

DARWIN IN THE DOCK

Intelligent design has its day in court.

BY MARGARET TALBOT

Courtroom battles about the teaching of evolution rarely have devoted much discussion to the science of evolution. This is partly because few working scientists have been willing to testify against evolutionary theory, and partly because judges have been reluctant to engage the heady question of what constitutes science. Even in the Scopes "Monkey Trial," of 1925, the judge, John Raulston, limited the issue at hand to whether John Scopes, a high-school teacher, had broken a Tennessee law against teaching "that man has descended from a lower order of animal." He refused to consider whether the law made any sense in scientific terms, and rebuffed efforts by the defense attorney, Clarence Darrow, to bring in an array of evolutionary scientists. In *Epperson v. Arkansas*, the landmark 1968 Supreme Court case in which a biology teacher named Susan Epperson successfully sought to overturn a state law banning the teaching of evolution, the trial in Little Rock lasted less than a day and did not include any scientific testimony. *Edwards v. Aguillard*, a 1987 case in which the Supreme Court struck down a statute requiring that creationism and evolution be taught side by side in public-school science classes, began in district court with a summary judgment against the Louisiana law, and thus had no testimony at all. Last spring, when the Kansas Board of Education held hearings on the teaching of evolution that were dominated by advocates of intelligent design, evolutionary scientists boycotted them, perhaps to their regret: in November, the Kansas board voted to include challenges to Darwinian theory in the state standards.

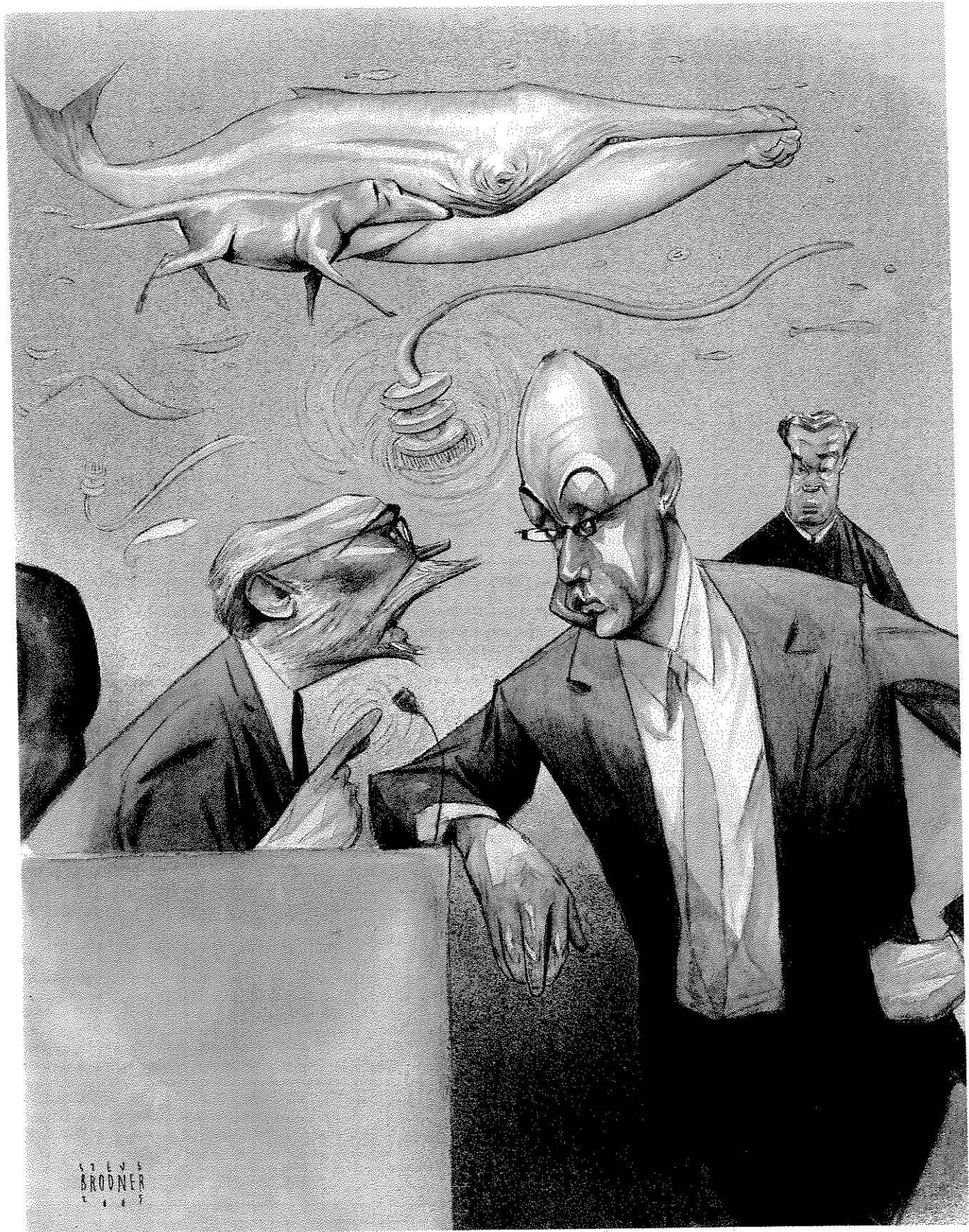
Nothing in the background of John E. Jones III—the judge who recently presided in a Harrisburg, Pennsylvania, courtroom over *Kitzmiller v. Dover Area School District*, the first case to test whether it is constitutional for public-school classes to present the argu-

ment of intelligent design—suggested that he would deviate from this pattern. Jones, who is fifty years old, was born in Pottsville, Pennsylvania. His family owns golf courses. In 1995, Tom Ridge, who was then the state's Republican governor, appointed him chairman of the state liquor-control board; in that post, he banned the sale of Bad Frog Beer, because its label shows a frog giving the finger. Yet the trial that Jones oversaw, which took place in a functional courtroom trimmed with teal and white panels, turned out to be rather like the biology class you wish you could have taken. Lawyers spent six weeks posing questions like "What is science?" and "Who was Charles Darwin?" Proponents of intelligent design—the argument that certain features of the natural world are so complex and intricately put together that they must have been deliberately fashioned—claimed that it was a bold new scientific idea that had been unfairly maligned. And scientists who believe that intelligent design is merely a repackaged version of creationism made a case for evolution that was thrilling in its breadth (evidence from homology, modern genetics, molecular biology, the fossil record) and satisfying in its detail (a recently excavated fossil of the oviraptor, a small carnivorous dinosaur of the kind that evolved into birds, depicts the creature brooding over its eggs like a hen).

The trial ended the first week of November. Jones has said that he will render his verdict by the first week in January, which is just before the ninth-grade biology students at Dover Senior High School are scheduled to start their unit on evolution. If Jones sides with the school district, the students will be read a four-paragraph statement casting doubt on the validity of Darwinian theory and touting intelligent design as an alternative. If Jones sides with the plaintiffs, he will establish the precedent that including intelligent design in a public-school

curriculum represents a tacit endorsement of Christianity—thus violating the First Amendment, which states, in part, "Congress shall make no law respecting an establishment of religion."

