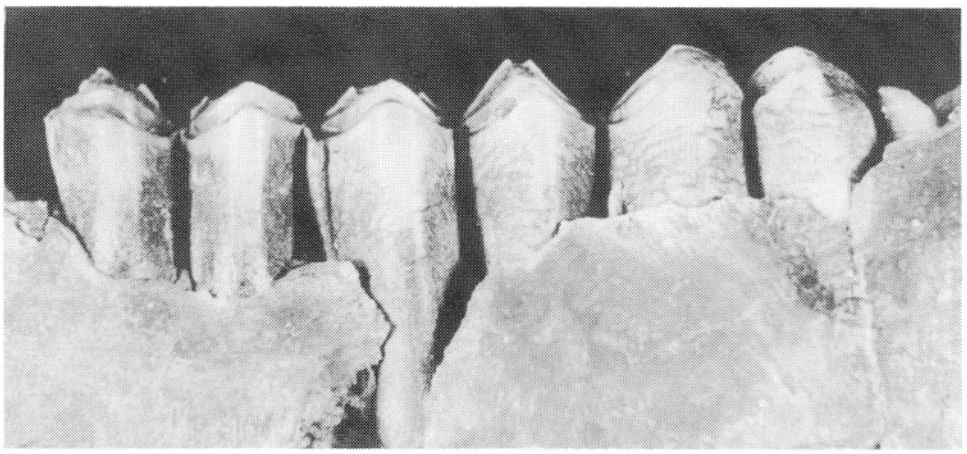


Figure 25

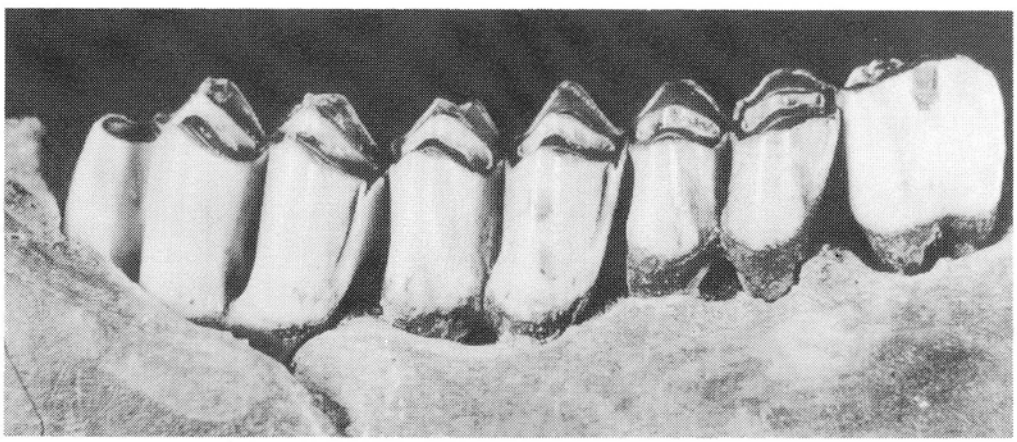


Figure 26

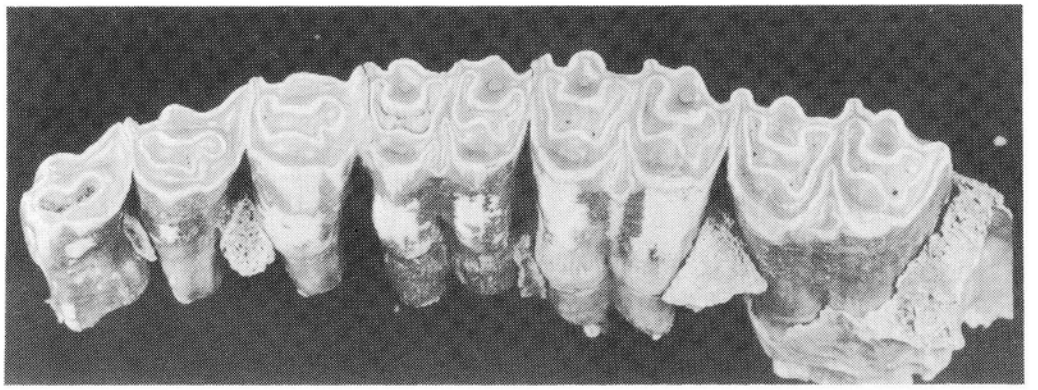
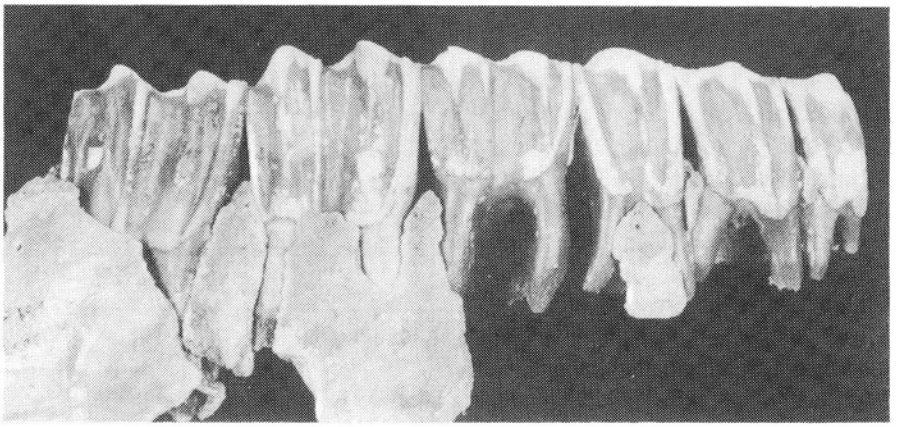


