REPORTS OF THE NATIONAL CENTER FOR SCIENCE EDUCATION

DEFENDING THE TEACHING OF EVOLUTION AND CLIMATE SCIENCE

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Tammy Kitzmiller with a framed collection of memorabilia from the Kitzmiller v Dover trial. *Richard Photograph: Wesley R Elsberry, http://wesley-fine-art.hweng.us*

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Kitzmiller at Ten

Ann Reid

This issue of *RNCSE* celebrates the tenth anniversary of one of NCSE's greatest triumphs—the *Kitzmiller v Dover* trial. This resounding defeat for the proposition that "intelligent design" is a scientific view deserving equal time in the biology classroom has had an enduring effect on science education as well as on NCSE.

I know that many of you not only supported NCSE during the *Kitzmiller* trial but also had been supporting NCSE for years before then. Without you, that trial could easily have gone another way, and "intelligent design" could have gained a foothold in our nation's public schools. The articles in this issue of *RNCSE* will inform (or remind) you just how essential NCSE was to the outcome of that trial. The unequivocal ruling in *Kitzmiller v Dover* was a victory that simply could not have happened without NCSE's long years of building up credibility, a network of experts, and a base of generous supporters.

Kitzmiller was perhaps the most public of NCSE's triumphs, but it was hardly the only one. Much of NCSE's impact, then and now, takes place out of the public eye. Every day, the organization's dedicated staff stands ready to offer advice and support to teachers, parents, and local citizens struggling with ideological interference in their local science classrooms.

In *Kitzmiller*, a great battle against creationism was won. Unfortunately, the war is far from over. Even though it is now indisputably unconstitutional to teach creationism—whether "creation science" or "intelligent design"—in public schools, 13% of high school biology teachers still do so. Perhaps even more chillingly, another 60% downplay the importance of evolution, teach it as "one theory among many," or simply skip it altogether. The science of climate change is also all too frequently omitted, downplayed, or taught as if scientists continue to debate whether Earth is warming and whether humans are responsible.

And so NCSE remains as vital as ever. As a scientist, I want every child in our nation to graduate from high school with a clear sense of what science is and isn't, how science works, and how scientists weigh evidence and draw conclusions. Only then will we attract the best young minds into science and ensure sure that everyone appreciates science for the powerful tool that it is. But more broadly, the very health of our democracy depends on our citizens understanding basic science. We cannot afford for our students to be confused or misled on topics as important as evolution and climate change.

Early in 2016, you will receive a completely redesigned *RNCSE*, in which you will be able to read about all the new programs NCSE is launching to defend the integrity of science education in every classroom, in every school, in every town, across the United States. I hope that you, our loyal members, without whom none of these battles could have been fought, will be as excited as we are about the new fronts we are opening in this ongoing war.

Thank you for your support, then, now, and into the future.

Ann Reid is the executive director of NCSE.

Can You Imagine?

Brian Alters

Since NCSE was incorporated in 1983, national polls on evolution acceptance haven't moved that much. So, it's understandable that I'm often asked why NCSE hasn't made much progress towards drastically reducing the percentage of people who accept the science of evolution. My response is always the same. Rather than shake my head and shrug my shoulders, I say, "Can you imagine how bad the situation would be if NCSE had *not* existed?"

Kitzmiller v Dover is arguably the most important federal science education case in the past quarter-century. NCSE was the most vital "behind-the-scenes" factor to our winning this historic trial. In addition to extraordinarily important work from NCSE staff, three of the six expert witnesses for the plaintiffs were members of NCSE's board of directors—Barbara Forrest, Kevin Padian, and myself. I can attest to the indispensable support that NCSE staff provided, working tirelessly with virtually everyone involved on the plaintiff side of the trial. Can you imagine what might have happened if NCSE hadn't been on the case?

Today, NCSE continues to provide for those who need help in defending the integrity of evolutionary science, battling the "breathtaking inanity" (as Judge Jones put it in the Dover trial) of "intelligent design" and other threats. But NCSE does much more than this. NCSE defends the integrity of science education writ large, and has put significant effort in the last few years to defending climate change science. It's about today and the future. It's about the present generation and future generations. It's about humans and virtually all life on the planet. Can you imagine what might happen today and in the future if NCSE wasn't here to help?

Whether your interest is in the defense of evolution, climate change, or even science in general, we need your help—we need every science advocate's help. We need every reasonable person's help. You can do this by having your friends, coworkers, acquaintances, loved ones join NCSE, and by all financially donating. Consider making an end-of-year tax-deductible donation to help increase reasonableness in the world. This issue of *RNCSE* celebrates an immense achievement that occurred a decade ago, and thanks to your generosity, we continue to celebrate quieter successes every day. But there is ever more work to do.

Can you imagine what might happen if NCSE had significantly more resources?

Brian Alters is president of NCSE's board of directors and holds appointments at Chapman, Harvard, and McGill universities.

UPDATES News from the Field

Controversies over evolution and climate science always seem to be happening somewhere. Here is a sampling of recent news.

Alabama: The Alabama state board of education voted unanimously to approve a new set of science standards on September 10, 2015, according to National Public Radio (2015 Sep 10)—and evolution is described as "substantiated with much direct and indirect evidence."

Speaking to NPR, NCSE's Minda Berbeco praised the improvement on evolution, saying, "We were really pleased to see that," and lauded the shift to "a really positive, pro-science perspective." (A nine-minute interview of Berbeco about the new standards is available on-line at https://news.wbhm.org/feature/2015/interview-dr-minda-berbeco-on-alabamas-potential-new-science-standards/.)

In the past, Alabama's science standards have explicitly sought to deprecate evolution. In the preface to the 1996 version of the standards, for example, evolution was described as "a controversial theory some scientists present," and the board voted to require the insertion of a corresponding disclaimer about evolution in science textbooks in the state's public schools.

Subsequent versions of the standards weakened the disclaimer. The preface to the 2001 version described evolution by natural selection as controversial and expressed skepticism of its ability to produce "large" evolutionary changes, while the preface to the 2005 version retained the skepticism of the power of natural selection but omitted the description of it as controversial.

According to the preface to the new version, however, "The theory of evolution has a role in explaining unity and diversity of life on earth. This theory is substantiated with much direct and indirect evidence. Therefore, this course of study requires our students to understand the principles of the theory of evolution from the perspective of established scientific knowledge."

In the standards themselves, biology students are expected to "[a]nalyze and interpret data to evaluate adaptations resulting from natural and artificial selection" and to "[a]nalyze scientific evidence (e.g., DNA, fossil records, cladograms, biogeography) to support hypotheses of common ancestry and biological evolution."

Curiously, although the Alabama standards adopt three of the NGSS's four core ideas of the life sciences verbatim, where the NGSS refers to "Biological Evolution: Unity and Diversity" as a core idea of the life sciences, the Alabama standards refer instead to "Unity and Diversity." (Similarly, Oklahoma's new standards refer instead to "Biological Unity and Diversity.")

There was comparatively little controversy over the new standards, according to NPR, which cited as possible reasons the requirement that public comments concern specific standards as well as the support of the Alabama Science Teachers Association.