During the trial, which did not have a jury, Jones sometimes joked, in his appealingly growly baritone, about all the science he and everyone else in the courtroom were contending with. One morning, he deadpanned that stopping for an early lunch break would allow for a "nice, long afternoon of expert testimony." After a few hours of instruction from Kenneth Miller, a biology professor at Brown University, Jones observed that his "friends in the jury box"—the reporters—looked "like they could use a little caffeine." When a lawyer for the plaintiffs, Witold Walczak, asked Miller how he would explain to his mother the microbiology he had just been laying out, Judge Jones chimed in, "Or me!" Jones has the rugged charm of a nineteen-forties movie star; he sounded and looked like a cross between Robert Mitchum and William Holden. (According to a local paper, the Judge's wife thinks that Tom Hanks should play him—a not entirely idle bit of speculative casting, since a representative from Paramount Pictures sat through the whole trial, filing dispatches to a potential screenwriter.) Despite his jokes, however, Jones not only allowed copious expert testimony but often seemed keenly interested in it, tilting his head toward the witnesses and raising his eyebrows in mild surprise. He seemed particularly engaged when Kevin Padian, a paleontologist at Berkeley, started showing slides of prehistoric animals—which he called, variously, "critters," "guys," and "paleozoic roadkill"—in order to illustrate that we have a lot of transitional fossils demonstrating the evolution of fish to amphibians and of dinosaurs to birds. And Jones clearly enjoyed Padian's remarks



At the trial, Michael Bebe, the leading intellectual of intelligent design, was cross-examined with cheerful mercilessness by Eric Rothschild. For six weeks, the courtroom of Judge John E. Jones III was like the biology class you wished you could have taken.



JOHN
MCKINLEY
© 2001

on the educational value of dissecting your Kentucky Fried Chicken (the pointy part of the wing shows where the individual digits of the dinosaur fused together in birds).

You sometimes hear it said that a courtroom is not a proper venue for debating science. In this case, it proved to be an ideal forum. For one thing, it allowed for the close questioning of Michael Behe, the Lehigh University biochemist who is the leading intellectual of intelligent design (and one of the movement's few working scientists). Under cross-examination by Eric Rothschild, a dogged lawyer for the plaintiffs, Behe conceded, for example, that a definition of science that could be expanded to embrace intelligent design could, by the same token, embrace astrology. And he was unable to name any peer-reviewed research generated by intelligent design, though the movement has been around for more than a decade.

The trial also allowed the lawyers to act as proxies for the rest of us, and ask of scientists questions that we'd probably be too embarrassed to ask ourselves. In a courtroom, you must lay an intellectual foundation in order to earn a line of questioning—and so the lawyers stripped matters neatly back to the first principles of science. Considering how often it is said that evolution is “just” a theory, for instance, it is clear that many people either do not know or do not accept the scientific definition of a theory.

The lawyers for the pro-evolution side went to great lengths to make the point that, although all science is provisional, a scientific theory is a powerful explanation that unites a large body of facts and relies on testable hypotheses. As Padian testified, it is not “something that we think of in the middle of the night after too much coffee and not enough sleep.”

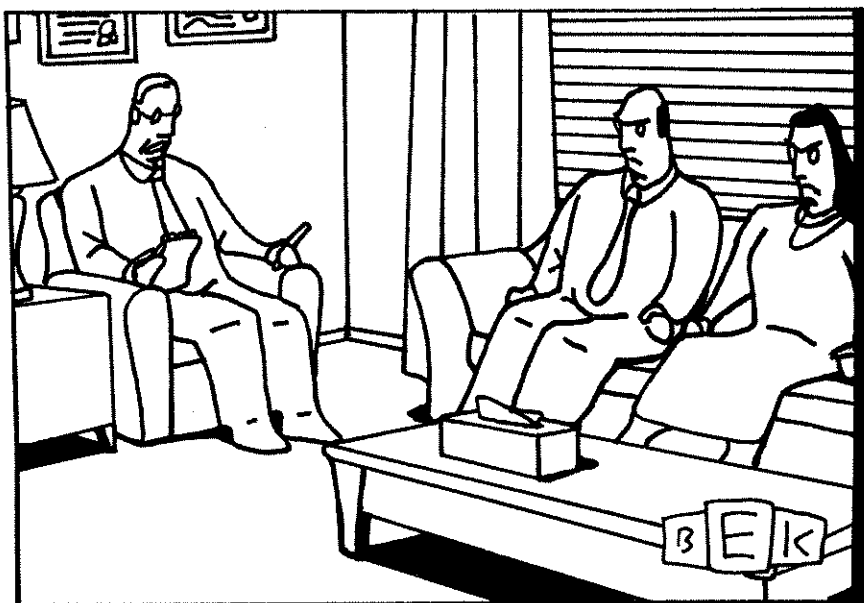
Intelligent design is an argument by inference. If we walk down the beach and see the words “John loves Mary” in the sand—an example offered by the intelligent-design textbook “Of Pandas and People”—we can infer that someone wrote them. We can make a similar inference, the textbook claims, when we look at the inner workings of some of nature's niftier products. In intelligent design's precursor forms—the nineteenth-century arguments of the Reverend William Paley, for instance, who rhapsodized about the mechanics of the human eye—the implied author is clearly God. The modern version of intelligent design, however, declines to specify who the master designer might be. Behe and other advocates will freely admit that, for them, the designer of life on earth is the God of Christianity. (Intelligent design, Behe has written, is “less plausible to those for whom the existence of God is in question, and is much less plausible for those who deny God's existence.”) But, conceivably, the intelligent designer could be space aliens

or a time traveller from the future. It's hard to believe that any proponents of the idea actually believe this.

The example that proponents of intelligent design dote upon is the bacterial flagellum, the outboard-motor-like apparatus that propels some bacteria. This tiny wonder isn't just machine-like, they argue; it *is* a machine, something that could never have been produced by random mutation and natural selection, no matter how many billions of years you gave it. (Behe has claimed that all its parts would need to be present and working at once for it to function.) During the trial, the flagellum was invoked dozens of times. The cumulative effect of all these return engagements was the opposite of the one intended, however: it began to seem as if the intelligent-design movement had hitched its wagon to one very tiny star—that on the side of evolution you had a vast accumulation of evidence from sundry disciplines, and on the other side you had . . . an extracellular appendage. To be fair, Behe cited a few other examples of “irreducible complexity,” like the blood-clotting mechanism. But when one of the lawyers for Behe's side joked that “we could probably call this the Bacterial Flagellum Trial,” he was hitting a little too close to home. Indeed, on the penultimate day of the trial, when Scott Minnich, a professor of microbiology at the University of Idaho who was testifying for the intelligent-design side, showed a slide of the bacterial flagellum, Judge Jones offered the dry understatement “We've seen that.” Minnich, who up until then had struck a staid, even sombre tone, acknowledged the sentiment: “I kind of feel like Zsa Zsa Gabor's fifth husband. As the old adage goes, I know what to do, but I just can't make it exciting.”

Behe's testimony went on for three days—longer than that of any other witness. He certainly looked professorial, with his graying beard and oversized glasses. And he seemed authoritative when he discussed the recondite structures of microorganisms. But under cross-examination Behe sometimes sounded evasive and circumlocutious; he seemed to have trouble hearing challenging questions, and would put his hand to his ear and ask the lawyer to repeat them.

Eric Rothschild kept at him with



“You're both miserable wretches, but I suppose that's beside the point.”

cheerful mercilessness. "Let's start with the bacterial flagellum," he said at one point. "You've made a point about how complicated and intricate it is?" Behe nodded. Rothschild went on, in a deceptively reassuring gee-whiz tone: "And it really is! I mean, it looks remarkable. But a *lot* of biological life is pretty remarkable."

Behe saw what he was up to. "That makes me very suspicious," he said.

"You're suspicious about how remarkable biological life is?" Rothschild asked incredulously. Then he marched Behe through a list of biological marvels, whose marvellousness Behe duly acknowledged: photosynthesis; the stars and planets; flowers. Rothschild's point was that arguments expressing astonishment at nature's complexities are obvious and infinitely extendable—why limit yourself to the bacterial flagellum?—and generally considered insufficient as science, however pleasing they might be from a philosophical or aesthetic perspective. When Rothschild added "the entire human body" to his list, saying, "Now, *that's* an amazing biological structure," Behe gazed upward dreamily and joked, "I'm thinking of examples."