Figure 27

Figure 28



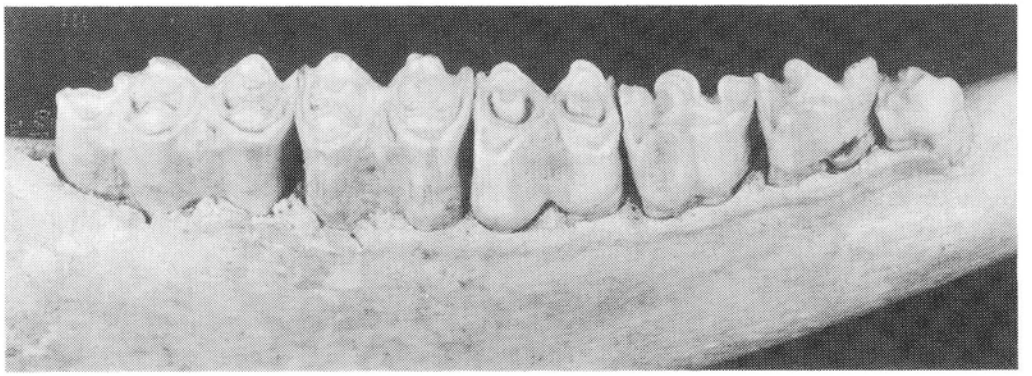


Figure 29

Figure 30

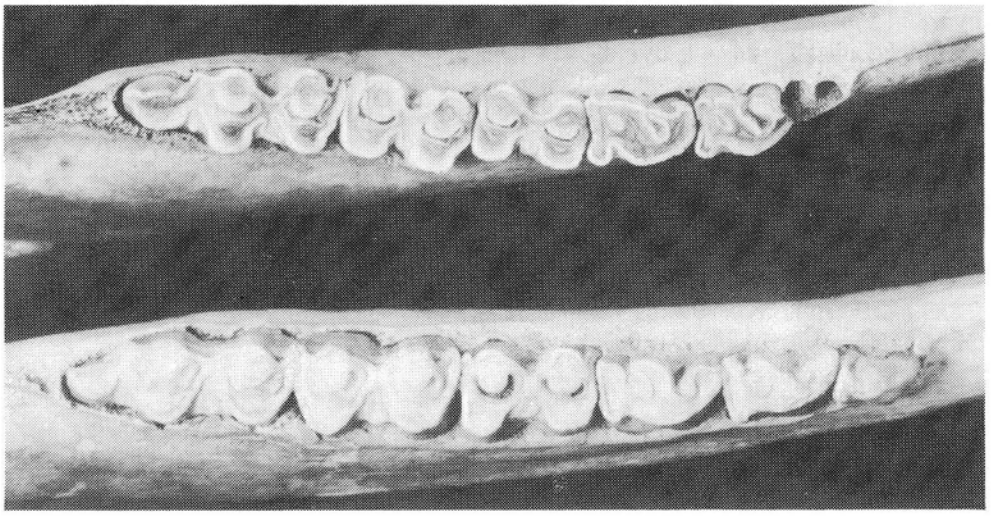


Figure 8: (no number) crowns are 5-7mm; m3 28x16, m2 18x14, m1 14x12, p4 10x11, p3 11x8, p2 11x7, p1 6x3
Figure 9: #1 (UF 18270) 11x5x22, #2 (UF 52749) 17x5x26
Figure 10: (UF 18267) p2 6x3x5, p3 8x3x5, m1 9x4x5, m2 10x5x5
Figure 11: (UF 9835) p2 11x9x8, p3 11x11x8, p4 11x11x9, m1 14x12x7, m2 17x14x9, m3 17x14x11
Figure 12: (UF 9835) p2 7x5x5, p3 12x7x7, p4 11x8x9, m114x9x7, m2 16x9x11, m3 20x9x10
Figure 13: (UF 81745) p3 14x8x19, p4 18x15x20, m1 24x19x18, m2 27x20x18, m3 27x18x18; there is a marked incline of the crown with the labial or flatter side of the teeth is as much as 14mm longer than the lingual side
Figure 14: (UF 80119) p3 14x10x12, p4 13x16x8, m1 11x19x10, m2 15x21x14, m3 16x23x14
Figure 15: Same as Figures 13 and 14
Figure 16: (UF 64233) p3 10x6x10, p4 14x8x15, m1 19x14x14, m2 21x14x18, m3 29x13x20
Figure 17: (UF 81742) (teeth along the top) c1 11x5x20, i3 13x5x20, i2 10x6x25, i1 10x7x21
Figure 18: Same as Figure 17
Figure 19: (no number) c1 10x7x10, p1 8x4x10
Figure 20: top (UF 135674), bottom (UF 83253)
Figure 21: top (UF 84374), bottom (UF 65304)
Figure 22: Same as Figure 22, left (UF 84374)
Figure 23: (no numbers) caniniforms, #1 43 overall, 17x7x22, #2 42 overall 15x6x28, #3 28 overall, 9x4x17, #4 41 overall, 14x6x23, #5 36 overall 13x6x21