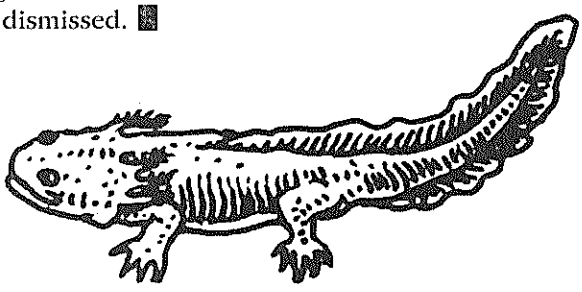
West Virginia: A federal lawsuit contending that teaching evolution in West Virginia's public schools is unconstitutional is over. In the decision in *Smith v Jefferson County School Board et al*, issued by the United States District Court for the Northern District of West Virginia on August 25, 2015, the defendants' motions to dismiss the case were granted. The complaint was dismissed with prejudice, so the plaintiff is not able to file the claim again.

In his original complaint, Kenneth Smith, representing himself, alleged that the defendants "fostered the propagation of religious faith" in the state's public schools by "denying the Plaintiff's accurate scientific mathematical system of genetic variations that proves evolution is a religion" and asked for the court to "declare the policy of evolution, as to be violating of the United States Constitutional Amendments [*sic*]."

The defendants—the Jefferson County School Board; Michael Martirano, the West Virginia state superintendent of schools; Francis Collins, the director of the National Institutes of Health; Arne Duncan, the Secretary of Education; and the Department of Education itself—argued that Smith failed to state a claim upon which relief could be granted, and the federal defendants argued moreover that Smith lacked standing to sue them.

In granting the defendants' motions to dismiss the case, the court noted that Smith is in effect asking "the Court to mandate that public schools in Jefferson County teach the Plaintiff's theories of science and religion, which, to put it mildly, are antagonistic to the theory of evolution," adding, "This court cannot order the West Virginia Defendants to instruct students in a manner that would violate the Constitution."

In 2007, Smith sued the Jefferson County School Board for failing to teach his views; in 2010, he sued the NIH and the state of West Virginia for endorsing evolution as a type of "ideology scientific religious belief"; in 2011, he sued the Postmaster General, the NIH, and the Department of Education, alleging that he suffered unlawful employment discrimination after expressing his views about evolution. All of these cases were also dismissed. ■



NCSENEWS News from the Membership

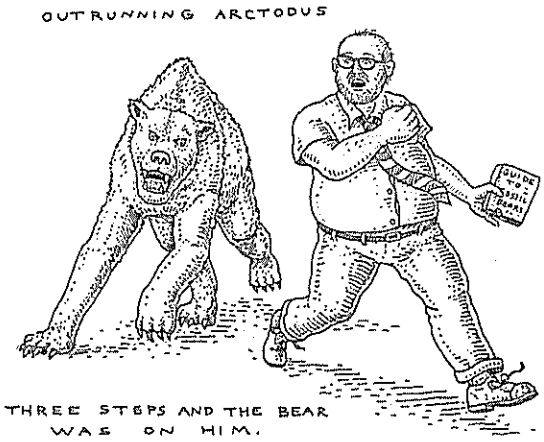
We regularly like to report on what our members are doing. As the following list shows, they—and we—have a lot to be proud about!

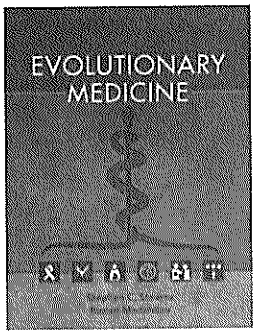
A new snake species, *Toxicocalamus ernstmayri*, was named in honor of the late **Ernst Mayr**, a towering figure in twentieth-century biology and a long-time member of NCSE. Collected forty-five years ago, the snake was in the collection of the Museum of Comparative Zoology at Harvard University, mislabeled as *Micropechis ikaheka*. On a visit to the museum, the BBC (2015 Aug 6) reports, Mark O'Shea, a curator of reptiles at a safari park in Britain, "spotted it in its jar" and realized that it was a different snake. The new snake species is described in "A new species of New Guinea worm-eating snake, Genus *Toxicolamus* (Serpentes: Elapidae), from the Star Mountains of the Western Province, Papua New Guinea, with a revised dichotomous key to the genus," *Bulletin of the Museum of Comparative Zoology* 2015;161(6):241–264.

NCSE's founding executive director **Eugenie C Scott** is featured in a multimedia exhibit about the Great Hall dome of the National Academy of Sciences building in Washington DC. Videos from the exhibit are available on YouTube and in a special iPad application (see http://nasgreathall.com/ for details).

In the exhibit's video clips, the website explains, "twelve scientists discuss the scientific disciplines; science as a unique way of knowing; science and society; the grand challenges of science; on being a scientist and doing scientific work; and recent accomplishments of science."

The scientists interviewed for the exhibit, in addition to Scott, are Cynthia Beall, S James Gates, Neil Gershenfeld, Robert Lefkowitz, Kirk Johnson, Eric Kandel, Marc Rothenberg, Barbara Schaal, Manil Suri, J Craig Venter, and George Whitesides.





Stephen C Stearns and Ruslan Medzhitov's *Evolutionary Medicine* (Sunderland [MA]: Sinauer, 2015) was published. The publisher writes, "*Evolutionary Medicine* is a textbook intended for use in undergraduate, graduate, medical school, and continuing medical education (CME) courses. Its professional illustrations and summaries of chapters and sections make its messages readily accessible." Stearns is the Edward P Bass Professor of Ecology and Evolutionary Biology at Yale University.

Mary P Winsor published "Considering affinity: An ethereal conversation," a three-part study of Hugh Strickland's chart "Natural Affinities of the Class of Birds," in the journal *Endeavour* 2015;39(1):69–79, 2015;39(2):116–126, and forthcoming. Winsor explains,

> At the 1843 meeting of the British Association for the Advancement of Science, ornithologist Hugh Strickland displayed a wall chart on which he had written, inside 490 little ovals, the genus names of about half of all the kinds of birds then known. A year later he added all the remaining families of birds. The resulting document, over 2 m long, showed subfamilies as coloured shapes resembling islands in an archipelago, and as in a marine chart, Strickland provided a scale of degrees, the length of the lines connecting genera expressing the strength of their relationship. ... Strickland was one of the zoologists Darwin had in mind when he wrote in his *Origin of Species*, "Naturalists try to arrange the species, genera, and families in each class, on what is called the Natural System. But what is meant by this system? . . . many naturalists believe that it reveals the plan of the Creator ... ." Strickland never read these words, for he died six years before the *Origin*'s publication. It is natural to wonder how Strickland would have reacted had he lived to read Darwin's book, but there is not sufficient evidence on which we could base a good answer. On the other hand, we have plenty of evidence to tell us what Darwin would have thought of Strickland's ambitious attempt to portray taxonomic affinity, had he had leisure to consider it carefully.

Relying on the available historical evidence, the article presents a fictitious afterlife dialogue between Strickland and Darwin. Winsor is Professor Emeritus at the Institute for the History and Philosophy of Science and Technology at the University of Toronto. ■

Evolution in the Context of Teaching Biology

Andrew J Petto

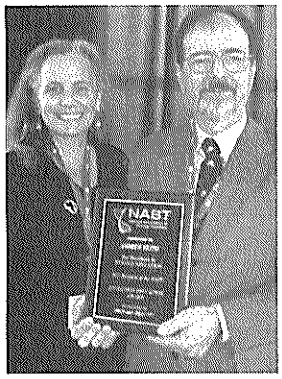


Photo by Sarah Petto.