"Hopefully, not mine!" Rothschild responded.

"Rest assured," came the reply.

Rothschild then asked Behe how, exactly, the designer executed his handiwork. Behe declined to speculate, but Rothschild pressed him for specifics, just skirting absurdity. Was the designer limited to making "the blueprint"? ("Well, no, the designer would also have to somehow cause the plan to, you know, go into effect," Behe replied.) Did the designer make each and every protein in the flagellum? (That was a difficult question to address and would require "lots and lots of distinctions to be made.") Did the designer fashion every individual flagellum or just "the first lucky one"? And so on.

In his writings, Behe has noted that his claim that the bacterial flagellum could not have emerged through evolution is open to rebuttal: "To falsify such a claim, a scientist could go into the laboratory, place a bacterial species lacking a flagellum under some selective pressure (for mobility, say), grow it for ten thousand generations, and see if a flagellum—or any equally complex sys-

tem—was produced." Rothschild asked Behe if he had attempted such an experiment. No, Behe said, with a weary smile; he doubted it would be fruitful, and he preferred to spend his time on other things.

Even if such an experiment were performed and failed to give rise to a bacterial flagellum, Rothschild suggested to Behe, it would hardly be dispositive. "It's entirely possible that something that couldn't be produced in the lab in two years or a hundred years, or even in a laboratory that was in operation for all of human existence, *could* be produced over three and a half billion years," he said. Behe conceded the point. And that, Rothschild concluded, is precisely why the age of the earth is crucial to any biological theory about the origins and development of life. And yet, Rothschild observed, "it doesn't matter to intelligent design" whether the earth is "billions of years old or ten thousand years old."

"Intelligent design is not a *person*," Behe retorted. "So it doesn't have feelings like you are describing."

For the vast majority of scientists, the argument against intelligent design starts with the notion that science is bound by methodological naturalism—it looks for natural explanations for natural phenomena, and has nothing to say about the supernatural. This was the foundation the plaintiffs' lawyers had to lay, and they had an ideal craftsman in Kenneth Miller, the Brown biology professor. Miller is the co-author of a best-selling series of high-school and college biology textbooks; students who lug the books around in their backpacks typically refer to them by their cover photographs—the "dragonfly book," the "lion book," and the "elephant book." He is also one of the few prominent scientists willing to debate creation scientists and intelligent-design advocates. (Many mainstream scientists don't want to be bothered to debate something they find as uncontroversial as the theory of evolution. Miller has been doing it for years, aided, perhaps, by his experience as an umpire for N.C.A.A. softball. In that capacity, a recent article on Miller reported, he has had "every foul word in the book hurled at him, and some dirt, too.") He is also a practicing Catholic, and there-

fore embodies the notion that religion and science are, as Stephen Jay Gould once called them, "non-overlapping magisteria." Miller, who is slim and has a neatly trimmed salt-and-pepper beard, addressed counsel on both sides as "sir," made delicate scholarly jokes that weren't too geeky, and answered each question with undiminished energy, as though he'd heard it before, but not that day, so, really, it was as fresh and interesting as ever. He has a firm voice and a forthright way of putting things: after noting that 99.9 per cent of the organisms that have ever lived on earth are now extinct, for instance, he said that "an intelligent designer who designed things, 99.9 per cent of which didn't last, certainly wouldn't be very intelligent."

Under direct examination by Walczak, one of the plaintiffs' lawyers, Miller described the tenets of science: practitioners seek their explanations in what can be observed, tested, and replicated by others.

"These rules don't apply just in the United States?" Walczak asked.

"No, sir, they don't," Miller said. "I think science might be the closest thing we have on this planet to a universal culture."

"Why are these rules important?" Walczak said.

"If you don't have these rules, you don't have science," Miller explained. "If you invoke a nonnatural cause—a spirit force or something like that—in your research and I decide to test it, I have no way to test it. I can't order it from a biological-supply house. I can't grow it in my laboratory."

"So supernatural causation is not considered part of science?" Walczak asked.

"I hesitate to beg the patience of the court with this, but, being a Boston Red Sox fan, I can't resist," Miller said. "One might say, for example, the reason the Boston Red Sox were able to come back from three games down against the New York Yankees was because God was tired of George Steinbrenner and wanted to see the Red Sox win. In my part of the country, you'd be surprised how many people think that's a perfectly reasonable explanation for what happened last year. And you know what? It might be true. But it certainly is not sci-

ence . . . and it's certainly not something we can test." Judge Jones, who did not interrupt this exchange, appeared to be suppressing a smile.

In the fall of 2003, the assistant superintendent of the Dover Area School District, a pleasant but persistent fellow named Mike Baksa, began making frequent visits to Dover High when the science teachers were having lunch. Bryan Rehm, who taught physics and environmental science at the time, recalled Baksa's talking to them about "biology, biology, biology"—in particular, about the board's concerns with the evolution unit. Bertha Spahr, a chemistry teacher who has taught at Dover for forty-one years, had heard from Baksa before. At the trial, she testified that he wanted to give her "a heads-up that there is a member of the school board who is interested in having creationism share equal time with evolution." The school-board official was Alan Bonsell, a conservative Christian who owns a radiator-and-auto-repair shop.

Spahr has short brown curls, an alert, birdlike manner, and, it seems, a strong aversion to what she considers nonsense. Her fellow-teachers call her Bert. "In Bert's class, it's her way or no way," her younger colleague Jen Miller told me. "But I can't tell you how many kids she's taught who have gone into chemistry or science because of her." On the stand, wearing a black pants suit with an austere gold pin, and replying precisely and astringently to cross-examination, Spahr recalled her annoyance with another member of the school board, Bill Buckingham, this way:

SPAHR: He had asked more than once if we teach man comes from a monkey. In response to that, in utter frustration, I looked at Mr. Buckingham and I said, "If you say man and monkey one more time in the same sentence, I'm going to scream." He did not do that, and I didn't have to.

QUESTION: And that's because you're Italian, Mrs. Spahr, is that right?

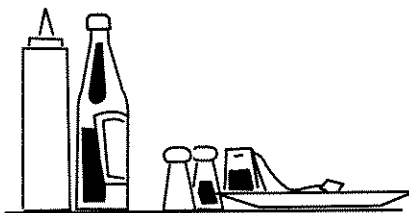
SPAHR: *Sicilian*.

It was in 2002, Spahr testified, that she first sensed a new and censorious attitude toward evolution in Dover, a town of nineteen thousand people in a largely rural corner of York County. That August, she learned that a janitor had removed and burned a student's classroom mural depicting the ascent

of man—hominid ancestors evolving into modern humans. She testified that when she complained to the school superintendent, Richard Nilsen, she was told to mind her own business.

At the trial, Rehm said that he and his colleagues kept telling Baksa, "We're not going to balance evolution with creationism. It's an inappropriate request. . . . There's no educational purpose for it." Yet "the next day or two days later," he said wonderingly, Baksa would be "back at lunch again with the same questions and the same concerns." Eventually, school-board members started passing on to the teachers, via Baksa, various materials, among them a video called "Icons of Evolution," a critique of Darwin based on a book that has been roundly dismissed by mainstream scientists, and a list of biology textbooks used by Christian schools. Jen Miller, a Dover biology teacher for thirteen years, testified that Bill Buckingham complained to her about a note in the teachers' edition of the biology textbook suggesting that students discuss what adaptations humans might undergo if they were sent to other planets. Buckingham didn't like the idea, Miller said, because "if we were asking students to do that, it showed man evolved and that kind of thing."

