

graduate student at the State University of New York, Stony Brook, examined forelimbs and shoulder blades from specimens of *Apatosaurus* (once known as *Bron-tosaurus*), a sauropod that roamed North America some 150 million years ago.

When Curry drilled samples from shoulder blades, she found regular changes in the density of microscopic canals that presumably once held blood vessels. The layers resemble the concentric rings laid down each year in manatee and sea turtle bones, so Curry assumed that they were annual and used them to age the sauropod shoulder blades. Bones from half-sized individuals were 4 to 5 years old, while the largest sauropods had apparently reached full growth in just 8 to 11 years.

That growth rate may sound extraordinary. But it implies that sauropods deposited about 10.1 micrometers of bone tissue per day—about the same rate as living ducks, which deposit an average of 10.0 micrometers of bone per day. Ducks, however, grow to full size in about 22 weeks, while *Apatosaurus* apparently kept up its growth spurt for years.

As a check, Curry used the rate derived from the *Apatosaurus* scapula to estimate the age of the forelimb bones, which have no rings, and came up with similar numbers. The bone growth rate also fits reasonably well with the lone previous estimate, by Armand Ricqlès of the Université Paris VII, who used faint layers in sauropod humerus bones to clock their growth at roughly 7 micrometers per day. “Even though *Ap-*

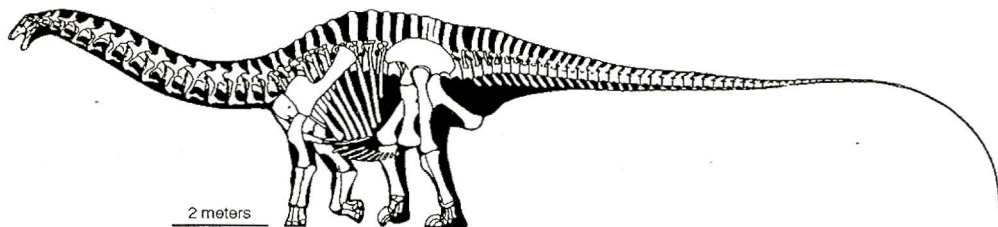
University of Pennsylvania, Philadelphia, and colleagues. Such an extended childhood would give predators and disease ample time to pick off animals before they reproduced, says Gregory Paul, an independent dinosaur artist and paleontologist in Baltimore, Maryland. But if Curry’s rapid growth rate is right, young sauropods probably weren’t picked on for long.

—ERIK STOKSTAD

PALEONTOLOGY

Young Dinos Grew Up Fast

SNOWBIRD, UTAH—The giant dinosaurs known as sauropods were the most massive creatures ever to tread on land. Now a detailed look at one species’ bones, described here earlier this month at the annual meeting of the Society of Vertebrate Paleontology, suggests that these hulking beasts could grow to full size—tens of tons and longer than a tractor-trailer—in just a decade. By



All grown up. Growth layers in shoulder bones suggest that an *Apatosaurus* like this one grew to full size in only about a decade.

clocking the sauropod childhood, the work “provides a whole new dimension to sauropod studies,” says Philip Currie of the Royal Tyrrell Museum of Palaeontology in Drumheller, Alberta.

Paleontologists had estimated that it would take more than a century for a modern reptile to reach the size of an adult sauropod. But under the microscope, dinosaur bone seems to tell a different story: It looks more like the fast-growing bones of mammals and birds than that of reptiles. To sharpen the age estimate, Kristina Curry, a

atosaurus may have lived for centuries, they certainly didn’t take that long to reach their full size,” Curry concludes.

The finding makes sense, says Currie of the Royal Tyrrell Museum, as hatchlings wouldn’t survive long if they grew slowly. Besides the threat of predators, just living with a 30-ton mother would be dangerous. “You’d probably get stepped on,” he notes. Moreover, if dinosaurs took more than 30 years to mature, their populations could sink to dangerously low levels, according to 1989 calculations by Arthur Dunham of the