Andrew J Petto with Louise S Mead (formerly of NCSE, now with BEACON), posing with his award.

Andrew J Petto, the former editor of Reports of the National Center for Science Education *and a former member of NCSE's board of directors, was presented by the National Association of Biology Teachers with its 2015 Evolution Education Award, which recognizes innovative classroom teaching and community education efforts to promote the accurate understanding of biological evolution. NCSE is pleased to publish Petto's essay on how he views evolution in the context of teaching biology, which NABT solicited as part of the award process.*

Evolution illuminates the history and diversity of life on Earth. It is not merely an explanation of the patterns of similarities and differences that we see among organisms over time and space, but a beacon that reveals the connections uniting all living things. This is the essence of the celebrated Dobzhansky passage "nothing in biology makes sense except in the light of evolution."

All the characteristics of life that we teach in biology have evolution at their foundations. Why is cell theory the basis of all organismal form and function? Evolution. Why are nucleic acids the basis of cellular function and reproduction in all organisms? Evolution. Each year biologic research adds more evidence of how life on earth is shaped by evolution.

In the US, we recognize two important hurdles for evolution education. First, nearly half of people polled on evolution deny its role in the history and diversity of life. Second, that proportion has barely changed since Gallup conducted its first "evolution" poll in the early 1980s. Even when other pollsters have changed the wording of their questions, rejection of evolution remains high. How is it that we have not been able to budge these poll numbers more than a few points in over thirty years? This is the question that drives my dedication to evolution education in the classroom and in community outreach.

Whether in biology classes or in community outreach events, evolution too often lurks in the background.

CHARLES COULSTON GILLISPIE DIES

The eminent historian of science Charles Coulston Gillispie died on October 6, 2015, at the age of 97, according to a tweet from Princeton University. His books included *Genesis and Geology* (1951), *The Edge of Objectivity* (1960), *Science and Polity in France at the End of the Old Regime* (1980), *Pierre-Simon Laplace, 1749–1827* (1997), and *Science and Polity in France: The Revolutionary and Napoleonic Years* (2004). He also was the editor-in-chief of the *Dictionary of Scientific Biography* (1970–1980).

Gillispie's first book, *Genesis and Geology: A Study in the Relations of Scientific Thought, Natural Theology, and Social Opinion in Great Britain, 1790–1850*, is regarded as a modern classic. In it, he argued—as Nicolaas A Rupke explained in a 1994 retrospective assessment—that the geological controversies in the generation before the *Origin of Species* "did not represent a clash of science with theology but stemmed from religious differences within the scientific community itself; the conflict was not one of religion versus science but of religion within science." Rupke added, "Gillispie's interpretation marked a radical departure from the popular warfare model," but reserved his highest praise for the book's historical methodology: "With Gillispie's *Genesis and Geology*, the history of the earth sciences became historical scholarship as we know it." The book was reissued in 1996 with a foreword by Rupke and a new preface by Gillispie.

Gillispie was born in Bethlehem, Pennsylvania, on August 6, 1918. He earned a degree in chemistry from Wesleyan University in 1940, served in the US Army during World War II, and earned his PhD from Harvard University in 1949. His academic career was mainly spent in the Department of History at Princeton University. His honors included the International Balzan Prize for History and Philosophy of Science in 1997 and the History of Science Society's George Sarton Medal in 1984 for lifetime scholarly achievement.

My goal is to bring it out from the shadows into the foreground. For example, in our anatomy and physiology courses, I will not accept a textbook that does not provide a evolutionary perspective on human form and function. Why do we have bilateral symmetry, teeth in sockets, a hard palate, two sets of teeth only? Common ancestry, of course! Why do we walk upright? Descent with modification!

I always accept opportunities to meet with and speak to community groups or media about evolutionary science and its role in understanding important issues for humanity: from agriculture to zoogeography. This outreach involves working with parents who express concerns about their children's schools, with legislators and school board members who want more information, with teachers and their students at all levels of instruction, with local museum staffs, and with a variety of campus and community organizations for whom evolution is a matter of interest. It also includes a willingness to speak with and write to members of the media. The goal here is to make the case for evolution most clearly, but also to hear the community's concerns and objections.

One thing that we know about most opposition to evolution in the US is that it is not built on a scientific critique of the research in evolutionary sciences. In a moment of candor, Phillip Johnson—a cofounder of the "intelligent design" movement—told Joel Belz of *World Magazine*: "This isn't really, and has never been, a debate about science. ... It's about religion and philosophy" (*World Magazine* 1996;11[28]:18; http://www.leaderu.com/pjohnson/world2.html).

When I speak to community organizations—particularly religious organizations or church groups—their chief concern is what evolution *means*. Does evolution attack their values, their morals, their understanding that their lives have a purpose? Will it make their children more rebellious, more selfish, more demoralized ... or worse? And for this audience, it is essential to separate the scientific from the non-scientific connotations of evolution. I use the phrase "evolutionary *sciences*" to focus on the scientific connotations of the term.

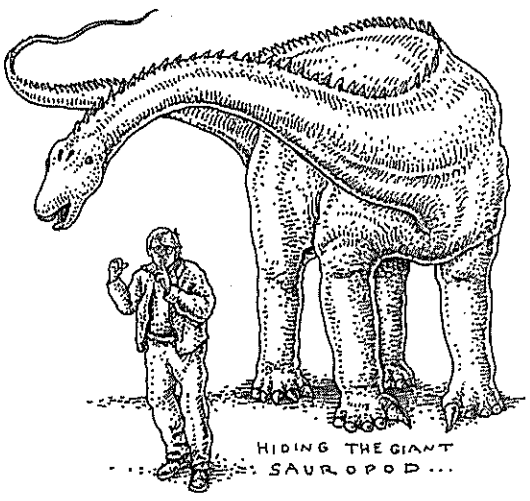
The community needs to understand evolution the way we do: (1) the fact of evolution: many organisms alive in the past do not live today, and many alive today did not live in the past; (2) the process of evolution: the models of biologic change in the history of life of earth are based on processes we observe producing variation and differentiation in living organisms; and (3) the theory of evolution: the framework for conducting and evaluating research into the history and diversity of life. Understanding the scientific uses of the term "evolution" sets the stage for a robust and informative dialog in the community.

It is not only evolution deniers who may be misinformed about evolutionary science. The evolution "fans"—those who are enthusiastic about evolution—may be equally uninformed. Their poor understanding risks reinforcing the very misconceptions that evolution deniers rely on. So it is also important to reach out to groups that accept, but perhaps do not fully understand, evolution.

Finally, the most promising and rewarding outreach activity is helping teachers to understand and be confident about evolutionary sciences and to incorporate evolution in their lessons. Many have never studied evolution explicitly. We build understanding and confidence by leading workshops and professional development programs, and by providing feedback and commentary on in-class activities, lessons, and curriculum. Knowing that each of the seventy-five elementary science specialists we meet in workshop sessions interacts with hundreds of students means that helping these teachers understand evolutionary science better will provide thousands of students with an accurate and confident introduction to evolution early in their education.

It is essential to use evolutionary science to illuminate the history of life on Earth and the relationships among living organisms, and to use it appropriately to show its value and validity in all areas related to the life sciences. But, as James Thurber cautioned, there are two kinds of light. And we need to cherish evolution as "the glow that illumines," not brandish it as "the glare that obscures." It should not blind us to the concerns of members of the community that may prevent their accepting scientific knowledge for fear that it would harm the foundations of their beliefs and values. But if we relegate evolution to the background, the biologic connections—the common ancestry—among all living things can only be perceived dimly ... and be easily misunderstood. This is why evolution must be in the foreground, in a bright light, but not a harsh light. It is what allows us to see the entirety of Darwin's "grandeur in this view of life."