Miller started reconsidering lesson plans that had worked well for her in the past. She had been fond of a time-line exercise in which she took her students into the hall and laid a long thin strip of tape on the floor; everybody helped write in dates for the origins of the earth and of various species. The exercise made explicit the standard scientific theory about the age of the earth: four and a half billion years, as opposed to the six to ten thousand years generally proposed by creationists. Miller, who found the relentless push and pull with the board stressful, dropped the time line. "I had never experienced anything like this before," she told me. "Up till then, I had always been very comfortable in my own classroom."



Robert Linker, an amiable and generally relaxed young biology teacher, who was also the school's wrestling coach, was getting nervous, too. Typically, he had started off the evolution unit by drawing a line on the blackboard. On one side he'd write "Evolution" and on the other side "Creationism." Evolution was based on the fossil and DNA record, and creationism was based on the Bible. Evolution, he'd say, is what we discuss in this class. Creationism was something to take up elsewhere—at home or in church. Feeling pressure from the school board, he stopped doing that. "I just felt there was some controversy, because I had to go to two meetings and, for the first time, tell how I taught a particular subject," Linker testified. "I didn't know if I was really doing something wrong with writing that 'creationism' word on the board."

By June, 2003, what had been unfolding as a behind-the-scenes struggle at Dover High was becoming public. At a June 7th meeting, the school board discussed adopting a new biology textbook, and Buckingham complained that the book—co-authored by Kenneth Miller—was "laced with Darwinism." Max Pell, a former Dover High student and current Penn State student, stood up to protest; according to several witnesses, Buckingham asked him if he'd ever heard of brainwashing, and suggested that it was happening at places like Penn State, which taught evolution over and over until it was accepted as fact. At a June 14th meeting, which was attended by a hundred Dover residents, the two local newspapers reported that Buckingham said, "Two thousand years ago, someone died on a cross. Can't someone take a stand for Him?" After the meeting, he told a reporter, "This country wasn't founded on Muslim beliefs or evolution. This country was founded on Christianity, and our students should be taught as such." On the stand, Buckingham admitted that he had made those statements, but claimed that he had made them at an earlier board meeting. A number of witnesses recalled his making both statements. And virtually everyone who spoke at the trial about that June meeting recalled that during public comment Buckingham's wife, Charlotte, had delivered a long and emotional speech in which she quoted Scripture and de-

clared evolution to be incompatible with the Bible. Some people recalled her asking how Dover could teach anything but creationism.

This summer, Buckingham quit the school board and moved to North Carolina, several months after announcing that he was in rehab for an addiction to the painkiller OxyContin. On the stand in Harrisburg, Buckingham, who wore a tan blazer with a pin of an American flag within a cross, was subdued, at times to the point of inaudibility. He insisted that he had wanted intelligent design, not creationism, to be taught in the Dover schools. He and two other board members, Alan Bonsell and Sheila Harkins, all testified that they simply wanted students to be aware of flaws in the Darwinian model; even if they themselves knew little or nothing about intelligent design—on the stand, Harkins acknowledged that she didn't have a definition of intelligent design in mind when she voted for it, adding, "I still don't today"—they thought that awareness of the argument would foster critical thinking. Buckingham said, "I didn't want the students to hear just [about evolution] because they would accept it as fact when there is another viable scientific theory out there called intelligent design. I wanted them to have more of a well-rounded education."

At one point, under cross-examination, Buckingham staunchly maintained that no board member had ever spoken in public, or to another board member, about creationism. This was an awkward moment, since two witnesses—one for the defense and one for the plaintiffs—had already testified that the board's president, Alan Bonsell, had mentioned creationism and school prayer at a board retreat. It became more awkward still when a lawyer for the plaintiffs showed a video clip from the local FOX affiliate, in which Buckingham, who was being interviewed, clearly says, "It's O.K. to teach Darwin, but you have to balance it with something else, such as creationism." Buckingham claimed that this comment had been accidental: he had been "like a deer in the headlights," trying so hard not to say the word "creationism" that he couldn't help but blurt it out. A Freudian slip? the plaintiffs' lawyer Steven Harvey asked him. No, Buckingham replied: a "human one."



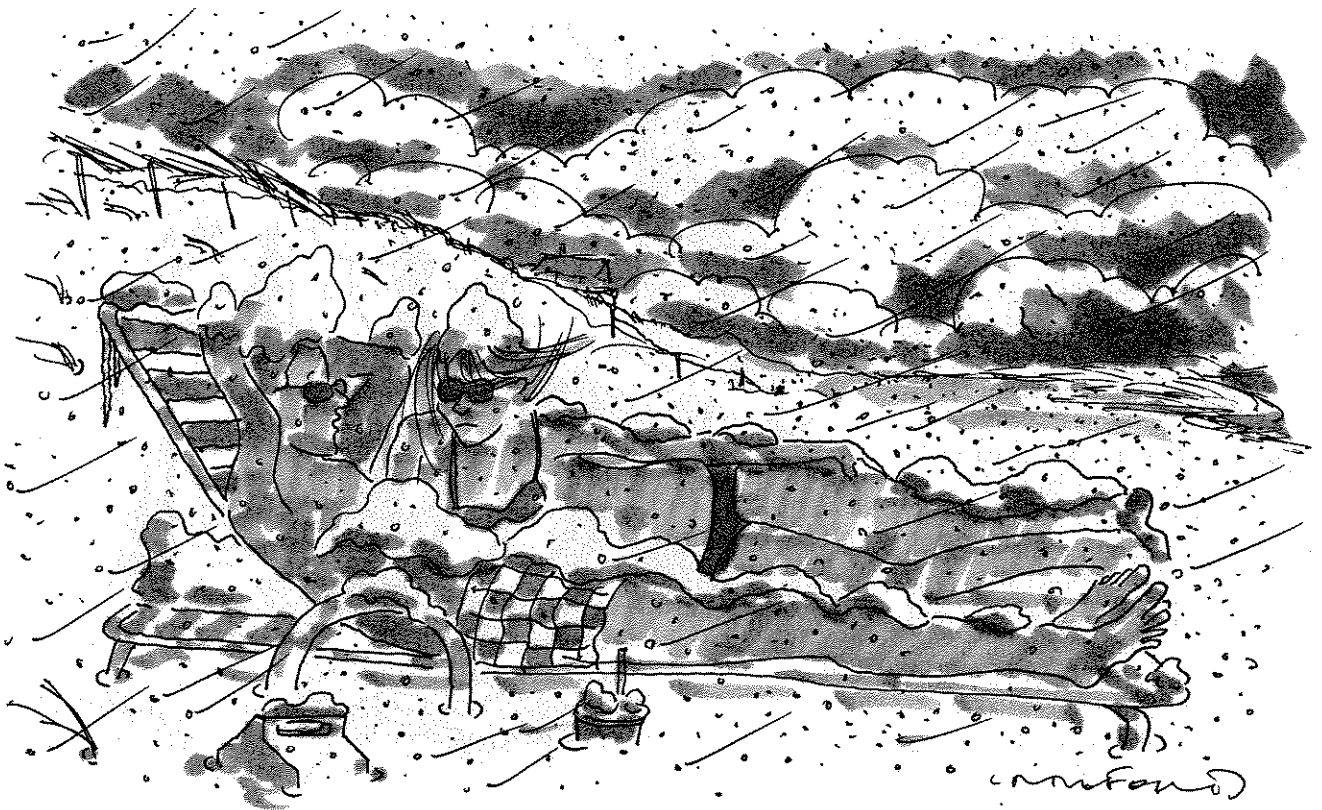
"Let's try to think of something that untold millions of people will buy."

