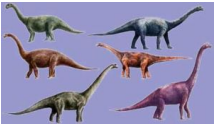


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By: Stefan Anitei, Science Editor



Did Dinosaurs Use Stones for Digestion?

Some scientists disagree

Researchers have often found alongside the skeleton of the huge Jurassic herbivore dinosaurs stones. They were interpreted as gastroliths, used as a "gastric mill", the way ostriches and related species use today. The giant sauropod dinosaurs (image) had a problem: their narrow, pointed teeth were more suited to tearing off plants rather than chewing them. (In fact, later were outcompeted by duckbilled dinosaurs and horned dinosaurs, with a more perfected dentition). In order to grind their food, many researchers have assumed that they were helped by stones which they swallowed. Giant dinosaurs from the Jurassic and Cretaceous period (200 million to 65 million years ago) were the largest herbivores (and terrestrial animals) which have ever existed. These beasts had to digest enormous amounts of food for their rapid growth and the metabolism of their gigantic bodies. Smoothly polished stones, which were found in several cases at excavations involving skeletons of sauropods, are also interpreted as gastric stones. But Dr. Oliver Wings from the Institute of Earth Sciences at the University of Tübingen, and Dr. Martin Sander from the University of Bonn, disagree with the idea that those stones were gastroliths. The researchers offered stones such as limestone, rose quartz and granite to ostriches on a farm. After the ostriches had been sacrificed, they checked the gastric stones. It resulted they wore out quickly in the muscular stomach and were not polished. More over, the surface of the stones, which had been partly smooth, became rough in the bird stomach and the mass of the stones then corresponded on average to 1 % of the body mass of the birds. "Whereas occasionally stones were found together with sauropod skeletons, we don't think they are remains of a gastric mill such as occurs in birds," said Sander. "Gastric mill" stones would have been much worn and would not have a smoothly polished surface. And gastric stones are not discovered regularly at sauropod sites and do not show a correlation to the body mass, like in ostriches. "In comparing these we extrapolate over four orders of magnitude, from an ostrich weighing 89 kilograms to a sauropod weighing 50,000 kilograms. This may seem a bit daring. However, within birds the range of body weight and corresponding masses of gastric stones also spans four orders of magnitude, from the 17 gram robin to the ostrich," says Wings. The scientists believe that the stones were accidentally swallowed by dinosaurs with their food or could have been ingested to improve the intake of minerals. The sauropods' digestive system must have used other methods to process vegetation. But gastric stones associated with theropod dinosaur (all carnivorous dinosaurs) fossils may indeed come from "gastric mills", as their descendant (the birds) proves it.