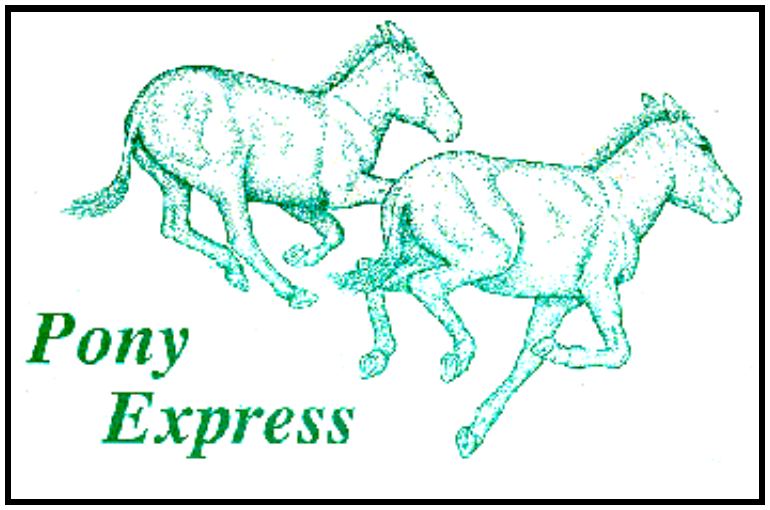


Florida Fossil Horse Newsletter

Volume 6, Number 1, 1st Half 1997

What's Inside?

Digging Science: Building a Fossil Pit in Your Schoolyard

Editor's note: The following article was presented by the author at the 1995 State Conference of the Florida Association of Science Teachers, and submitted for review to the Florida Science Teacher, Journal of the Florida Association of Science Teachers. Mr. Jones is the Science Department chairman at the P.K. Laboratory School in Gainesville

by Griff Jones

Searching for hidden treasures has always been an alluring endeavor, whether you are a scuba diver canvassing a sunken galleon for gold doubloons or a child searching through their backyard for "eggs" on Easter morning. The more the objects are valued by the hunter the greater the hunt. Scientists are also treasure hunters. For a scientist, the valued object can be searching for parts of a neutron or a new star in a distant galaxy. The valuable objects for the science students at our school (P.K. Yonge Laboratory School) are fossils.

In an attempt to make our studies of fossils more fun and realistic, we have constructed a 20' x 15' Fossil Pit in our schoolyard. With the help of the Florida Museum of Natural History, the generous contributions of Larry Rogers of Limestone Products, Inc., Newberry, and Hugh Cannon of Quality Aggregates, Inc., Tallevast, the pit was filled with fossil-rich substrate from active museum dig sites plus additional fossils contributed from the collections. To maintain the authenticity of our Fossil Pit only fossils found in Florida were included.

First a centrally located site was chosen on our campus to facilitate its use by our K-12 school. The site was also located near a service road to allow for easier access by the fossil-loaded dump trucks and visitors.

The building of the pit began with the excavation of the 2 foot deep pit by the University of Florida's Grounds and Maintenance Department. Then a wooden frame and dividers were constructed during a Saturday Parent Workday. Pressure-treated 4x4 inch posts were embedded in concrete at each corner and periodically along the longer sides of the frame.

After consulting with Russ McCarty from the FLMNH, I decided to try to create a geological time line within the pit. By dividing the pit into three separate sections each section could be filled with fossils and substrate representing different Epochs.

Pressure-treated 2" x 12" framing lumber were nailed to the posts to complete the frame. Additional 2" x 12" framing lumber was used to create the dividers. One divider bisects the pit lengthwise down the middle to form two long 20 foot by 7.5 foot sections. The other divider cuts the right-sided section into two shorter sections 10 feet long and 7.5 feet wide. The lumber and other construction materials were purchased for approximately $150.

Since the pit is part of our Outdoor Learning Trail, it was located close to a large 4' x 16' worktable and an semi-circular bench seating area located under a large stand of oak trees. The seating area allows for pre-dig instructions and discussions. The large worktable provides a standing height work surface for the students to examine, measure, draw and record observations about their newly discovered fossils. Students place their clipboards, pencils, magnifying glasses, tape measures and any other post-dig equipment on the worktable before proceeding to the Fossil Pit.