In the end, it wasn't very hard for the plaintiffs to make the case that several of the school-board members had been eager to see creationism added to the curriculum and, after discovering that the idea was legally problematic, had latched on to the term "intelligent design." For example, in June, 2004, a board member named Heather Geesey sent a letter to one of the local papers, in which she argued, "Our country was founded on Christian beliefs and principles. We are not looking for a book that is teaching students that this is a wrong thing or a right thing. It is just a fact. All we are trying to accomplish with this task is to choose a biology book that teaches the most prevalent theories. The definition of 'theory' is merely a speculation or an ideal circumstance. To present only one theory or to give one option would be directly contradicting our mission statement. You can teach creationism without it being Christianity. It can be presented as a higher power."

On October 4, 2004, Alan Bonsell announced at a school-board meeting that the district had received an "anon-

ymous" donation of sixty copies of the textbook "Of Pandas and People," by Percival Davis and Dean H. Kenyon. (A typical paragraph reads, "Intelligent design means that various forms of life began abruptly through an intelligent agency, with their distinctive features already intact—fish with fins and scales, birds with feathers, beaks, and wings, etc.") Bonsell later admitted, in a deposition, that the donor was his father.

At the trial, Bill Buckingham revealed that he had been involved in the acquisition of the textbooks. He testified that he had stood up in front of his church one Sunday and said that there was "a need" for money to purchase copies of "Pandas." ("I said, 'If you want to give money, fine. I'm not asking for any, I'm not telling you to give any, it's up to you,'" he recalled on the stand.) The congregation donated eight hundred and fifty dollars, which Buckingham gave to Bonsell, who handed it over to his father. In his deposition, Bonsell had not been forthcoming about where the money came from—nor was he candid about the matter at another board meeting, when he was asked



"We should probably think about heading back to the city."

who the donor was. (By the end of the trial, counsel for the plaintiffs had said "That's not what you said in your deposition" so many times that one of them finally made a joke out of it. When Eric Rothschild asked Mike Baksa whether something had caused his "antennae" to go up, Baksa joked that he didn't have antennae. "That's *not* what you told me at your deposition," Rothschild intoned portentously.)

On October 18th, the school board voted to make students "aware of gaps/problems in Darwin's theory and of other theories of evolution, including, but not limited to, intelligent design." Teachers of ninth-grade biology would have to read their students the following statement:

The Pennsylvania Academic Standards require students to learn about Darwin's Theory of Evolution and eventually to take a standardized test of which evolution is a part.

Because Darwin's Theory is a theory, it continues to be tested as new evidence is discovered. The Theory is not a fact. Gaps in the theory exist for which there is not evidence. A theory is defined as a well-tested explanation that unifies a broad range of observations.

Intelligent Design is an explanation of the origins of life that differs from Darwin's view. The reference book "Of Pandas and People" is available in the library along with other resources for students who might be interested in gaining an understanding of what Intelligent Design actually involves.

With respect to any theory, students are required to keep an open mind. The school leaves the discussion of the Origins of Life to individual students and their families. As a Standards-driven district, class instruction focusses upon preparing students to achieve proficiency on Standards-based assessments.

It was, as its defenders like to point out, a one-minute statement. Plenty of students would just tune it out. It was also a statement that, as its detractors argued, was singular in the high-school curriculum. Evolution was the only scientific theory that the Dover school district was expressing any reluctance about teaching. Of all the scientific theories that the students would learn about in ninth-grade biology, only this one was declared to be riddled with "gaps"—gaps for which, confusingly, there was "not evidence."

Over the next several months, four board members—including Angie Ying-

ling, who had initially voted with the majority, then reversed her position—announced their resignations, claiming that Buckingham and his supporters were accusing them of atheism or a lack of patriotism. Yingling said at the time that she saw a religious agenda "spiralling out of control."

In a tense exchange with the school board, the teachers at Dover High had tried to modify the language of the disclaimer that was to be read to students. They liked a sentence that Mike Baksa, the perennial middleman, had written into the draft of the statement: "Darwin's theory of evolution continues to be the dominant scientific explanation of the origin of the species." They also supported including the word "yet" before the word "evidence" in the sentence "Gaps in the theory exist for which there is not evidence." The board declined to adopt these compromises. Students would be allowed to leave the classroom when the statement was read, but the teachers considered that an inadequate solution. And they worried about their legal liability in introducing to the classroom

a subject that they considered "too close to creationism to be comfortable," as Jen Miller put it. (This was a concern that Bert Spahr had publicly expressed at one of the school-board meetings, prompting Buckingham to demand to know where she had obtained her law degree.) The teachers did not accept the district's argument that reading a statement, or "making students aware" of intelligent design, was not the same as teaching it. They believed that everything they did in front of a classroom was teaching—that students picked up signals even from what clothes the teachers wore or the TV show they mentioned having watched the night before.

The Dover biology teachers refused to read the statement. In a letter to the board, they argued that "central to the teaching act and our ethical obligation is the solemn responsibility to teach the truth." Each of them believed "that if I as the classroom teacher read the required statement, my students will inevitably and understandably believe that intelligent design is a valid scientific theory, perhaps on par with the theory of evolution. That is not true. To refer the students to 'Of Pandas and People,' as if it were a scientific resource, breaches my ethical obligation to provide them with scientific knowledge that is supported by recognized scientific proof or theory." Last January, Richard Nilsen, the superintendent, and Mike Baksa read the intelligent-design statement to ninth-grade biology classes at Dover High.

The night after the board approved the evolution disclaimer, Brad Neal, a social-studies teacher at the high school, had an e-mail exchange with Baksa. "In light of last night's apparent change from a 'standards-driven' school district to the 'living-word-driven' school district . . . I would like some direction in how to adapt our judicial-branch unit," Neal wrote. "It is apparent that the Supreme Court of the United States has it all wrong. Is there some supplemental text that we can use to set our students straight as to the 'real' law of the land? We will be entering this unit within the next month and are concerned that we would be polluting our students' minds if we continue to use our curriculum as currently written in accordance with [state] standards."

Neal's message was sarcastic, but

Baksa's reply was not. "Brad, all kidding aside, be careful what you ask for," he wrote back. "I've been given a copy of 'The Myth of Separation,' by David Barton, to review from board members. Social studies curriculum is next year. Feel free to borrow my copy to get an idea where the board is coming from."

In December, 2004, eleven parents brought suit against the Dover Area School District. They were represented by lawyers from the A.C.L.U., Americans United for Separation of Church and State, and Pepper Hamilton, a high-end law firm with an office in Philadelphia. The Dover Area School District was represented by attorneys from the Thomas More Law Center, which is based in Ann Arbor, Michigan, and was co-founded by Thomas Monaghan, the multimillionaire who started Domino's Pizza. The law center calls itself the "sword and shield for people of faith"; it has defended various pro-life groups, including an organization that created a Web site listing the names and addresses of abortion providers under the heading "Nuremberg Files." The law center's Web site invites users to order various free items, including book covers featuring the Ten Commandments. ("Make sure the Ten Commandments are found in your public school!")

The center's chief lawyer is Richard Thompson, a voluble silver-haired fellow with the prominent features and sallow complexion of the subject of a Renaissance portrait. As the chief prosecutor of Oakland County, Michigan, for most of the nineteen-nineties, Thompson made it a personal mission to prosecute Jack Kevorkian. (He failed several times to convict him.) At the Harrisburg trial, most of the questioning was handled not by Thompson but by two other lawyers affiliated with the center: Patrick Gillen, who was bespectacled and courteous and spoke in a voice that got steadily softer and hoarser as the trial went on; and Robert Muise, a handsome young man with neatly parted hair and nine homeschooled daughters, who posed questions in an unnerving monotone. Outside the courtroom, however, Thompson blasted the separation of church and state; he said that he "intuitively" did not believe in the common descent of man and animals; and he joked

that he certainly couldn't trace his own family back to an ape. When a British documentary filmmaker called out, "Does America have a love-hate relationship with God?" Thompson happily called back, "America has a *love* relationship with God! If you look at poll after poll, the vast majority of Americans believe in God; the vast majority of Americans are Christian."

