55," he says.

Branch may hew to the old line, but the high-Hubble movement has gained a lot of momentum. And, for most cosmologists, that's bad news. "There's a large part of the theoretical community that doesn't want to hear this answer," says Tully. The problem is that the Hubble constant is one of two numbers that cosmologists can use to compute the age of the universe. The other is the amount of matter in the universe, indicated by the Greek letter omega. An omega of 1 means there is enough mass to arrest the expansion of the universe—and this "flat" universe has strong theoretical support. But, according to standard cosmological theory, an omega of 1 and a Hubble constant of 80 equal a universe only 8 billion years old.

That would be fine, if it were not for the fact that stellar evolutionists have pegged the ages of some stars in globular star clusters at 13 billion years or older. Even an "impossible" omega of 0 (an empty universe) would not solve the problem; a Hubble constant of 80 then equals a 12-billion-year-old universe. Therefore, if the new, higher values for the Hubble constant turn out to be true, cosmologists will have their work cut out for them—adjusting their standard theory so that a realistic omega and a high Hubble constant yield a plausible age for the universe. It may not be as frightening as death or as infuriating as taxes, but after more than half a century the Hubble constant retains plenty of power to vex the astronomical community.

–John Travis

PALEONTOLOGY

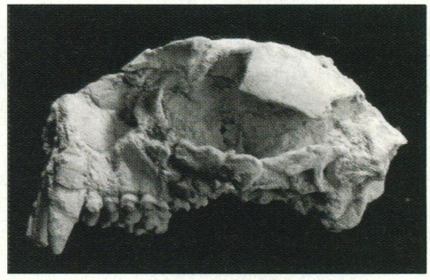
Primate Origins: New Skull Fuels Debate

Today, the Fayum Depression, a gigantic bowl on the west side of the Nile River Valley south of Cairo, is a wind-carved, dusty place. But 36 million years ago, it was a tropical forest on the shores of the ancient Tethys Sea, teeming with the ancestors of monkeys, apes, and humans—and possibly lemurs and lorises. In this wind-swept basin paleontologists have been uncovering a trove of fossils that shed light on primate evolution. The latest treasure is a nearly complete skull from a never-before-seen type of primate. And, along with earlier finds from the same place, the new skull is fueling debate over whether the primate order is rooted in Africa, rather than in Asia as some primatologists have argued.

The new creature is described by Duke University primatologist Elwyn Simons and Washington University physical anthropologist D. Tab Rasmussen in the current issue of the *Proceedings of the National Academy of Science* (vol. 91, no. 21, p. 9946). It was a small, furry primate the size of a small cat, belonging to the suborder of prosimians. These "lower" primates are a group of arboreal, large-eyed, furry primates that today includes long-tailed lemurs and the smaller, nocturnal lorises and woolly bushbabies. The new find, says Rasmussen, was "a big-eyed, cute-looking prosimian with a large lower face. If it were to open its mouth, it would scare the hell out of you." The startle factor is produced by the creature's giant lower front tooth and a sharp daggerlike upper canine.

The 36-million-year-old skull is so different from anything found before that the researchers have placed it not just in a new species—*Plesiopithecus teras*—but in a whole new primate family and superfamily. Rasmussen and Simons decided *P. teras* couldn't be one of the "anthropoids," or "higher" primates that include apes, monkeys, and humans. That decision was made because the skull lacked certain anthropoid features such as an enclosed bony cup at the back of the eye.

The skull also had four premolars and a loop of bone behind its eye, features of primitive prosimians. But the skull's pronounced front tooth and wide lower face made clear it was a prosimian like no other. Says Philip Gingerich of the University of Michigan, who has seen the skull: "I think this animal is pretty odd." So odd, in fact, that it deserved its own family, Plesiopithecidae, and superfamily, Plesiopithecoidea, only the third superfamily of prosimians known from the Eocene, the period lasting from 55 million to 35 million years ago.



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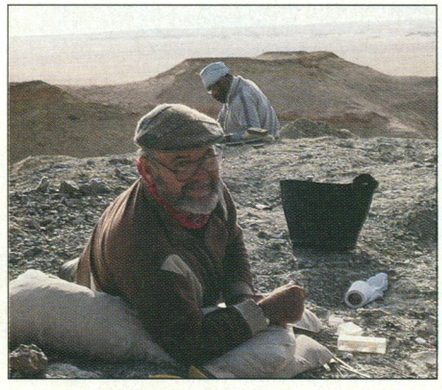

SENTURIA

Fossil find. Elwyn Simons *(above)* unearthed a new type of primate skull *(top)* in Egypt.

For this period, the new site where *P. teras* was found in the Fayum Depression—known as quarry L-41—has now produced a wider assortment of extinct primates than any other spot in the world. In the quarry, anthropologists have found at least three other primate families representing four genera of anthropoids and two of prosimians. "The whole world was warm and tropical ... and this site was bounding with little fuzzy lemurs and weird anthropoids," says Rasmussen.

Indeed, Fayum L-41 is the only Eocene site with "undoubted anthropoids," says Rasmussen, because the purported anthropoids from other sites in Africa and Asia only include teeth, which are unreliable for distinguishing ancient anthropoids from prosimians. He and Simons contend that the presence of the anthropoids, as well as the overall primate diversity, suggest that anthropoids—and perhaps all primates—arose in Africa. These widely divergent primates, they argue, must have taken many millions of years to evolve from a common ancestor; in their view, that time frame pushes the common ancestor of anthropoids and prosimians in Africa back to about 45 million years ago.

But others doubt that the common ancestor existed in Africa. K. Christopher Beard of the Carnegie Museum of Natural History in Pittsburgh and his colleagues have found a wealth of new primate fossils in southeastern China dating back 45 million years. In a paper in the 14 April issue of *Nature*, they claimed that those fossils include anthropoids and prosimians (though with fewer genera and families than at the new Fayum site).

While some such as Gingerich think the purported Chinese anthropoid may be a hedgehog, it is clear there are several families of primates at the Chinese site—at an earlier date than in Africa. Asia has other old primate fossils as well, and the finder of two of them (45-million-year-old primates from Burma), University of Iowa paleoanthropologist Russell L. Ciochon, argues that "in many ways, the diversity argument is just as strong in Asia as in Africa."

The clincher, everyone agrees, would be to find an ancient primate on one continent or another that shows features ancestral to both the anthropoids and the prosimians. The latest find from Egypt isn't that. But as an odd, old prosimian, it is bound to make paleoanthropologists take a look at Africa as the possible cradle of the primates.

–Ann Gibbons