The first small section in the pit is filled with limestone that contains marine fossils from the 40 million year old Eocene Epoch. The limestone was gathered from the Limestone Products, Inc. located near Newberry, Florida. Under the guidance of Roger Portell, invertebrate paleontologist with the FLMNH, a dump truck was loaded with 8 tons of limestone from an area that the museum is currently investigating.

The second small area of the Fossil Pit is yet to be filled with fossils representing the 5-20 million year old Miocene Epoch. This area will contain fossils from the Bone Valley Formation located along the Peace River in Polk County, Florida. The largest of the three areas is filled with fossils from the Pliocene and Pleistocene Epochs. This 20 foot long x 7.5 foot wide x 2 foot deep section is filled with 24 tons of fossil and substrate from an active museum dig site in Sarasota, Florida. The cost of trucking the fossils was not overwhelming considering the years of use and enjoyment they will bring to our students. The eight ton load was hauled locally and only cost $35, the 24 ton load was hauled 150 miles and cost $325.

In addition to the fossils found in the substrate in this section, the Museum donated important additional fossils. These fossils have been buried throughout this section of the Pit. Students are enthralled when they find huge 3-4 inch long sharks teeth that belonged to a long lost cousin of the present day great white shark *Carcharodon carcharias*. While it is tough to top finding a shark's tooth, students still get very excited when they find some of the other buried treasures such as mammoth molars and bones, horse teeth and bones, deer bones and antlers, turtle and tortoise shell fragments or sea-cow ribs and vertebrae. The planted museum fossils that are recovered by the students are reburied by them at the end of their digging expedition. With the substrate being from an active museum dig site, the possibility exists that the students may make a truly unique

discovery of a museum-quality specimen.

To protect our fossils, a fencing company constructed a two-piece chain link fence cover that we placed on top of the pit and padlocked to anchors cemented in the ground. The cover requires two adults to lift and move to the side. The cost of the design and construction of the security fence cover was $650. Upon consulting with the paleontologists at the museum, we decided to keep the tools used during the dig as simple as possible. Each pair of students were given 2-small 1/2" paint brushes, 2-10" wooden skewers, and 1-24" x 10" plastic collection tray. Before going on their first dig, students were shown laser discs and videos depicting paleontologists working at dig sites. We discussed how the scientists practiced methodical digging techniques, good observation skills and patience.

Currently our Fossil Pit is used by elementary students from second grade through fifth grade. We plan to continue the integration of the Fossil Pit activities into lower elementary grades and middle and high school science classes. Lessons for the Fossil Pit are evolving as the pit itself evolves. During their first visit, our students freely explore in the pit in hopes of discovering a fossil. Many students experience the thrill of discovering a fossil for the first time. All truly become scientists doing field work as they dig through the layers of dirt trying to distinguish ordinary rocks from fossils.

In successive trips, we have found the Fossil Pit an excellent place for the students to practice their basic science process skills (observing, communicating, classifying, measuring, predicting, inferring). As they learn how to recognize a fossil, they begin recording observations about fossils in their science notebook. With the help of magnifying glasses students are required to make detailed notes and drawings of their fossils. They also use measuring tapes and balances to measure the size and mass of the fossils. Students are asked to develop a simple method to classify their fossils and to predict what type of fossil will be the most abundant among the entire class. At the end of the dig, students spend time inferring the origins of their fossils.

Students digging in the Fossil Pit at P.K. Laboratory School. (Photo by Griff Jones)

One indication of the pit's success is student testimonials. When the fourth grade classes were asked to write about their favorite science activities from the entire year, 30% of the students said digging in the Fossil Pit and reconstructing the wooden models were their two favorite science activities.

Deep Thoughts about the Faraway Times

The following passage, taken from Archie Carr's A Naturalist in Florida *for your amusement, is a conversation between on-looking friends of Ted White, a former collector at Thomas Farm, as he was excavating the famous bear-dog skull from the site:*

"You reckon there was any folks around here in them days?" Leonard pondered the faraway times for a while, and then he said, "Well what kind a rig you reckon they had to handle a critter like this-yer-un?" John Henry faced him and scornfully spit snuff juice against a clod of blue clay. "Great God-a-mighty ," he said. "What you reckon they had them long roffles for?"

