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equilibria" theory of evolution (organisms stay the same for millions of years, then change quickly rather than gradually, as Darwin believed), was asked about it once, he said:

There have been an awful lot of stories, some more imaginative than others, about what the nature of that history [of life] really is. The most famous example, still on exhibit downstairs, is the exhibit on horse evolution prepared perhaps fifty years ago. That has been presented as the literal truth in textbook after textbook. Now I think that that is lamentable, particularly when the people who propose those kinds of stories may themselves be aware of the speculative nature of some of that stuff.

When I brought the subject up with Platnick, he said he thought horse fossils had not yet been properly classified, or even exhaustively studied. I wanted to know whether Platnick believed that evolution has occurred. He said he did, and that the evidence was to be found in the existing hierarchical structure of nature. All organisms can, as it were, be placed within an interested set of "boxes." The box labeled "gazelles" fits in the larger box labeled "ungulates" (animals with hoofs), which fits inside the "mammals" box, which fits inside "tetrapods" (four-footed animals), which fits inside "vertebrates." The grand task of taxonomy, Platnick said, is to describe this hierarchical pattern precisely, and in particular to define the traits that delineate the boundaries of each "box."

Whether taxonomy will ever fill in all the blanks in the pattern is a question Platnick cannot answer. One problem, he said, is the shortage of taxonomists. "Systematics," he said, "doesn't have the glamour to attract research funds." Research grants have increasingly gone to molecular and biochemical studies; the result is that support for taxonomy at many institutions has, he said, "withered away." This bothered Platnick. "I am fully prepared to stand up to any biologist who says evolutionary theory is more important, or more basic. Without the results of systematics there is nothing to be explained."

I wanted to find out what those on the other side—the evolutionary biologists and paleontologists—had to say about what the cladists are saying. First I went to the bookshelf. In his 1969 book *The Triumph of the Darwinian Method* (recently reprinted by the University of Chicago Press), Michael T. Ghiselin, one of Darwin's greatest admirers, seems to be taking on the cladists (or trying to) when he writes:

Instead of finding patterns in nature and deciding that because of their conspicuousness they seem important, we discover the underlying mechanisms that impose order on natural phenomena,

whether we see that order or not, and then derive the structure of our classification system from this understanding.

I next looked in *Hen's Teeth and Horse's Toes*, Stephen Jay Gould's volume of essays on natural history. "No debate in evolutionary biology has been more intense during the past decade than the challenges raised by cladistics against traditional schemes of classification," Gould writes. He is not sympathetic to cladistics ("its leading exponents in America are among the most contentious scientists I have ever encountered"), but in his essay "What, If Anything, Is a Zebra?" he admits that "behind the names and the nastiness lies an important set of principles." These he enunciates, only to repudiate. He acknowledges that a strict taxonomy would eliminate groups like apes and fishes. But when cladists go this far, "many biologists rebel, and rightly, I think." Like his Harvard colleague Edward Q. Wilson, the Frank B. Baird Professor of Science, Gould opts for the "admittedly vague and qualitative, but not therefore unimportant notion of overall similarity" of form.

I decided it would be a good idea to talk with a scientist who believes strongly in evolutionary theory. Last May, I traveled to Boston to meet with Richard C. Lewontin, a geneticist, a one-time president of the Society for the Study of Evolution, a well-known writer on science, and currently Agassiz Professor of Zoology at Harvard. I had seen a quote from Lewontin used as a chapter head in a book titled *Science on Trial*, by Douglas Futuyma. The quote, as edited, read: "Evolution is fact, not theory. . . . Birds evolve from nonbirds, humans evolve from nonhumans."

Lewontin was uncharacteristically attired in a scientist's regulation white lab coat when I first saw him (instead of his usual blue work shirt). We talked a bit about his stand against biological determinism. Finally it was time to get around to the point of my visit. What about these claims: evolution is fact; birds evolve from nonbirds, humans from nonhumans? The cladists disapproved, I said.

He paused for a split second and said: "Those are very weak statements, I agree." Then he made one of the clearest statements about evolution I have heard. He said: "Those statements flow simply from the assertion that all organisms have parents. It is an empirical claim, I think, that all living organisms have living organisms as parents. The second empirical claim is that there was a time on earth when there were no mammals. Now, if you allow me those two claims as empirical, then the claim that mammals arose from non-mammals is simply a conclusion. It's the deduction from two empiri-