Andrew J Petto is senior lecturer in anatomy and physiology at the University of Wisconsin–Milwaukee. With Laurie R Godfrey, he is co-editor of Scientists Confront Creationism: Intelligent Design and Beyond *(New York: WW Norton, 2008). His most recent book is* Primer of Anatomy and Physiology, *3rd ed (Eden Prairie [MN]: bluedoor Publishing, 2014).*



A Teacher's-Eye View of *Kitzmiller v Dover*

Jennifer Miller

Before the *Kitzmiller v Dover* trial, evolution was just another topic that I covered in my biology classes at Dover Area High School. In 2004, when all of the commotion started, I had been teaching for eleven years. I can admit now that my treatment of evolution was pretty cursory back then because I wasn't very comfortable teaching the topic. I taught it last, and would sometimes only have a day or two to devote to teaching it. Thanks to the Dover Area School Board, I now teach evolution first and thoroughly—which is ironically the antithesis of what the school board wanted. So what exactly happened in the Dover Area School District to turn me into a better teacher?

It really began with a book order. It was our department's turn to order new textbooks in spring of 2004, and we decided on the newest version of *Biology* coauthored by Ken Miller and Joe Levine. There was usually no fuss when teachers recommended materials to the school board, but this time we were asked to justify our choice. Why? Because certain board members were concerned that the Miller and Levine book was "laced with Darwinism" from start to finish. Our textbooks would not be approved unless we agreed to use the "intelligent design" book *Of Pandas and People*, too. We were furious. To take this meddling one step further, in October 2004, after a bitter and contentious school board meeting, the following addition to our curriculum was approved:

> *Students will be made aware of gaps/problems in Darwin's theory and of other theories of evolution including, but not limited to, intelligent design.*

In November, we were given a statement to read to our students before we taught evolution. The statement undermined evolution, made it clear that origins of life would not be discussed, and made sure that students were aware of "intelligent design." Students were encouraged to consult available copies of *Pandas,* which provides "an explanation of the origin of life that differs from Darwin's view."

Eleven parents, whose students would be affected by these curriculum changes, filed suit on December 15, 2004. The Thomas More Law Center was retained to represent the school board while Pepper Hamilton, Americans United for Separation of Church and State, and the ACLU of Pennsylvania represented the parents.

In the spring, several science teachers—including me—were subpoenaed for records of any meetings with the school board and to give depositions. The media had set up camp in front of our high school to try and catch students after school to get reactions for their stories about the pending trial. It seemed as if Dover was in the newspapers every day.

The community was in upheaval as people took sides on this issue. We got lots of hate mail—from both sides. It seemed that we couldn't win no matter what we did. Luckily, the science department stood together and supported one another through this whole ordeal. It would have been much more difficult to take this stance on my own, but I knew that I had the support of my colleagues, the ACLU, and NCSE.

The trial began in the fall and lasted until December 2005. Three science teachers, including myself, were called to testify. The day I testified was perhaps one of the most terrifying times of my career—but I got through it. My favorite part of the trial was during closing arguments, when one of the defense attorneys from the Thomas More Law Center pointed out to Judge Jones that by his calculations the trial lasted for 40 days and 40 nights. Judge Jones responded, "Trust me, that was not by design."

The ruling came down on December 20, 2005—in our favor. The department chairperson came down the school hallway, pulled me out of my classroom, and gave me a big hug. We were elated! All of the meetings, worrying, and inconveniences now seemed worth it. We had done the right thing and stood up for our beliefs and what we knew was best for our students.

No one really talks about the trial here anymore, except at anniversaries and the like. The funny thing is that I now do teach my students about "intelligent design"—specifically, about why we cannot and should not teach it in the science classroom. The trial has definitely made me more knowledgeable about evolution, more willing to tackle it head on, and hopefully a better teacher. I suppose that I have the school board to thank for that!

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Jennifer Miller teaches biology at Dover High School in Dover, Pennsylvania, and was one of the teachers who refused to read the evolution disclaimer mandated by the Dover Area School Board.

Summary of *RNCSE* 2015;35(6):3.1–3.7; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/400/770

Kitzmiller's Tenth Anniversary: How the Scientific Case Might Be Updated

Kenneth R Miller

Kenneth R Miller (left) is examined by Vic Walczak (right) before Judge John E Jones III (center) in the Kitzmiller v Dover trial.

I'll admit it. The whole *Kitzmiller v Dover* thing was my fault. Well, at least half my fault. My coauthor, Joe Levine, deserves a big share of the blame as well, since he's the one who actually wrote most of the evolution section of our biology textbook. As the teachers at Dover High School will tell you, it was their preference for our book that started everything back in 2004, and eventually resulted in the *Kitzmiller v Dover* lawsuit, which was filed on December 14, 2004.

Early in 2005 I was contacted by an attorney from Philadelphia, Eric Rothschild, who asked whether I might be willing to serve as an expert witness in the upcoming trial. I said "yes," of course. In the spring I prepared an "expert statement," outlining my own area of expertise and highlighting what I hoped to be able to say in court regarding evolution and the Dover "intelligent design" (ID) policy. Vic Walczak, from the Pennsylvania ACLU, patiently made it clear that my testimony, as I had planned it, would be far too technical, and would likely have little effect on the court. Remember, he explained, "You've got to put things in terms so simple that *even a lawyer* would be able to understand them."

Vic explained that my testimony should unfold like a series of seminars in which evidence was presented in clear and understandable fashion, gradually building towards a definitive conclusion we hoped the court would share. Together, we outlined the three-part plan for my testimony. First, I would explain the case for evolution. Next, I would explain to the judge exactly what Behe's testimony was likely to be (Behe's testimony was going to follow my own by several weeks), and how it was linked to the ID textbook the board had chosen, *Of Pandas and People*. Finally, after carefully presenting what Behe and *Pandas* said about ID and evolution, I would have to explain, well in advance of Behe's own testimony, why these arguments were wrong. In effect, our goal was to prepare the judge for what would come when the board got to present its defense, and make sure the judge already knew the flaws, errors, and misrepresentations that riddled the case for ID.

How well did the team succeed? As Vic was to tell me in an excited phone call the morning of the decision, "We hit a home run. No, wait a minute. We hit a grand slam!" Judge Jones had clearly grasped our scientific arguments. His opinion went on to dismantle one ID argument after another, until it was clear that the board's disingenuous plea of scientific relevance was hopeless.

If we were to try the case again today, my testimony regarding the nature of scientific theories and the need for testability would be almost unchanged. So too would be the description of Joe Levine's and my motivations as science educators and authors, and also of the need for curriculum and content to reflect the scientific mainstream. But in many respects, the science of the last ten years—in particular new insights into evolution of systems such as the flagellum and the blood clotting cascade, Richard Lenski's long-term study of evolution in *E coli*, and Joe Thornton's work on the mechanisms by which proteins evolve new and novel functions—would make possible an even more compelling case for evolution.

