

# When modern humans encountered their first dinosaur

March 12 2012, By Faye Flam

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It was the time of P.T. Barnum, when people would line up to see a whitewashed elephant or a carefully faked petrified giant. But in 1868, a display in Philadelphia proved that reality could be far stranger than fiction. That year, the Academy of Natural Sciences showed the world its first glimpse of a real dinosaur skeleton - a 15-foot-tall Godzilla pulled from a pit in Haddonfield, N.J.

The creature threatened to obliterate the traditional picture of the universe. Along with Darwin's theory and a revolution in geology, dinosaur fossils were opening the human imagination to lost worlds on our own planet, separated by vast epochs of time.

It was a quantum leap from the neat, biblical picture of a 6,000-year-old Earth, created with all of today's living things.

Some inevitably clung to the old order, insisting that these monsters were somehow lost in the biblical flood, said Robert Peck, curator of arts and artifacts at the academy and coauthor of "A Glorious Enterprise: The Academy of Natural Sciences of Philadelphia and the Making of American Science." The book is being released just in time for the academy's bicentennial festivities, which begin March 24.

The dinosaur that unwittingly donated its remains to this display was called "Hadrosaurus foulkii." It stood 14 feet tall and stretched 26 feet from head to tail. It didn't leave the complete skeleton, but there were enough bones to enable an American paleontologist and a British

sculptor to fill in the blanks with plaster, said Peck.

The sculptor, Benjamin Hawkins, had created models of dinosaurs for display in London. Another display in Central Park was destroyed by vandals. The paleontologist, Joseph Leidy, was a professor at the University of Pennsylvania and a curator at the academy.

Unfortunately, said Peck, the beast was missing its head. So Leidy and Hawkins, as a rough guess, decided to scale up the head of an iguana lizard.

Together, their work shaped the public's image of dinosaurs for decades to come. Hawkins' earlier sculptures depicted lumbering beasts that stood with all four legs firmly on the ground, said Peck. Leidy, who was trained as a physician, used his knowledge of anatomy to propose a more upright stance, one that is closer to the current image of dinosaurs as more graceful beasts.

The display was so wildly popular that the academy had to start charging a 10-cent admission fee, Peck said, hoping to keep the crowds under control.

The Hadrosaurus was first pulled from the ground in 1858, a year before the publication of Darwin's "On the Origin of Species." Through the 19th century, less complete [dinosaur fossils](#) were already tearing holes in the paradigm of an all-species-included creation.

Leidy was among those open to the possibility of extinction. At one point, he wrote that his public reputation was suffering as a result. "I am shamefully abused as being an atheist, an infidel," he wrote to colleague Spencer Baird of the Smithsonian.

When Darwin finally published his theory of natural selection, Leidy

embraced it, and nominated Darwin for election to the academy that year. Darwin wrote back with gratitude. "Most paleontologists entirely despise my work: consequently approbation from you has gratified me much."

There were still vast mysteries to be solved. While Leidy could say that the creature came from the Carboniferous period, he couldn't say how long ago that was. A new geology born of the 19th century allowed time to stretch back millions of years, but the calibration of a geological time scale would have to wait until the next century.

There was much trial and error in early paleontology. "A bone was found, and it was thought to mean one thing, then a second bone was found and together the two bones indicated something entirely different," wrote former Inquirer reporter Mark Jaffe in his book "The Gilded Dinosaur," which describes the evolution of science in this era.

When self-educated paleontologist Edward Drinker Cope put together the academy's second great skeleton from the depths of time, a marine reptile called "Elasmosaurus," the famously brash and brilliant 29-year-old placed the head on what was later determined to be the end of the tail.

His error was corrected by a studiously observant Yale professor named O.C. Marsh, who was something of an early myth-buster, having debunked a P.T. Barnum spectacle known as the Cardiff Giant. Marsh knew enough about anatomy to realize that the vertebrae were backward in Cope's original reconstruction.

But such hiccups aside, modern science was taking shape, and the academy's Leidy was an important part of that, said Ted Daeschler, the academy's associate curator and chair of vertebrate zoology.

Traditionally, academy scientists focused their energies on careful empirical observations, Daeschler said. "Leidy absolutely provided the foundation pieces for the concepts Darwin was working on at that time."

And in turn, Darwin's theory helped Leidy and others make sense of what they were describing, he said. "This is the classic way science is supposed to work."

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