On the weekend of November 8th and 9th, the Florida Museum of Natural History (FLMNH) on the University of Florida campus in Gainesville held ***Paleofest96***, a festival celebrating Florida paleontology. It was our first attempt at such a venture, and fortunately the success of this event exceeded our most optimistic expectations.

The Leisey Equus *horse skeleton, dedicated at* ***Paleofest96*** *and ready for exhibit in the new Education and Exhibition Center, is shown here with its proud "parents" Sue and Steve Hutchens. (Photo by Stan Blomeley)*

Over 350 registrants participated in this two-day event, which was organized by FLMNH staff Marc Frank, Douglas Jones, Bruce MacFadden, Carol Pooser, and Roger Portell and co-sponsored by the FLMNH, The Paleontological Society and Florida Paleontological Society. Over 75 volunteers, including many UF students and FLMNH Associates, worked very hard and thereby ensured the overall success of this event. ***Paleofest96*** activities included a Friday night reception social and dedication of the Florida 40 Million Years Ago exhibit and Leisey *Equus* horse skeleton (see photo). Saturday's events included 32 workshops, displays by many of the state's fossil clubs and related organizations, a fund-raising happy-hour and auction, and book-signing by noted paleontologist and author of *Lone Star Dinosaurs* and *Quest for African Dinosaurs*, Dr. Louis L. Jacobs, III, geology professor and museum director at Southern Methodist University in Dallas, TX. In addition to the ***Paleofest96*** registrants, another 300 children and adults from the surrounding community attended Dr. Jacobs' evening lecture entitled "Discovering Dinosaurs."

Paleofest96 was a resounding success. It brought together Florida paleofolks, allowed us to introduce the FLMNH to many first-time visitors, provided community visibility for our museum's programs, allowed a fun learning environment, and, last but certainly not least, the net proceeds from ***Paleofest96*** totaled $13,500, which will be used to support the paleontological activities and educational programs here at the FLMNH. Many of those in attendance are supporters of the *Pony Express* program and we sincerely thank you for attending this event. We hope that ***Paleofest96*** allowed you an additional opportunity to enjoy Florida fossils (including horses, of course) and to make new paleofriends.

Horse Teeth from Thomas Farm

by David Thulman

(Editor's note: David is an environmental attorney in Tallahassee. He enjoys photographing fossil specimens. This is the first article in a series he plans to do for the Pony Express *newsletter on fossil horse teeth.)*

Anyone who collects fossils in Florida is bound to find fossil horse teeth, and usually quite a few. The large cheek teeth of *Equus* (and their fragments) are ubiquitous. The 1-2 million year old plains of the Pleistocene must have been filled with herds of grazing zebras.

The situation at Thomas Farm 18 million years ago was very different from the late Pleistocene. The three horses found there, *Anchitherium clarencei*, *Archaeohippus blackbergi*, and *Parahippus leonensis*, were smaller browsers than the Pleistocene grass-grazing *Equus*.

