

ScienceWatch – Critics of Dinosaur-Bird Origin Smothered by a Coat of Downy Feathers



A new fossil has once again fired up the debate over the theory of the dinosaur origin of birds. The theory states that birds arose around 150 million years ago from fast-running, warm-blooded dinosaurs, known as theropods. The find was made in Liaoning province in northeastern China, an area that has produced other non-avian theropod dinosaurs with feather-like structures. The fossil, reported in the April 26, 2001 issue of *Nature*, is that of a dromaeosaur, a group of small theropods, which includes *Velociraptor*, made famous by *Jurassic Park*. Although it obviously could not fly, it is distinctive due to what appears to be a covering of downy feathers. The discovery team was headed by Qiang Ji of the Chinese Academy of Sciences in Beijing and Mark Norell of the American Museum of Natural History in New York. These paleontologists and others have pointed to the earlier finds of feathered theropods in the Yixian Formation (dated at 125 million years ago) of Liaoning Province to support the dinosaur-bird ancestral link. One, known as *Sinosauropteryx*, sported a downy fringe along its neck and backbone. Critics, led by ornithologists such as Alan Feduccia, dismissed these as frayed internal collagen fibers. Two others, dubbed *Caudipteryx* and *Protoarchaeopteryx*, displayed what supporters consider true feathers [see *ScienceWatch*, Jan./Feb. 1999 or “Birds(?) of a Feather??” at our website, www.hras.org for a complete description of these fossils].

The latest find is that of an animal, about three feet long, with a rigid tail, curved wrist bone and claw-like toe, all characteristic of an ordinary dromaeosaur. However, the observer is struck by a delicate halo of what looks like down feathers surrounding the animal, especially at the head. Microscopic examination has revealed that these fibers are definitely attached to the skin. Many other fine-structured fossils have been taken from the Yixian Formation, a region formed from a series of lake deposits and layers of volcanic ash during the Early Cretaceous age. The fossil consists of two slabs, perfect impressions of the left and right halves of the skeleton. Its head is large for its size, leading the team to conclude it was a juvenile animal. The appearance of a downy covering on an animal that clearly could not fly supports the theory that feathers originally arose in warm-blooded dinosaurs for insulation, and were adapted for flying only later on.

Dromaeosaur skeletons resemble primitive birds more so than any other dinosaur, and as such they are considered to be their closest relatives, sharing many features, most important of which is a furcula or wishbone. In the past critics of the theory have noted that no feathered dromaeosaurs were known. So the fossil is a setback for them because

now they have lost that piece of their argument. However, diehards to the last, they contend that the down-like imprints could be skin.

What is most amazing about this story is that through July 31 you can see this fossil on display (the original, not a copy), as I did at the American Museum of Natural History, and judge for yourself.*

Saul Scheinbach

*If you can't get to the museum and wish to see a photo of the fossil, visit the museum's website at: www.amnh.org/science/specials/dinobird.