As the years have gone by, I think that all of us who had the good fortune to be swept up in the trial have realized just how lucky we were to play our parts in the drama. While the case was argued publicly by attorneys in open court, NCSE's work behind the scenes was surely the key ingredient to ultimate success. This was a very special struggle, and those of us who came from across the nation to testify or to work with the *Kitzmiller* team will remain forever in the debt of those who made the trial possible. I refer, of course, to the eleven courageous plaintiffs and their families who stood up for principle and braved the criticism, slander, anger, and even worse from neighbors and friends in the town of Dover. Theirs are truly profiles in courage, and all of us owe them a debt that can never be repaid.

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Summary of *RNCSE* 2015;35(6):4.1–4.8; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/401/788

Kitzmiller in Retrospect

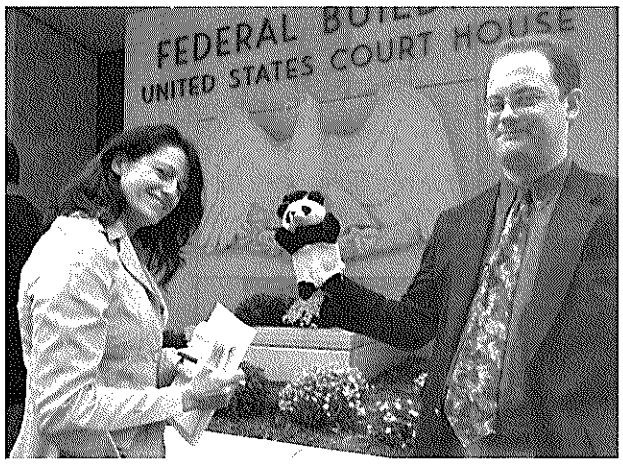
Lauri Lebo

In 2005, I was the education reporter for the local newspaper, and covered the *Kitzmiller v Dover* trial as well as the events that took place in the community. Even though I don't have a science background, it became clearly evident to me who was on the side of deception and who was on the side of truth. When Judge John E Jones III issued his decision in exposing "intelligent design" as nothing but a fraud used to promote religion in the classroom, I thought that we had reached the high-water mark of anti-science and that this nation would witness a *Sputnik* moment. American voters and politicians would, perhaps, experience a renewed interest in science and science education and that America—demonstrating the same spirit and commitment that took us to the moon—would lead the world in addressing the realities of climate change.

Unfortunately, my new *Sputnik* moment never arrived. A decade later, Republican candidates for president and the public alike continue to question the realities of evolution and climate change. This is despite the blow the trial dealt the Discovery Institute, which had heavily invested its reputation in promoting "intelligent design."

"Dover really took the rug out from under the Discovery Institute," said Barbara Forrest, whose expert testimony in the *Kitzmiller* trial exposed the Discovery Institute's religious goals. Initially, the Discovery Institute put out numerous pieces decrying the unfairness of Jones's decision. But its fellows and staff also turned their attention to a different strategy, developing a piece of model legislation based on "academic freedom." Although the exact provisions vary a bit, these so-called academic freedom bills basically encourage teachers to discuss scientifically dubious views on various topics—with evolution often explicitly given as an example, along with global warming—and prevent state and local educational authorities from intervening. Such bills were enacted in Louisiana in 2008 and Tennessee in 2012, over the protests of those states' scientific and educational establishments.

There is yet another growing battlefront worth our attention, the school privatization movement, which seeks to be a profit-driven revolution of the concept of public education. Even though science education isn't the specific target of these efforts, it can still be a casualty. In Louisiana, for example, Governor Bobby Jindal's expansive private school voucher program has diverted millions of taxpayer dollars to fund private schools—including Christian schools that teach out-and-out young-earth creationism from textbooks that claim that dinosaurs and humans lived together. Florida, Indiana, Ohio, and Arizona have similar voucher programs that fund religious schools.



Photograph: Wesley R Elsberry, http://wesley-fmc-art.berg.as.

Lauri Lebo interviews Professor Steve Steve (the mascot of The Panda's Thumb blog, http.pandasthumb.org) and NCSE's Nick Matzke in Harrisburg, Pennsylvania.

Charter schools, which are privately run but publicly funded, are required to follow state education standards and are forbidden from teaching creationism. But last year, a Slate magazine article by Zack Kopplin showed that for-profit charter school corporations in Texas and other states were openly teaching creationism in their science classes.

All of these changes in public education in the past decade has made it more difficult to track the classroom attacks on science. "We know how to fight creationists," Forrest said. "We've won every time in the courtroom. But now it's so much more complicated. The climate science education is much more difficult. There are so many publicly aligned powerful forces lined up to fight it." But that doesn't mean battles can't still be won.

Reflecting on the *Kitzmiller* trial ten years on, there's good news and bad news. The bad news is that, despite the successful outcome of the trial, those who attack the integrity of science have not disappeared. Their tactics simply continue to evolve (ironically) to the changing legal and educational landscapes. The good news is that the people and organizations who have fought so effectively against these assaults have, with new tools and new allies, continued to fight the good fight. The battle for science can be won, and *Kitzmiller* lights the way to victory.

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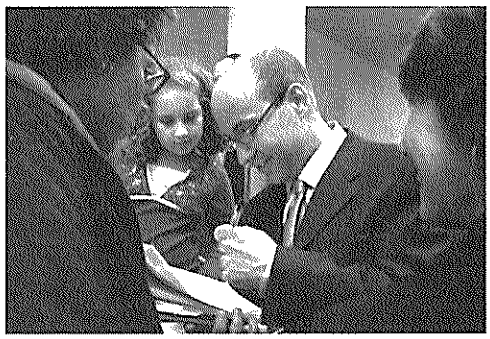
The Legacies of the *Kitzmiller* Trial

Eric Rothschild

The Dover Area School District instituted its "intelligent design" (ID) policy in October 2004 in a particular cultural moment in America. It was a time of social, sectarian conservative ascendency, and public schools were (and remain) the ripest opportunity to press this agenda, of which ID was a part. The marketing of ID to lay audiences in conservative media had clearly been highly successful and school boards around the country were poised to add ID to their curriculums. They had not all jumped to do that before Dover did, because of resistance by science teachers and the science community (with NCSE playing a crucial role), and for fear of the kind of expensive legal proceedings that Dover experienced. But if Dover had won, the barriers to ID's entry into biology curriculum would have disappeared. Even in school districts where public and school officials were opposed to ID, parents and voters would have been empowered to demand it as part of a "balanced" scientific education.



Eric Rothschild signs autographs outside the federal courthouse in Harrisburg, Pennsylvania.
Photograph: Wesley R Elsberry, http://wesley-fine-art.bwng.us.

Instead ID was humiliated. The Discovery Institute recognized that the trial was such a disaster for its mission that it filed a brief at the end of trial beseeching the judge to rule narrowly against the school district because of the board members' confused and bad behavior, without addressing whether ID was science or religion. Judge Jones did not oblige. He did find that the school board members who instituted the policy acted with the sole purpose of imposing their sectarian religious views of creation on students, and then lied to cover their tracks. But he also evaluated the extensive evidence presented at trial from scientists, educators, and philosophers, and determined that ID was a religious proposition. He was purposeful about conducting this evaluation for the benefit of other districts that might consider a similar policy, and his judicial brethren who might confront a similar claim—not because his decision could bind them, but as a resource that might guide their thinking.

Judge Jones's objective has largely been accomplished; no other school district has adopted a curriculum that includes intelligent design. At the time of the trial, Kansas and Ohio had adopted an ID-friendly set of state science education standards and an ID-friendly model lesson plan, respectively, but they backed off after *Kitzmiller*. No school district today includes ID or other forms of creationism expressly in their curriculum. The trial victory was the dam that didn't break.