Figure 24: left (no number) 29x21x37, right (UF 82480) 25x21x24
Figure 25: (UF 65291)
Figure 26: (UF 135674)
Figure 27: (UF 19376) at least 1/2 of the crown is below the jaw line. p2 19x13x30, p3 23x17x30, p4 20x19x30, m1 29x22x28, m2 35x24x37, m3 39x24x37
Figure 28: Same as Figure 27
Figure 29: (UF 7559) m3 45x18x35, m2 30x19x31, m1 25x18x23, p4 24x13x20, p3 21x12x18, p2 13x8x16

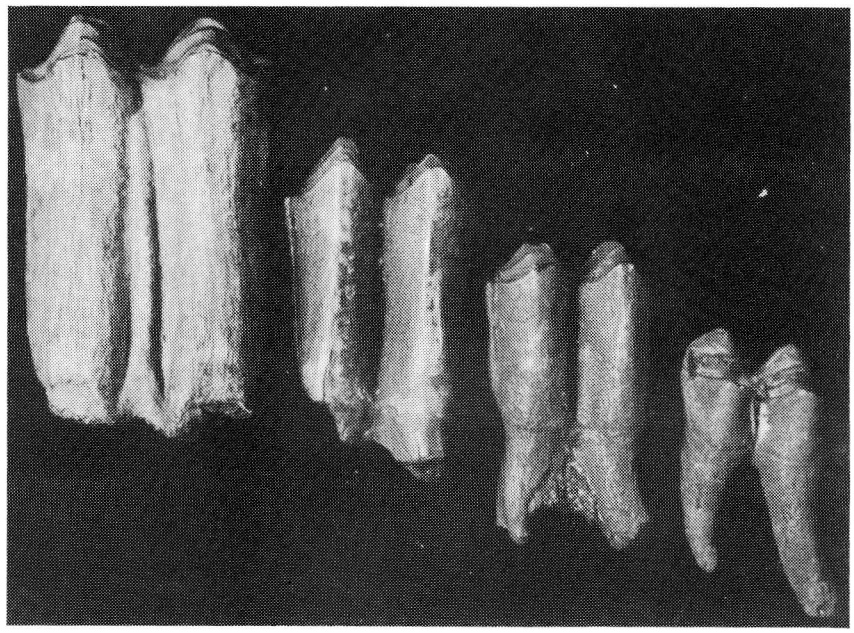


Figure 31

Figure 30: top (UF 2987), bottom (UF 7559)
Figure 31: (no numbers)

References

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FLORIDA PALEONTOLOGICAL SOCIETY, INC.
APPLICATION FOR MEMBERSHIP

Mail completed form to: Florida Paleontological Society
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611

NEW_____ RENEWAL_____ MEMBER NUMBER (From Label)_____

NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP CODE _____ TELEPHONE (___)-___-____
E-MAIL ADDRESS _____

TYPE OF MEMBERSHIP

1. INDIVIDUAL ACTIVE ($15.00)_____
2. SUBSCRIBER ($15.00)_____
3. INSTITUTIONAL ($15.00) _____
4. GIFT (Mark Type) _____
5. FAMILY (3 or more. $25.00)_____
6. COUPLES ($20.00) _____
7. SUSTAINING ($50.00) _____
8. ASSOCIATE (Under 18 $5.00)_____

FAMILY AND COUPLES PLEASE LIST NAMES OF ALL APPLICANTS IF NEW.
PLEASE COMPLETE PERSONAL FACT SHEET BELOW IF NEW OR CHANGES HAVE OCCURRED SINCE PREVIOUS YEAR.