The people of Dover were divided over the trial. Tucked between Bald Hill and Conewago Creek, Dover is geographically isolated and overwhelmingly white. But it is a more complex place than it might appear from the outside. "It has layers," as Rob McIlvaine, a longtime resident, told me. At the diner on Route 74, where I stopped for a milkshake one night, a rack of books for sale featured Christian marriage manuals and Tim LaHaye novels. At a revival meeting at the Mt. Royal Full Gospel Church, I saw a woman, white hair coiled atop her head, speak in tongues and recall an episode when God had dangled her over Hell. At the same time, many of the town's residents shared Kenneth Miller's definition of science and the Supreme Court's current understanding of the separation of church and state.

The two sides sometimes clashed in ways that were almost funny. Bernadette Reinking, a retired nurse, campaigned this fall to be elected to the Dover school board, on a slate that opposed the curriculum change. While going door to door one evening, she encountered "an older gentleman who started doing this monkey dance." She told me, "He was going, you know, 'Ooh-ooh, aah-aah!,' jumping up and down, scratching, the whole bit. I said, 'Sir, please stop! I'm a nurse.' I was concerned he was going to have a heart attack, for goodness sake."

Sociologically, neither side was notably different from the other. Bonsell has his repair shop; Buckingham is a former prison supervisor; Harkins is a homemaker who sells real estate in her spare time. Of the three, only Bonsell has a college degree. The plaintiffs had four teachers in their ranks, but the lead plaintiff was Tammy Kitzmiller, a high-school graduate who works as the office manager at a landscaping company. (One of her two daughters, Jessica, had walked out of biology class when the

disclaimer was read.) On the stand, another plaintiff, Cynthia Sneath, described her educational background as follows: "graduated high school; diploma; life lessons; hopefully, a dose of common sense." She and her husband run a small business repairing and installing appliances, and have two sons, ages four and eight.

Sneath is thirty-seven, wears her hair in a spiky, shoulder-length shag, and favors jeans and denim shirts. It will be years before her children attend Dover High, but Sneath was concerned about any downgrading of evolution in the biology curriculum—she distrusted the motives for the change, and she was protective of her older son Griffin's interest in science. She testified, "You know, don't get him started on talking about the NASA space-shuttle program—I mean, just everything he does is very science-oriented." As a parent, Sneath said, you want to be "proactive in your child's education," but "obviously, I'm not an educator. I have no big degrees." She said that she depended "on the school district to provide the fundamentals, and I consider evolution to be a fundamental of science." Besides, Sneath added, "the word 'designer' is a synonym for 'creator,' and, you know, that takes a leap of faith for me." It was her "privilege," she said, to guide her children "in matters of faith"—it wasn't the job of "a science teacher," "an administrator," or "the Dover Area school board."

You couldn't really say that the divide in Dover was between old-timers and newcomers—both sides included peo-

ple whose families had lived in town for generations—or between religious and secular people. Bryan Rehm, one of the plaintiffs, belongs to the United Church of Christ; he and his wife, Christy, run a vacation Bible school. Julie Smith, a medical technician who was another plaintiff, said that what had bothered her most about the curriculum change was that it had fanned religious tension within her own family. She is an observant Catholic, but her teen-age daughter came home one day after a discussion with friends at Dover High, and announced, "Mom, evolution is a lie. What kind of a Christian are you?" On the other side, Bill Buckingham, the former prison supervisor on the school board, belonged to one of Dover's most conservative evangelical churches, and Alan Bonsell believes in a literal reading of Genesis. But Sheila Harkins is a Quaker.

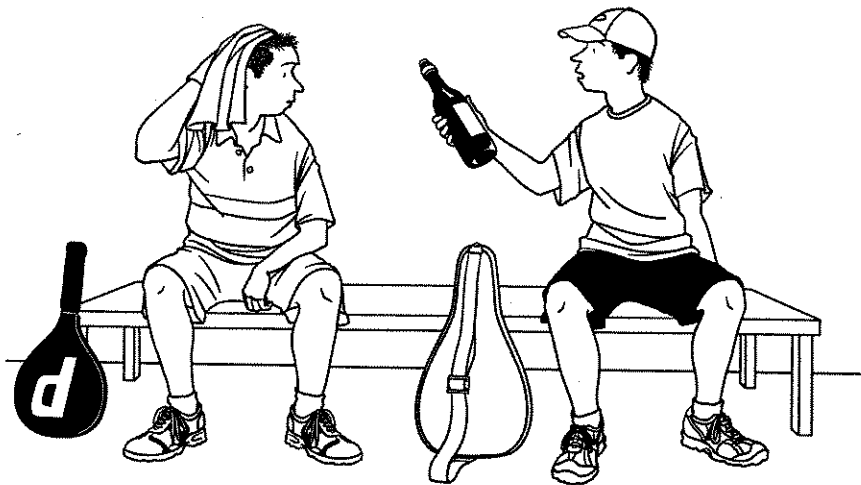
Even the political divisions didn't track precisely. Steven Stough, a registered Republican who is a middle-school teacher and track coach, was one of the first parents to call the A.C.L.U. hot line in Philadelphia. At election time this year, the school-board candidates who pledged to keep intelligent design in the curriculum ran on a Republican ticket, but the opposing slate was made up of four Republicans and four Democrats.

In some ways, the clearest line of demarcation was between those who avidly read the local newspapers (virtually all the plaintiffs) and those who scorned them (virtually all the pro-intelligent-design school-board members). Unusually for a small American city

these days, York, Pennsylvania, which is eight miles from Dover, has two vigorous newspapers: a morning paper called the *York Daily Record* and an afternoon paper called the *York Dispatch*. (Dover itself does not have a newspaper.) Most of the plaintiffs in this case first learned of the plans of the Dover school board from reading the York papers, which have covered the controversy closely.

Long before the intelligent-design crisis, there were clearly people in Dover who relished the York papers and others who despised them. The plaintiff Steven Stough, for instance, described it as "his sickness" that he read both papers, even while on vacation. (He read them online.) Yet Bill Buckingham, the school-board member, remarked on the stand that he no longer read about the school district in either paper: "I don't believe a darn thing they print," he said. You could argue that this was because the papers were biased, but the *York Daily Record* had a *Wall Street Journal*-like divide between its front section and its editorial page. The paper included tough analytical reporting on the trial and a column by Mike Argento, a York native—who launched a mock campaign to "get the Dover Area schools to teach the theory that cows think in Spanish," given that the notion "clearly meets the strict criteria set by the Dover schools for what can get into the curriculum"—but its opinion pages were sympathetic to the school board. A recent essay argued, "Their witnesses insist that Darwinism is pure fact, that it is neutral in regard to religion. Then they roll out the old chestnut that science and religion are two entirely different realms of knowledge—separate but equal. We've heard that before."