The legacy of the *Kitzmiller* trial extends beyond the achievement of its primary objectives, however. In *Speak Now: Marriage Equality on Trial*, chronicling the Perry trial for marriage equality in California, Kenji Yoshino (2015) compared that trial to *Kitzmiller,* because in both, "the trial distinguished secular fact from religious belief." In both cases, the purported secular motivations for the policy could not withstand the scrutiny of the trial, and could not be sustained by experts exposed to the rigors of cross examination. In both cases, the court and the public also got to see the human faces of the plaintiffs seeking to vindicate their constitutional rights. In both cases, the plaintiffs' dignity and intelligence sparkled, revealing the best of American citizenship.

It should not be lost in the celebration of *Kitzmiller*'s national impact that it was first and foremost a community's story. The community of Dover suffered some ruptures over the intelligent design policy and trial, but meaningful things happened because community members had been activated. A school board election after the trial brought in a reform slate dedicated among other things to good science education. Dover's science teachers, who were prepared to risk their jobs rather than be forced to misrepresent ID as real science to their students, were liberated to teach evolution comprehensively, without fear of reprisal. Several plaintiffs became leaders in the Pennsylvania ACLU. All of the plaintiffs had the experience of the American justice system addressing their grievance with their elected officials, and vindicating their Constitutional rights.

The last legacy is personal. The team of parents, teachers, lawyers, legal assistants, and experts from NCSE and around the country that collaborated to win the *Kitzmiller* trial is family forever. For us, the experience is a shared accomplishment that we will always cherish.

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A Tale of Two Trials

Eugenie C Scott

NCSE's Eugenie C Scott (left) discusses the ongoing Kitzmiller *trial with Lauri Lebo outside the federal courthouse in Harrisburg, Pennsylvania.*
Photograph: Wesley R Elsberry, http://wesley-fine-art.bweng.us.

The first thing NCSE staff did, once *Kitzmiller v Dover* was filed, was to examine the many previous legal cases dealing with creationism and evolution. Two of the most important are the "equal time for creation science" cases, the federal district court decision *McLean v Arkansas*, in 1982, and the Supreme Court decision *Edwards v Aguillard*, in 1987. Both addressed state legislation (in Arkansas and Louisiana, respectively) requiring the teaching of creation science when evolution is taught; both found the legislation to be unconstitutional. The court record for *McLean*, however, was far richer. For this reason, it became our primary resrouce.

As the months of preparation for the trial passed, we were struck again and again by the remarkable parallels we discovered between *McLean* and *Kitzmiller*. Spotting new likenesses between the cases almost became a game among us, and the comparisons grew in number. For example, The First Amendment prohibits the establishment of religion, not the teaching of bad science. It is perfectly legal, however dumb, to teach that the world is flat. So in one sense, science was a secondary consideration in both *McLean* and *Kitzmiller*. Yet in an important sense, science was necessary to the plaintiffs' success in both trials. Defendants in both *McLean* and *Kitzmiller* claimed the students would benefit educationally from being taught alternatives to evolution, with critical thinking also thrown into the mix in *Kitzmiller*. If the secular purpose for teaching "intelligent design" (ID) was its educational value, ID had to meet the criteria defining science, and in addition, its claims had to be sound—otherwise, why teach it?

So plaintiffs in both *McLean* and *Kitzmiller* had to show that creation science and ID were outside of science, and not rooted in fact as the defense suggested, thus negating any claim that there was a pedagogical value for teaching them. Expert witnesses, with particular skills and backgrounds, were used to define science and to establish evolution as valid science in both *McLean* and *Kitzmiller*. Here again there are parallels. In fact, we matched the *McLean* plaintiffs' team, pretty much one-for-one. Another spooky parallel between *McLean* and *Kitzmiller* is the Case of the Incredible Vanishing Witnesses. In a decision much lamented by creationists, the best known and arguably the most informed leaders of the creation science movement, Henry M Morris and Duane T Gish, were not used by the *McLean* defense. Similarly, two of the leading lights of ID, Stephen C Meyer and William Dembski, did not appear on the *Kitzmiller* witness stand. Another parallel was the presence of witnesses that maybe the defense wished it hadn't called, particularly Steve Fuller.

There were differences, of course: witnesses for the creationist side in *McLean* were not accused of lying in court by the judge, for example. *McLean* concerned the legality of teaching creation science and *Kitzmiller* concerned the legality of teaching ID. (To be sure, they're related, but before the *Kitzmiller* trial, that hadn't been demonstrated in a courtroom). An important issue in *McLean* was the inability of the state to present any books or other curricular materials suitable to the classroom, whereas by 2005, there was an ID textbook—and *Of Pandas and People* was an important part of the trial.

Details varied: the Arkansas situation involved a state legislative directive to teach creation science, whereas the Dover situation involved a policy at the school district level. The list of plaintiffs in *McLean* consisted of religious leaders, and religious and educational organizations, with two parents and one teacher almost as afterthoughts, whereas all of the plaintiffs in *Kitzmiller* were parents, some of whom were teachers, with no outside associations or organizations included.

But the obvious, and not-so-obvious, similarities between the two cases, beyond that both were full trials that dealt in part with whether the claimed alternatives to evolution, overwhelm these differences. Clearly, in terms of the content of ID and the content of creation science, we were replaying *McLean*'s songs in *Kitzmiller*.

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The More Things Evolve, the More They Stay the Same?

Meredith Dorner

Introduction

When it comes to evolution, there is clearly a divide between what scientists know and what much of the public believes, which invites the question: Why? One of the ways to answer is by considering what students are taught in school. Paul J Wendel (2006) suggests that because the use of biology textbooks correlates with the content covered in the classroom, "textbook studies provide a second window into the biology classroom."

Previous studies have examined both the quantity and quality of evolution coverage in biology textbooks. Each of the previous studies, however, focused on the textbooks commonly used in public schools. What about private schools and home schools? Together, private schools and home schools educate more than eight million children in the United States. Of these students, a significant proportion are enrolled in conservative Christian schools or are being homeschooled to ensure religious and moral instruction.

Analyzing the coverage of evolution in a widely used Christian biology textbook is one way to explore what students in highly conservative educational settings may be learning. (By referring to these textbooks as "Christian" I am following their usage without endorsing their implicit claim to represent the only proper approach for a Christian to take toward biology.)

Methods and Results

I calculated the percentage of pages devoted to coverage of evolution through several editions of mainstream biology textbooks and Christian biology textbooks. The percent of total text covering evolution was calculated by dividing the number of pages on evolution by the total number of pages in the book. In addition, information about the use of religious terminology was obtained from several of the chapters in the Christian textbook. Tables 1 and 2 summarize some of the data collected.

Discussion and Conclusions

The results reveal that the mainstream textbooks devote more pages to evolution than the Christian textbook does to evolution and creationism combined. Additionally, the results indicated that there are more religious words used in the chapters on evolution versus other chapters in the Christian textbook, regardless of edition. These results are true even when the section explicitly covering creationism is left out of the analysis. The increase in the use of religious terminology in the evolution chapters is most likely due to a desire on the part of the publisher to reinforce religious explanation for the diversity of life rather than scientific explanations.

