

It's a Mother and Stegosaurus Reunion

By HENRY FOUNTAIN

WHICH came first, the dinosaur or the egg?

This is not a tough question. When it comes to studying dinosaurs, the beasts themselves or what remains of them — their bones and footprints — have always come first, while dinosaur eggs have long received short shrift among paleontologists.

That is changing, because new egg discoveries and analytical techniques are opening up what has become a different window into the world of dinosaurs. Eggs are a major field of study these days, offering clues to how the reptiles evolved, what they were like as babies, and even what kind of parents they were.

Dinosaur eggs are such a booming field, in fact, that they warrant museum exhibitions of their own, and the latest of these is at the Bruce Museum of Arts and Science in Greenwich. The show, "Hatching the Past: The Great Dinosaur Egg Hunt," is a traveling exhibition and includes real eggs and nests, models, drawings and photographs.

While dinosaur bones have been unearthed for hundreds if not thousands of years, and the first fossil dinosaur was scientifically described almost 180 years ago, fossilized eggs are a much later discovery. The first ones were found in 1923 in the Gobi Desert of Mongolia by members of an expedition led by the great adventurer Roy Chapman Andrews and sponsored by the American Museum of Natural History.

Andrews was not even sure what a member of his group had found when a nest of eggs was discovered in an area known as the Flaming Cliffs. But since the nest was embedded in rock from about 80 million years ago, when there were few birds, Andrews and his team ultimately deduced that

the eggs must be from dinosaurs.

The fossil hunters could perhaps be forgiven if they were confused. For as the Bruce Museum exhibition illustrates, depending on the type of dinosaur, a fossilized egg looks very much like a bowling ball or a squashed loaf of Italian bread. After millions of years of mineralization, they are more hefty rocks than delicate eggs.

But Andrews's deduction was reinforced by the discovery of the bones of an adult dinosaur near the nest. The dinosaur, with its sharp beak and claws, was thought to be stealing the eggs for food, and thus was named *Oviraptor*. It was the first of many misconceptions inspired by dinosaur eggs, and it was decades before this view of *Oviraptors* was discarded.

It is telling that this first discovery focused on the adult dinosaur. The eggs attracted less attention, presumably because, other than the fact that they were eggs, there was little that could be said about them. There was no hint of embryos within.

Since then, dinosaur nests have been

found in diverse places including Montana (by the American dinosaur expert Jack Horner), Patagonia and, in recent years, in central China. They have been found in ancient floodplains, where fast-moving floods buried nests and hatchlings, and sometimes adults, in alkaline mud, and in arid regions where sudden sandstorms had the same preservative effect. The oldest eggs are from the Jurassic Period, 208 million to 144 million years ago, but most, and all those in the Bruce show, are from the Late Cretaceous, from 99 million to 65 million years ago, when dinosaurs became extinct.

As the exhibition demonstrates, the increasing pace of discovery has been accompanied by improved ways of analyzing the eggs. "Hatching the Past" focuses particularly on the work of Terry Manning, a fossil technician in Leicester, England, who has developed a technique for dissolving shells in a weak acid solution to uncover the fossilized embryos inside. A highlight of the exhibition is the view of the tiny bones of a developing dinosaur revealed in this fashion.



Photographs by Suzy Allman for The New York Times

But fossil hunters have also sometimes been lucky and found a dinosaur egg that was preserved at the moment it was hatching. Such is the case with Baby Louie, a model of which is a prominent feature of the exhibition.

Baby Louie, named after a photographer, was discovered by Charlie Magovern, an amateur paleontologist, fossil dealer and, with his wife, Florence, owner of the Stone Company of Boulder, Colo., which developed the Bruce exhibition. Mr. Magovern was in his laboratory late one night, working on a block of fossilized eggs he had bought from Chinese geologists, when he began to uncover a tiny bone. It turned out to be the rarest of rare finds: a hatchling with all its bones in the proper positions. Other hatchlings or embryos are usually a jumble of bones.



The Bruce Museum's show on dinosaur eggs includes a painting by Luis Rey, above, of a nest; a model of a hatchling, "Baby Louie," left, by Brian Cooley and of an embryo, far left, bottom. There are real eggs, too, like that of a titanosaur.

Baby Louie, which came from an egg that was about 18 inches long and five inches wide, is believed to belong to a previously unknown species of *Oviraptor*. It is estimated that the adult that lay the egg was about 30 feet long.

Other discoveries presented in the exhibition have been just as fortunate, including that of another *Oviraptor* nest in the Gobi Desert, found in 1993 by Mark Norell of the American Museum of Natural History. It was this finding that helped alter the image of *Oviraptors*.

The nest, which was about 80 million years old, consisted of at least 20 eggs arranged in a circle. But what was most remarkable was the eight-foot-long ostrichlike adult that was uncovered with them. It was on top of the nest, legs tucked under its body in a crouch, with one of its arms outstretched, sheltering some of the eggs from what evidently was a lethal sandstorm.

The animal, nicknamed Big Mama, was the first evidence that *Oviraptors* were nurturing parents who tended their nests. Their reputation as egg thieves, it turned out, was undeserved. Rather than stealing some other dinosaur's eggs, the *Oviraptor* that Andrews's team had found 70 years before was most probably guarding its own.

"Hatching the Past: the Great Dinosaur Egg Hunt" is at the Bruce Museum of Arts and Science, 1 Museum Drive, Greenwich, just off exit 3 of Interstate 95, through April 27. Information: (203) 869-0376.