The following photos include

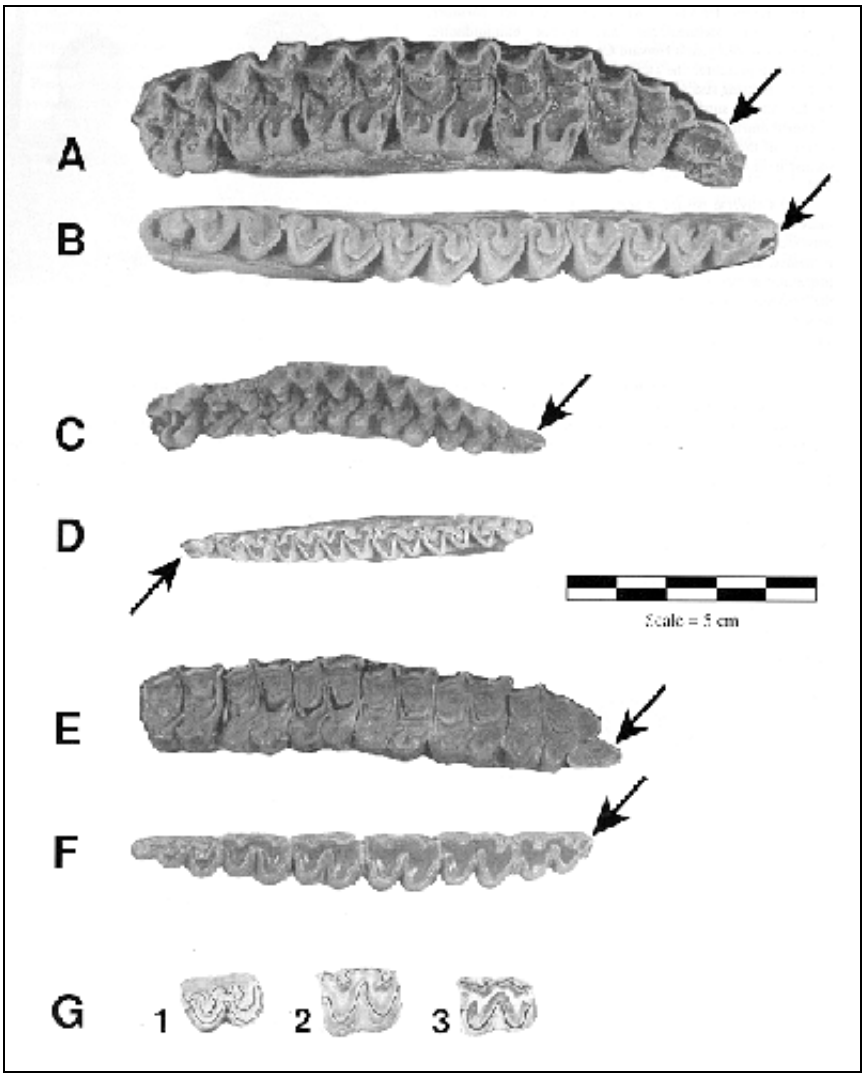
full sets of cheek teeth (premolars and molars) from the FLMNH collection for comparison of these three horse species. The arrow in each photograph indicates the first premolar, except the lower set of *Parahippus leonensis*, which starts at the second premolar. For comparison, a set of lower cheek teeth on an *Equus* from Leisey IA is about 18 cm. or 7.25 inches.

A, see figure on opposite page, shows the top view of a set of left upper premolars and molars of Anchitherium. clarencei. B shows a top view of a full set of cheek teeth of the right lower mandible of Anchitherium

C and D are sets of upper and lower cheek teeth of Archaeohippus blackbergi. Archaeohippus was about 40 to 50 pounds. These teeth are about half the size of Anchitherium.

E and F are sets of upper and lower cheek teeth of Parahippus leonesis.

G shows three Parahippus cheek teeth in various stages of wear. (The enamel patterns are outlined in black.) The cusp pattern changes as the tooth wears. Teeth 1, 2, and 3 are arranged from (1), least to (3), most wear.



Upper and lower dentitions of (A-B) Anchitherium clarencei; (*C-D)* Archaeohippus blackbergi; *(E-F)* Parahippus leonensis. *(G) shows wear patterns of* Parahippus. *(Photos by David Thulman; Composition of plate by Laurie Walz)*

On making a living at Thomas Farm

The following lines were captured from a letter by former caretaker John Henry Miller to the University of Florida. John Henry was concerned with the arrangement to look after Thomas Farm in exchange for free rent, but no salary. "I cant stay there all the time and nothin to do if tha will Pay me a Straght Satery where I Can live ill bee to glad to Just Sleep under that old Papler Tree all the time an will See the dig ever day" You'll have to decipher the words and include punctuation.