Table 1. The degree of evolution coverage, alone and with creationism in the Christian textbook, and in the mainstream textbooks: percentages (and numbers of pages out of the total).

	Christian textbook (evolution only)	Christian textbook (evolution & creationism)	Mainstream Text 1	Mainstream Text 2
first edition	2.29% (17/741)	5.66% (42/741)	5.18% (44/850)	7.6% (87/1145)
second edition	2.31% (16/693)	5.76% (40/693)	9.03% (107/1185)	9.14% (89/974)
third edition	1.80% (15/832)	4.44% (37/832)	10.2% (123/1206)	9.96% (111/1114)
fourth edition	—	—	—	10.53% (124/1178)
mean% ± standard deviation	2.13% ± 0.29	5.29% ± 0.73	8.13% ± 2.63	9.3% ± 1.27

Table 2. The number of religious words in several sections of the Christian biology textbook including both evolution and non-evolution subjects.

Edition of Christian textbook	Number of religious words in sections on evolution	Number of religious words in five pooled non-evolution sections
first (1980)	76	5
second (1991)	80	4
third (2005)	120	14
mean ± standard deviation	92 ± 24.3	7.67 ± 5.5

In summary, the study found significant differences in both the coverage of evolution between Christian and mainstream textbooks and the religious terminology usage across topics and editions; however, further research is necessary to uncover the depth and strength of those findings. Future research could focus on including more texts in the analysis, completing a more thorough word count analysis, corroborating the word counts with another observer, and delving deeper into the literature to consider the changes in coverage over a longer period of time.

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People and Places: John Lightfoot (1602–1675)

Randy Moore

John Lightfoot (1602–1675) was an English churchman and rabbinical scholar often associated with the claim that creation occurred at 9:00 AM on October 23, 4004 BCE

John Lightfoot was born into an ecclesiastical family on March 29, 1602, in Stoke-upon-Trent, Staffordshire, England. After graduating from Cambridge University, Lightfoot taught for two years at Repton, Derbyshire, after which he became a chaplain in Shropshire. In 1629, Lightfoot published his first work, entitled *Miscellanies, Christian and Judaical, Penned for Recreation at Vacant Hours*, which—as the title suggests—he wrote in his spare time.

He then became minister of London's Saint Bartholomew's Church, and moved closer to London to supervise his next publication, the wonderfully titled twenty-page *A Few, and New Observations, upon the Booke of Genesis, the Most of Them Certain; the Rest, Probable; All, Harmeless, Strange, and Rarely Heard of Before*, which was published in 1642. In 1654, Lightfoot became Vice-Chancellor of Cambridge University, and in 1658 he published the first volume of his best-known work, *From the Talmud and Hebraica*, a commentary on the New Testament aimed at helping readers understand the background and framework of Jewish literature.

Lightfoot was a leading Hebrew and Christian scholar and was the first to call attention to the importance of the Talmud, which is the standard collection of rabbinical commentary dating back to late antiquity and still deemed relevant to Judaism today (Bowden 1989). His expertise granted him membership into the Westminster Assembly, the group of theologians and parliamentarians that restructured the Church of England beginning in 1643, in the run-up to the Civil War.

Lightfoot is often credited with claiming that creation occurred at 9:00 AM on October 23, 4004 BCE (a date similar to that claimed eight years later by Irish prelate James Ussher). The source of the claim is verse 26 on page 4 of *A Few and New Observations*, where Lightfoot wrote, "Man was created by the Trinity about the third houre of the day, or nine of the clocke in the morning." That's it. Nowhere did Lightfoot mention the creation of the Earth (his "nine of the clocke in the morning" referred only to the creation of humans) nor did he make any mention of a specific date for creation of either humans or Earth. Creation occurring on October 23 was added by subsequent writers, most notably Andrew Dickson White (1832–1918) in his *A History of the Warfare of Science with Theology in Christendom* (1896), a book in which White told readers that science and religion were in perpetual conflict.

Only later, in 1644's *The Harmony of the Foure Evangelists: Among Themselves, and with the Old Testament* did Lightfoot make a claim of knowing when creation occurred: "From the beginning of time to this fullness of it, hath laid this great, wondrous, and happy occurrence of the birth of the Redeemer in the yeere of the world, three thousand nine hundred twenty eight." Lightfoot even gave the actual day—the September equinox, September 12. (He was of course using the Julian calendar.) Nevertheless, Lightfoot continues to be (inaccurately) associated with the claim that creation occurred at 9:00 AM on October 23, 4004 BCE as opposed to his own (inaccurate) claim of creation occurring on September 12, 3928 BCE.

Lightfoot died of pneumonia on December 6, 1675, in Ely, Cambridgeshire, and is buried in Great Munden, Hertfordshire. He bequeathed his library of Old Testament documents and books to Harvard University, but they were destroyed by a fire there in 1764.

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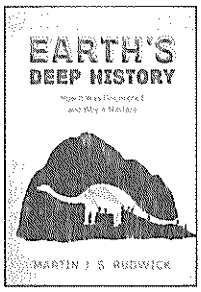
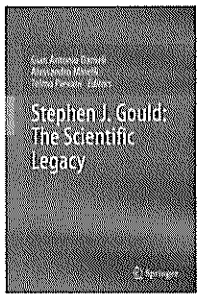
Summary of *RNCSE* 2015;35(6):5.1–5.2; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/355/773



Earth's Deep History: How It Was Discovered and Why It Matters by Martin JS Rudwick (Chicago: University of Chicago Press, 2014; 392 pages). "This book by a noted historian of Earth sciences is meant for the general reader," explains reviewer **Jody Bourgeois**, "to place 'the discovery of deep time' ... as a 'major revolution in human thought." It is not entirely successful, she feels: "It seems to have been a challenge for a 'deep scholar' such as Rudwick to write a popular book—to decide what to include, what to leave out, what to simplify. ... I found the book quirky and uneven."

Summary of *RNCSE* 2015;35(6):8.1–8.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/360/779



Stephen J Gould: The Scientific Legacy edited by Gian Antonio Danieli, Alessandro Minelli, and Telmo Pievani (Milan: Springer-Verlag, 2013; 208 pages). According to reviewer **Joel Cracraft**, "the thirteen chapters" of *Stephen J Gould: The Scientific Legacy* "are largely great reads and insightful about Gould's contributions; a few only tangentially weave Gould's thoughts into their narrative and are therefore somewhat less successful. As a whole, the volume admirably summarizes many of his contributions in setting new conceptual agendas and shifting fields as diverse as paleontology, evo-devo (evolutionary developmental biology), paleoanthropology and human evolution, and the role of hierarchy theory in evolution."

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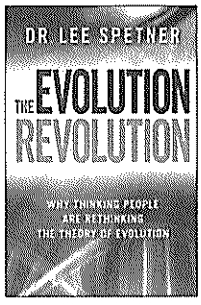
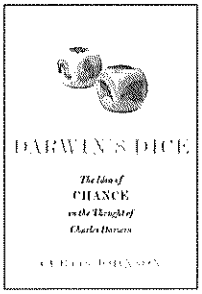


The Evolution Revolution: Why Thinking People are Rethinking the Theory of Evolution by Lee Spetner (New York: The Judaica Press, 2014; 168 pages). "*The Evolution Revolution* is an abbreviated reprise of Lee Spetner's *Not by Chance!*" writes reviewer **David E Levin**. In his new book, "Spetner offers a poorly-written rehash of his idea that organisms respond to environmental signals by rearranging their genomes in a pre-programmed and adaptive way. The addition this time around is his claim that a variety of scientific discoveries made in recent years has generated evidence in support of his hypothesis. However, no such evidence exists."

