

A Comic History of Dinosaurs

I am a dinosaur paleobiologist, so imagine my pleasure when I first came across the "Mark Trail" info-strip on dinosaurs [Comics, Oct. 31]. It quickly turned to disappointment and dismay. Again and again, Dodd and Elrod got the facts wrong.

In the first and second panels, the strip declares: "The Earth is generally estimated to be more than two billion years old, but about three-fourths of this span of Earth history is without any fossil record!" and "Fossils have been found in rocks that go back about 500 million years!"

The Earth and the solar system are close to 4.5 billion years old. Give or take a few million years, there is no scientific dispute about this long-accepted and well-documented date. Trace fossils of single-celled organisms have been discovered in rocks about 3.5 billion years old. The newest data indicate that abundant fossils of hard-bodied organisms—trilobites and the like—first appeared in rocks formed about 540 million years ago. By my calculations there are no fossils for about one-fifth of Earth history, and they are rare for about eight-tenths of Earth history.

The third panel of the strip states: "The Jurassic Period, which we've heard about so much lately, is when dinosaurs dominated the Earth." Okay, so far as it goes. But dinosaurs were also dominant in the following period, the Cretaceous. And Dodd and Elrod further muddle things by illustrating their discussion of Jurassic times with the skeleton of a duckbilled dinosaur from the late Cretaceous period.

Panel four states: "Jurassic is the name for the middle period of the Mesozoic era, and it comes from the Jura Mountains in Europe where early fossils were found." The authors got the text right. Too bad they illustrated the panel with primitive, mammal-like reptiles that are no more closely related to dinosaurs than are you and I and that lived in the Paleozoic era—long before dinosaurs.

Panel five states: "Dinosaurs were reptiles, cold-blooded animals related to crocodiles, lizards and snakes, and they lived about 200 million years ago," and, "They became extinct some 70 million years ago."

Where have Dodd and Elrod been hiding out for the last quarter-century?

Dinosaurs are no longer looked upon as "cold-blooded reptiles." The modern debate is about whether they were warm-blooded, like birds, or had a lukewarm-blooded metabolism intermediate to reptiles and birds. It is true that crocodilians are close relatives of dinosaurs, but Mark Trail does not tell his readers that birds are the direct descendants of small-bodied, big-brained, flesh-eating dinosaurs like the raptors in "Jurassic Park."

What gives the situation a comic twist is that in the same Sunday comics Watterson ran another of his marvelous dinosaur tales in "Calvin and Hobbes." Watterson has obviously been keeping up with the latest research. Like the



other dinosaurs that appear in Calvin's imagination, the *Tyrannosaurus rex* is accurate, up-to-date and original. Tails are carried high in the air, and head shapes and body form are drawn with the dynamism and skill of a trained dinosaur artist. They are a true pleasure. In comparison Dodd and Elrod's dinosaurs are pale, plodding imitations of the tail-dragging dinosaurs illustrated half a century ago.

Dodd and Elrod's intentions are good, and space limits how much natural history they can present in a single strip. But that is no excuse for sloppy popularization of science. It is also a shame, because the love children have for dinosaurs gives adults a chance to introduce them to the wonders and promise of science. So, kids, until Mark Trail gets his act together, get the real scoop on dinosaurs from Calvin and his feline friend.

—Gregory S. Paul

MARK TRAIL

THE EARTH IS GENERALLY ESTIMATED TO BE MORE THAN TWO BILLION YEARS OLD, BUT ABOUT THREE-FOURTHS OF THIS SPAN OF EARTH HISTORY IS WITHOUT ANY FOSSIL RECORD!

FOSSILS HAVE BEEN FOUND IN ROCKS THAT GO BACK ABOUT 500 MILLION YEARS!

DINOSAURS WERE REPTILES, COLD-BLOODED ANIMALS RELATED TO THE CROCODILES, LIZARDS AND SNAKES, AND THEY LIVED ABOUT 200 MILLION YEARS AGO

THEY BECAME EXTINCT SOME 70 MILLION YEARS AGO...

THE JURASSIC PERIOD, WHICH WE'VE HEARD SO MUCH ABOUT LATELY, IS WHEN DINOSAURS DOMINATED THE EARTH!

JURASSIC IS THE NAME FOR THE MIDDLE PERIOD OF THE MESOZOIC ERA, AND IT COMES FROM THE JURA MOUNTAINS IN EUROPE WHERE EARLY FOSSILS WERE FOUND

BUT RECENT PUBLICITY IS BRINGING THESE GIANTS BACK TO LIFE, AND THEY ARE ROAMING OUR TOY STORES AND MALLS

CALVIN, THE MIGHTY TYRANNOSAUR, STANDS OVER HIS KILL AND ROARS TRIUMPHANTLY!

calvin and hobbes

BY WATKINSON 1983

THE STRUGGLE TO BRING DOWN HIS PREY HAS GIVEN CALVIN A MONSTROUS APPETITE!

WITH MASSIVE JAWS TWISTING VIOLENTLY AT THE CARCASS, HE RIPS APART GIGANTIC CHUNKS AND SWALLOWS THEM WHOLE! WHAT A DISGUSTING SPECTACLE OF SAVAGE GLUTTONY!

THAT'S ENOUGH FOR TONIGHT, CALVIN. YOU'RE GOING TO GET SICK IF YOU EAT ALL THAT.

BUT MOM, I EARNED IT!