

## Dinosaur feathers

Gierliński G. 1997. What type of feathers could nonavian dinosaurs have, according to an Early Jurassic ichnological evidence from Massachusetts? — *Przegląd Geologiczny* 45, 4, 419–422, 3 figures.

Feathers have flown many times over debates on the origin of plumage. Feathers are known as a uniquely avian feature and their fossil record as beginning with the Late Jurassic *Urvogel*, *Archaeopteryx*, whose name itself means ‘ancient feather’. These specimens represent, however, fully developed flight feather vanes, which remain attached to a still dinosaur-like skeleton of the oldest bird.

Now, it seems that the fossil record of feathers can be extended back some 30 million years to the Pliensbachian-Toarcian Portland Formation, because of the reexamination of a specimen described three years before the original feather from Solnhofen was named *Archaeopteryx litographica* by Hermann von Meyer (1861). Edward Hitchcock (1858) described *Anomoepus major*, considered by him at first a sitting marsupial trace and later, a track left by a squatting primitive bird. The specimen, housed in the Hitchcock Collection at Amherst College as AC 1/7, has been recently studied by Gerard Gierliński, who noticed regular impressions of feather-like structures along the belly of the trackmaker. According to Gierliński (1996), the specimen should be attributed to the ichnospecies *Eubrontes minusculus* (Hitchcock, 1858); he believes that it was imprinted by a ceratosaurian theropod about five meters long, thus the earliest and the largest feathered animal known.

The feather-like imprints have been reported by Gierliński (1996) at the Continental Jurassic Symposium in Flagstaff, Arizona. The paper published in the conference volume was, however, illustrated only with line drawings and photographs showing the general view of the slab with two footprints and the abdominal and ischiadic imprints. The paper reviewed here appends these with several good quality, close-up, color photographs of the belly margin and the featherlike structures, each over 1 centimeter long and spaced three or four millimeters apart. The regularity of these traces along the abdominal imprint, together with their absence from the footprints, suggests that they were not artifacts resulting e.g. from sitting on a substrate covered with algal scum. Comparison with experimentally obtained impressions of different types of modern bird feathers led the author to conclude that the dinosaur had its body covered with structures most closely resembling semiplumes of extant birds. Very similar structures, brushlike rather than pennate, seem to be associated with the feathered Early Cretaceous theropod *Sinosauropteryx prima* from Liaoning, China, according to preliminary information available at the moment (Gibbons 1997; Hecht 1997). The Chinese locality has also yielded imprints of primitive tail feathers with symmetrical vanes associated with a skeleton of *Protarchaeopteryx robusta* Ji (Hecht 1997).

### References

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