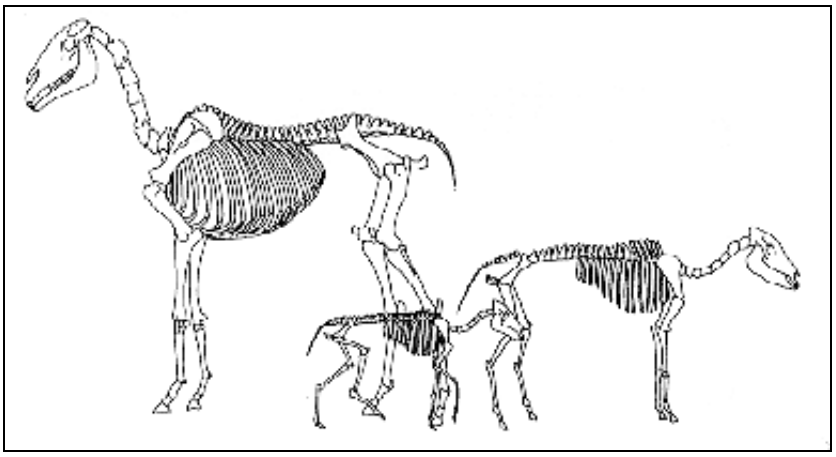
Robin Brown receives '96 Converse Award

Dr. Robin Brown, *Pony Express* Charter Member, paleontologist, archaeologist and author extraordinare, received 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 outstanding contribution is, of course, his famous book on *Florida's Fossils*, which is in its second edition and fourth printing, with over 10,000 copies sold.

Robin Brown receiving the Howard Converse Award at **Paleofest96**. *(photo by Stan Blomeley)*

The Converse Award is presented yearly to recognize an individual from the avocational 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.

Dwarf-horse Archaeohippus skeleton to be in New Fossil Horse Exhibit



Equus *(left),* Parahippus *(right), and* Archaeohippus *(center)*

We are delighted to announce that, thanks to funds from the State of Florida, a contract has been let to Steve and Suzan Hutchens (who have already done the beautiful reconstruction of the Leisey *Equus*) to reconstruct the tiny Thomas Farm dwarf horse *Archaeohippus*. The new *Archaeohippus* skeleton will be placed along-side the larger three-toed *Parahippus* in our new exhibit and will complete a central module on life 18 million years ago in Florida. The very rare, dog-sized Florida *Archaeohippus* skeleton will be unique to science; it will be the only life-like complete skeletal reconstruction of this horse in existence anywhere in the world. Many of the bones used to compete this skeleton have been collected over the past 5 years by *Pony Express* diggers at the Thomas Farm site.

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(V.=Volume; #=issue number; p.=page; fig.=figure)

ANNOUNCEMENTS

- **Dinosaur--The Story of Egg Mountain**

  Dinosaurs come alive in our first exhibit at the new Education and Exhibition Center at Powell Hall at the corner of Hull Rd. and SW 34th St. The exhibit will feature real dinosaur eggs with embryonic maiasaur bones and fleshed out robotic models of the dinosaurs found on Jack Horner's famous Egg Mountain site in Montana. Mark your calendars with the opening date: January 25. The exhibit will in Gainesville until April 27, 1997. For further information call (352) 846-2967 or check with our home page at http://www.flmnh.ufl.edu

- **6th Annual Thomas Farm Fossil Horse Dig-- 1997**

  We are pleased to announce that all three sessions for the 6th Annual Thomas Farm fossil horse dig, to be held this April and early May, are fully booked. Given the high demand for this activity, we hope to be able to offer other Pony Express sponsored events in the future.

- **Should we have a Lab Session?**

  Several people have suggested that we have a lab session at the museum during the summer to process fossils that have been found in the spring. If there is enough response from members, we will conduct such a session this summer. We will sort, repair, identify, and paint stripes on the bones for the catalog numbers. Russ has agreed to include plaster jacket preparation as well. This 1 1/2 day session would support a maximum of 15 participants. If you are interested, please pre-register on the enclosed form.

Pony Express

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Pony Express--Statement of Purpose:

The purpose of this newsletter is to communicate news and information and disseminate knowledge about fossil horses, particularly in Florida, and to develop a state-wide constituency that will support and enhance the research, exhibition, and educational programs offered at the FLMNH that pertain to fossil horses. Contributions to the Fossil Horse Fund are deposited into an account at the University of Florida Foundation, Inc., a tax-exempt entity, and will be used for the purposes stated here.

Do you travel along the information superhighway?
The *Pony Express* is now on the World Wide Web via the Internet URL location:
http://www.flmnh.ufl.edu/vertpaleo/ponyexpr.htm

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http://www.flmnh.ufl.edu/fhc/