Summary of *RNCSE* 2015;35(6):10.1–10.4; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/381/781



Darwin's Dice: The Idea of Chance in the Thought of Charles Darwin by Curtis Johnson (Oxford: Oxford University Press, 2015; 253 pages). According to reviewer **Charles F Pence**, "The concept of 'chance' quickly takes us right to the heart of what makes Darwin such an interesting and important thinker, and Johnson shows us exactly why this is the case" in his "skillful analysis of many purposes to which Darwin put the concept of 'chance.'" Pence praises the breadth of Johnson's research as "the book's most alluring feature," although he warns that a reader unfamiliar with Darwin's writings may be overwhelmed.

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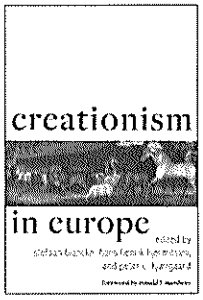
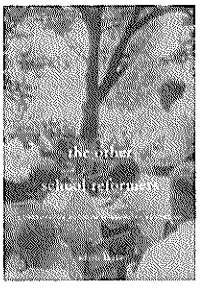


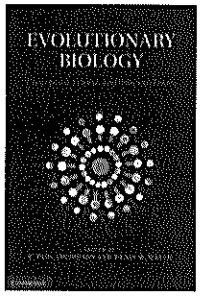
Creationism in Europe edited by Stefaan Blancke, Hans Henrik Hjermitslev, and Peter C Kjærgaard (Baltimore [MD]: The Johns Hopkins University Press, 2014; 296 pages). "Opposition to evolution is shaped by presumed associations between evolution and some other viewpoint that opponents find unacceptable, and these associations are shaped by the history and culture in individual European countries in different ways," explains reviewer **Andrew J Petto**. "Because of that diversity, telling the stories of these movements serves the purpose of informing readers not only about their emergence and growth but also about the history of creationism here at home." He strongly recommends the book.

Summary of *RNCSE* 2015;35(6):12.1–12.4; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/374/783



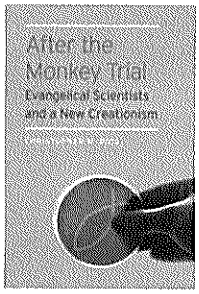
The Other School Reformers: Conservative Activism in American Education by Adam Laats (Cambridge [MA]: Harvard University Press, 2015; 328 pages). According to reviewer **Andrew J Petto**, "Laats tells us that his goal is for readers to understand the activism of conservative reformers in the context of the general history of conservatism in the US. Conservative activism in education is part of a long and deep tradition, not a series of impromptu protests. To understand that history and the concerns that drive it, according to Laats, is to understand the state of public education in the US. And for those who hope to change things in the public schools, this is an important place to begin."

Summary of *RNCSE* 2015;35(6):13.1–13.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/395/784



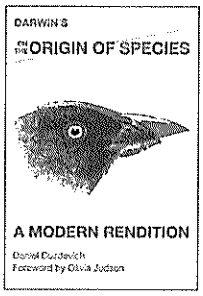
Evolutionary Biology: Conceptual, Ethical, and Religious Issues edited by R Paul Thompson and Denis Walsh (Cambridge: Cambridge University Press, 2014; 243 pages). Reviewer **Doren Recker** explains, "This collection is a *Festschrift* for Michael Ruse, and consists of eleven new articles written by well-known philosophers, historians of science, and biologists," including sections on evolution and theology and on function, adaptation, and design. Recker concludes, "This collection contains material that will interest philosophers, historians, and biologists, as well as anyone concerned with the relationship between science (especially evolutionary biology) and religion. Anyone falling into those categories will find it worth a look."

Summary of *RNCSE* 2015;35(6):14.1–14.4; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/364/787



After the Monkey Trial: Evangelical Scientists and a New Creationism by Christopher M Rios (Bronx [NY]: Fordham University Press, 2014; 272 pages). According to reviewer **Michael Roberts**, "Rios focuses on two groups founded in the 1940s, the American Scientific Affiliation (ASA) and the Research Scientists' Christian Fellowship (RSCF), exploring how they and their members dealt with the broader issues of science as well as evolution, taking the story up to 1985, shortly before the RSCF mutated into Christians in Science (CIS). ... This book gives an excellent historical perspective on Evangelicals who were not creationists from 1940 to 1985."

Summary of *RNCSE* 2015;35(6):15.1–15.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/385/785



Darwin's On the Origin of Species: *A Modern Rendition* by Daniel Duzdevich (Bloomington [IN]: Indiana University Press, 2014; 307 pages). "[W[hen I am presented with a 'modern rendition' of Charles Darwin's *Origin of Species*, my teeth are already on edge," writes reviewer **Michael Ruse**: "I like the *Origin* and think that Darwin writes well." Duzdevich's rendition failed to convince him of its merits. Ruse concludes, "Don't waste your money, folks! The original is just as good if not better than the modern rendition. And, incidentally, if you buy the first edition facsimile put out by Harvard University Press ..., it's cheaper!"

Summary of *RNCSE* 2015;35(6):16.1–16.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/296/786

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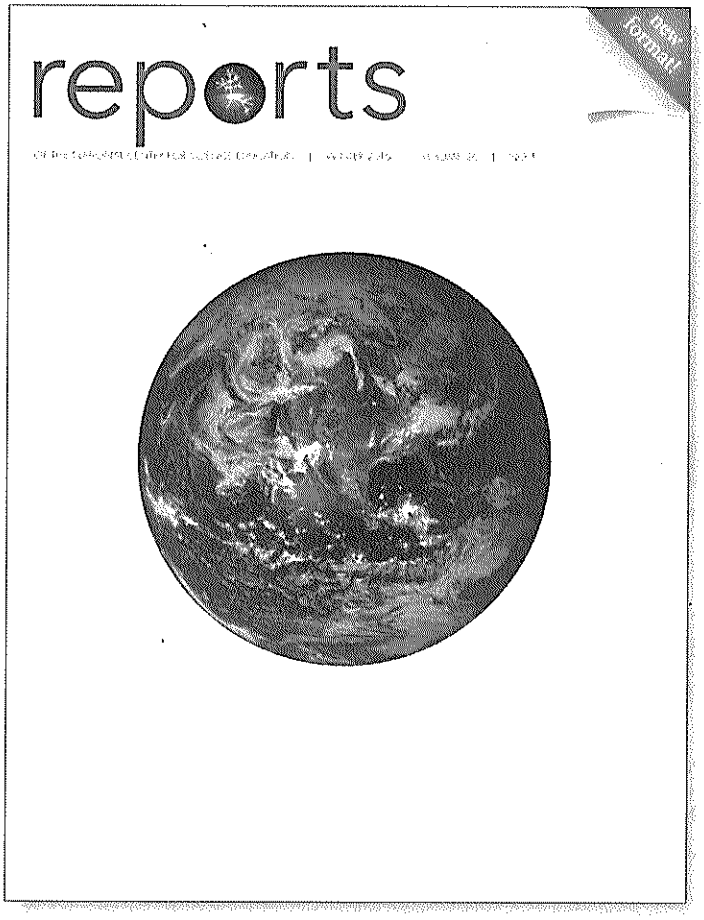

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