

## Bipedal Apatosaurs?

New data published by Emily Giffin shows that the nerves to the forelimbs of *Stegosaurus* and *Apatosaurus* (indicated by the cross-sectional area of the neural canal in the shoulder region) were much less developed than in other quadrupedal dinosaurs and mammals. The same condition appears to be true of *Dicraeosaurus* (another sauropod). Reptiles have a similar condition, and Emily Giffin suggests that this might imply that stegosaur and apatosaur forelimbs had a sprawling posture. This is not supported by the articulations of the known skeletons. But there is an alternative.

Flightless birds also have poorly developed nerves to their arms since they do not use them much. It is interesting to note that *Stegosaurus*, *Apatosaurus*, *Dicraeosaurus*, and *Amargasaurus* share many similar characteristics: neck is not extremely long, trunk is short, trunk vertebrae decrease rapidly in height approaching the hips, the sacrum and hips are massive, the tail is very heavy, the arms are much shorter and weaker than the hind limbs (the circumference of the humerus is only 1/3 that of the femur), the hind limb is as strong as in bipeds, and most of the weight is on those hind legs. It could therefore be speculated that *Stegosaurus*, *Apatosaurus*, and the dicraeosaurus often walked on just the two hind legs. The lack of use of the forelegs could then explain the poor neural controls. The body posture would have been horizontal (the hips are not modified for a more erect posture as they are in therizinosaurs).

This idea is radical and impossible to confirm or reject. Even if trackways showed only hind feet (and many show both feet or only the front feet), it could be argued that the hind feet were stepping onto the front footprints.—Gregory S. Paul