John Scopes lost his case. It's easy to forget this, because most of us get our sense of the trial from the stirring movie version of the play "Inherit the Wind," in which fundamentalism is decisively routed by Spencer Tracy. Moreover, even though Clarence Darrow failed to win over the judge, his cross-examination of his opposing counsel, William Jennings Bryan—the aging populist politician and champion of creationism—is an indelible moment in legal history. Edward Larson, the leading historian of the Scopes trial, writes, "Through Bryan's testimony, Darrow sought to show that



"Care for some sports wine?"

certain passages of the Bible, like the account of creation, cannot logically be accepted as literally true. Bryan fell for this scheme, by admitting under close questioning that, despite his expertise, he had no notion about how Joshua lengthened the day by making the sun (rather than the Earth) stand still," or "where Cain got his wife." Still, if Darrow succeeded in humiliating Bryan—who died five days after the trial—he did not persuade the court that Scopes's case was about intellectual freedom.

For three decades after the Scopes trial, the teaching of evolution was not subject to legal challenge from creationists. It wasn't necessary: textbook publishers, conscious of the sensitivities of fundamentalist Christians, had nearly eliminated Darwin and his theory from biology textbooks. And this effort was rewarded: the less a textbook mentioned Darwin, the more it sold. As Larson points out in his book "Trial and Error: The American Controversy Over Creation and Evolution," a typical adaptation was undergone by a popular textbook called "Biology for Beginners," by Truman Moon:

Moon published new editions of his popular text about every five years from 1921 to 1963. Moon's initial text carried a picture of Darwin as the frontispiece, opened with the affirmation that biology was "based on the fundamental idea of evolution," and stated that "both man and ape are descended from a common ancestor." . . . The 1926 editions dropped Darwin's picture and replaced the word "evolution" with "development" in the opening. Some religious quotations were added to the otherwise unchanged chapters on evolution. . . . Seven years later, those chapters underwent a substantial overhaul, with passages about the evolution of man and natural selection deleted. Succeeding revisions during the forties and fifties further downgraded evolution, with the term itself finally disappearing.

In 1958, Hermann J. Muller, a Nobel Prize-winning geneticist, gave an address marking the centenary, the following year, of "The Origin of Species," titled "One Hundred Years Without Darwinism Are Enough," in which he decried the dwindling treatment of evolution in American textbooks. His words were soon echoed by the paleontologist George Gaylord Simpson, who gave a speech with virtually the same title. Anxiety about keeping up with Soviet science lent urgency to these warnings, and the National Science Founda-



"Hi—I'm your secret Santa."

Shanahan

tion started a program enlisting top biologists to rewrite textbooks.

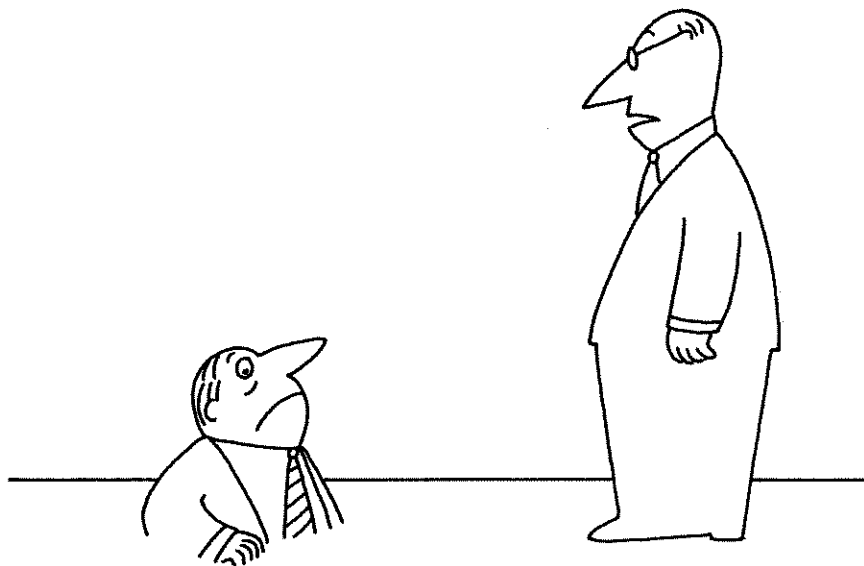
As evolution began returning to the classroom, fundamentalists regrouped, this time under the banner of "scientific" creationism. In 1961, Henry Morris, an engineering professor at Virginia Tech, and John C. Whitcomb, a theologian, published "The Genesis Flood," which argued that the earth's rocks offered proof of the planet's young age, and that most of the earth's geological strata had been deposited at one time by a Great Flood. Morris went on to help found the Institute for Creation Research, the prototype for a new kind of creationism that sought the imprimatur of science.

At the same time, the Supreme Court elaborated a new interpretation of the establishment clause of the First Amendment. Historically, the Court had viewed the clause chiefly as an obstacle to a state-sponsored church; it now was more likely to apply the wall-of-separation metaphor that Thomas Jefferson had first enunciated in his 1802 "Letter to the Danbury Baptists." ("I contemplate with sovereign reverence that act of the whole American people which declared that their legislature should 'make no law respecting an establishment of religion, or prohibiting the free exercise thereof,' thus building a wall of separation between church and state.") In 1962, the Court banned

state-sponsored prayer in school. In 1963, in *Abington School District v. Schempp*, it outlawed the reading of Bible verses and the Lord's Prayer in public school. "To withstand the strictures of the 'establishment' clause, there must be a secular legislative purpose and a primary effect that neither advances nor inhibits religion," Justice Tom C. Clark wrote. This emphasis on purpose has been the source of much grumbling by conservative jurists: after all, critics say, should a law that sets aside money for homeless shelters be invalidated if the legislators who drafted it were motivated by Christian piety? Nevertheless, the "secular legislative purpose" test has been invoked in dozens of subsequent cases, and the precedent has become firmly entrenched in American law.

In 1965, Susan Epperson, the young high-school teacher, was married to an Air Force officer and living in Little Rock, Arkansas. She wanted to teach her students from one of the new biology textbooks that discussed evolution, but a 1928 state law banning the teaching of evolution prevented her from doing so. She brought suit and, eventually, appealed the case to the Supreme Court—which, citing the establishment clause, overturned the statute.

From then on, American courts have consistently defended evolution. Several recent court cases have even confirmed



C. Barrett

"Quicksand in a modern office building? Don't be silly."

that school districts which prevent public-school teachers from teaching creationism, or that mandate the teaching of evolution, do not violate free-speech rights. And last January U.S. District Judge Clarence Cooper ruled that stickers placed on the covers of textbooks in Cobb County, Georgia, stating that "evolution is a theory, not a fact" and should be "approached with an open mind, studied carefully and critically considered," were the equivalent of "endorsing the viewpoint of Christian fundamentalists and creationists." This decision does not bode well for intelligent design, since the sticker did not mention God and was not explicitly religious. (The decision has been appealed; a ruling from the U.S. Court of Appeals for the Eleventh Circuit is expected next spring.)

Considering these precedents, the Dover Area School District is not likely to emerge victorious in Harrisburg. The plaintiffs made a very strong case that the primary motive behind the school board's embrace of intelligent design was religious. Edward Larson, the Scopes historian, who teaches law and history at the University of Georgia, told me that he would not be surprised if Judge Jones rules that the Dover Area school board had also "entangled itself in a sectarian religious controversy." He explained, "There is a large element among many

religious believers who accept evolution or integrate it into their faith. So this is a religious dispute in which the state is intervening, potentially lending its authority to one side. . . . If you look at Dover, you see a town where the churches were divided, Christians were divided, *families* were divided over this."

If Judge Jones does rule against the school board, he may simply say that its actions did not have a sufficiently secular purpose—that whether intelligent design is science or not, the board's motive for putting it into the curriculum was religious, not pedagogical. But he could also make a more ambitious ruling—one that explicitly counters the claim that intelligent design is science.