NOTE!!! MEMBERSHIPS ARE FOR A CALENDAR YEAR AND ARE DUE NO LATER THAN JANUARY 1 EACH YEAR! PLEASE RENEW ON TIME!

BIOGRAPHICAL FACT SHEET

1. NUMBER OF YEARS OF INTEREST IN PALEONTOLOGY __
2. WHICH BEST DESCRIBES YOUR STATUS: COLLECTOR__ OCCASIONAL DEALER __ FULL TIME DEALER __ PROFESSIONAL POSITION __ JUST STARTING __
3. PRIMARY AREAS OF INTEREST:

	VERTEBRATE	INVERTEBRATE	BOTANY	MICRO
PLEISTOCENE	__	__	__	__
PLIOCENE	__	__	__	__
MIOCENE	__	__	__	__
OLIGOCENE	__	__	__	__
EOCENE	__	__	__	__
EARLIER	__	__	__	__

4. LIST ANY PREFERRED TYPES (Horses, Sloths, Echinoids etc.)_____

5. LIST ANY PUBLISHED WORKS ON PALEONTOLOGICAL SUBJECTS.

6. DO YOU BUY _____ TRADE _____ FIND _____ FOSSILS?
7. LIST ANY SKILLS OR ABILITIES THAT MAY BE OF USE TO THE SOCIETY'S PROJECTS (RESTORATION, PREPARATION, COMPUTER USE, GRAPHICS SKILLS, SPEAKING, PHOTOGRAPHY, PUBLIC RELATIONS, WRITING, FUND RAISING ETC.)

8. LIST ANY UNUSUAL SPECIMENS FOUND, CIRCUMSTANCES UNDER WHICH THEY WERE LOCATED AND THEIR DISPOSITION.
PLEASE USE AN ADDITIONAL SHEET IF REQUIRED! THANK YOU!

Payments, contributions or gifts to the Florida Paleontological Society are **not deductible** as charitable contributions for federal income tax purposes. Dues payments may be deductible by members as ordinary or necessary business expenses. We recommend that you consult with your tax advisor.

(cut out and return form)

FLORIDA PALEONTOLOGICAL SOCIETY, INC.

As stated in the Articles of Incorporation, "The purposes of this Corporation shall be to advance the science of Paleontology, especially in Florida, to disseminate knowledge of this subject and to facilitate cooperation of all persons concerned with the history, stratigraphy, evolution, ecology, anatomy, and taxonomy of Florida's past fauna and flora. The Corporation shall also be concerned with the collection and preservation of Florida fossils." (Article III, Section 1).

CODE OF ETHICS

ARTICLE IX

Section 1.	Members of the Florida Paleontological Society, Inc., are expected to respect all private and public properties.
Section 2.	No member shall collect without appropriate permission on private or public properties.
Section 3.	Members should make a sincere effort to keep themselves informed of laws, regulations, and rules on collecting on private or public properties.
Section 4.	Members shall not use firearms, blasting equipment, or dredging apparatuses without appropriate licenses and permits.
Section 5.	Members shall dispose of litter properly.
Section 6.	Members shall report to proper state offices any seemingly important paleontological and archaeological sites.
Section 7.	Members shall respect and cooperate with field trip leaders or designated authorities in all collecting areas.
Section 8.	Members shall appreciate and protect our heritage of natural resources.
Section 9.	Members shall conduct themselves in a manner that best represents the Florida Paleontological Society, Inc.

ANNUAL DUES for the FPS are $5.00 for Associate Membership (persons under age 18) and $15.00 for Full Membership (persons over age 18) and Institutional Subscriptions. Couples may join for $20.00, and Family memberships (3 or more persons) are available for $25.00. A Sustaining membership is also available for $50. Persons interested in FPS membership need only send their names, addresses, and appropriate dues to the Secretary, Florida Paleontological Society, Inc., at the address inside the front cover. Please make checks payable to the FPS. Members receive a membership card, the FPS newsletter, the Papers in Florida Paleontology, and other random publications entitled to members.

NEWSLETTER POLICY: All worthy news items, art work, and photographs related to paleontology and various clubs in Florida are welcome. The editors reserve the right not to publish submissions and to edit those which are published. Please address submissions to the Editors, Florida Paleontological Society, Inc. Newsletter, at the address inside the front cover.