Jones has a reputation for thoroughness and vigor; he told a local newspaper that he gets up at 4:30 A.M. six days a week to exercise and reads five newspapers a day. He is undoubtedly familiar with a 1982 case, *McLean v. Arkansas Board of Education*, which invalidated a statute mandating the teaching of creation science in public schools. The judge in that case, William R. Overton, delivered a sharply worded opinion in which he declared, "The essential characteristics of science are: (1) it is guided by natural law; (2) it has to be explanatory by reference to natural law; (3) it is testable against the empirical world; (4) its conclusions are tentative, i.e., not necessarily

the final word; (5) it is falsifiable." Creationism failed to meet these criteria, Overton concluded, and therefore could not be taught as science. The fact that Judge Jones admitted so much expert testimony—and, in ruling objections, showed a preference for more rather than less scientific information—suggests that he may similarly assess the credibility of intelligent design's arguments. If not, he may at least incorporate into his opinion the fact that virtually every mainstream scientific group mentioned during the trial—from the National Academy of Sciences and the American Association for the Advancement of Science to the Soil Science Society of America and the members of Michael Behe's own department at Lehigh—describes intelligent design as unscientific.

Over the past century, creationists have adapted to new environmental conditions. Thwarted in the effort to pass statutes that ban the teaching of evolution altogether, they tried statutes that called for "balance." Stymied again, they've tried to introduce the proviso that evolution is "just a theory." The idea that there is a design to nature has a long lineage—going back to Paley, at least, or arguably to Aristotle. Tellingly, its newest incarnation emerged in close tandem with the defeat of creationism in the courts. Barbara Forrest, a historian of the intelligent-design movement, testified at the trial that the first "Of Pandas and People" manuscripts contained the word "creationism" precisely where the words "intelligent design" appear now.

If intelligent design is defeated in the Dover case, its backers will undoubtedly find subtler ways of promoting it. The Discovery Institute, a pro-intelligent-design think tank based in Seattle, has distanced itself from the Dover case, saying that it prefers a "teach the controversy" approach to the blunt advertisement for intelligent design that Dover adopted. Indeed, during a public forum at the American Enterprise Institute last month, Mark Ryland, the director of the Discovery Institute's Washington, D.C., office, said that his organization had "never set out to have school boards or schools get involved in this issue. We've never encouraged people to do it. . . . We have unfortunately gotten sucked into it because we have a lot of experts in this issue that people are interested in. When asked

for our opinion we always tell people, Don't teach intelligent design. There's no curriculum developed for it. Your teachers are likely to be hostile towards it. . . . If you want to do anything, you should teach the evidence against Darwin's theory. Teach it dialectically." Ryland was being disingenuous: Two Discovery Institute fellows, David DeWolf and Stephen Meyer, are co-authors of a book called "Intelligent Design in Public School Science Curricula," which concludes, "School boards have the authority to permit, and even encourage, teaching about design theory as an alternative to Darwinian evolution—and this includes the use of textbooks such as 'Of Pandas and People.'" And Casey Luskin, a staff member at the institute, recently wrote an article in the *Journal of Church and State* in which he noted that "intelligent design may clearly be currently taught where there is no policy on teaching intelligent design." He added, "Most districts have no policy about teaching intelligent design." In other words, so long as it can be done sub rosa, why bring intelligent design to court, where, as Ryland observed, "there is a potential for rulings" that it "is somehow unconstitutional"?

The "teach the conflicts" rationale for working intelligent design into public-school science classes has a certain appeal. It sounds to some people like a healthy aversion to orthodoxy. Of course, most scientists don't like it, because in science—as opposed to, say, literary criticism—interpretations can be wrong. Kevin Padian, the paleontologist, told me, with characteristic bluntness, that the problem with this approach is that "it makes people stupid. It pretends there is confusion where there is not and it wastes children's time." And, in the end, fundamentalist Christians who would likely appreciate any notion that softens the ground for creationism might find "teaching the conflicts"—phraseology lifted straight from the left-wing academy of the eighties—a little too post-modern for their taste. Already, you can see some strange and probably not too stable alliances along these lines. In Harrisburg, for instance, the defense offered as a witness Steve Fuller, a sociologist of science at the University of Warwick, in England. Fuller, who wore thick-framed Woody Allen-style glasses, waved his arms a lot, and delivered profuse answers

at a breathless pace, said that he thought evolution offered a better explanation of biological diversity than intelligent design, but he also argued that it was "kind of bad news epistemologically" to have "taken-for-granted theories" like evolution "in any given discipline." Besides, he added, it might be interesting if science was "reconfigured so that the notion of design would be taken as a kind of literal unifying concept." Fuller bounced with glib, manic energy as he riffed on the history of science (at one point, the Judge suggested taking a break—"water or decaf only"), dispensing postmodern lingo about science as "a self-perpetuating elite" committed to "policing" its own boundaries. Yet it was hard to imagine, say, Bill Buckingham sitting down to coffee—even decaf—with Steve Fuller.

On the last day of the trial, Theatre Harrisburg opened a production of "Inherit the Wind" in an arts center a block from the courthouse. William Parkinson, the York *Dispatch* editorial-page editor, had a part in the show as a lawyer for the prosecution. I recognized somebody else in the cast, a local fellow who had often come to the trial, and had held forth about evolution in the hallways with such vigor that at first I'd thought he was one of the plaintiffs. The program notes, which were written by the theatre's dramaturge, Kevin Pry, noted that, in a courtroom very near this theatre, "once again, the battle has been joined, dividing our people, making many out of the one that we hope America can be, and reminding us of the truth of the injunction from Proverbs from which the play takes its title, 'he that troubleth his own house shall inherit the wind.' Welcome to the eye of the hurricane, folks!" The production was a good one, though the judge isn't much of a presence in the play, and I missed Judge Jones, with his deft one-liners and his capacity for projecting American good sense.

Near the end of "Inherit the Wind," Henry Drummond, the character based

on Clarence Darrow, is comforting Bert Cates, the John Scopes character, after his conviction. "Sure, it's gonna be tough, it's not gonna be any church social for a while," Drummond says. "But you'll live. And while they're making you sweat, remember—you've helped the next fella." Cates asks what he means, and Drummond replies, "You don't suppose this kind of thing is ever *finished*, do you?" That line got a rueful laugh.

In an election on November 8th, four days after the trial, the eight school-board candidates who ran on a slate opposing the addition of intelligent design to the science curriculum won a resounding victory. (One of the candidates was Bryan Rehm, the former Dover High teacher who was a plaintiff in the case.) From the opposing slate, which had recently circulated leaflets tying the A.C.L.U. to the American Man/Boy Love Association, not a single candidate was elected. The two candidates who got the least votes were Alan Bonsell and Sheila Harkins, the two most closely associated with the curriculum change. By declining to drop the statement about intelligent design when they were threatened with a lawsuit, the former board members had chosen a path that could require the Dover Area School District to pay the legal fees for the plaintiffs—probably upward of a million dollars. After the election, the new board said that it would abide by Judge Jones's decision. Therefore, his ruling may be the final word on the case. These developments did not please the televangelist Pat Robertson, who addressed the citizens of Dover on his program. "If there is a disaster in your area, don't turn to God," he said. "You just rejected Him from your city."

In the final minutes of the trial, Judge Jones closed the proceedings with an eloquent speech about how proud he was of everyone in the courtroom, and what great lawyering he'd been privileged to see. Then Patrick Gillen, the soft-spoken lawyer from the Thomas More center, stood up to say something. For all his awareness of what this trial was about, he could not suppress a religious reference. "By my reckoning, this is the fortieth day since the trial began and tonight will be the fortieth night," Gillen said.

"Mr. Gillen, that is an interesting coincidence," Judge Jones replied. "But it was not by design." ♦

