NCSE

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DEFENDING THE TEACHING OF EVOLUTION AND CLIMATE SCIENCE

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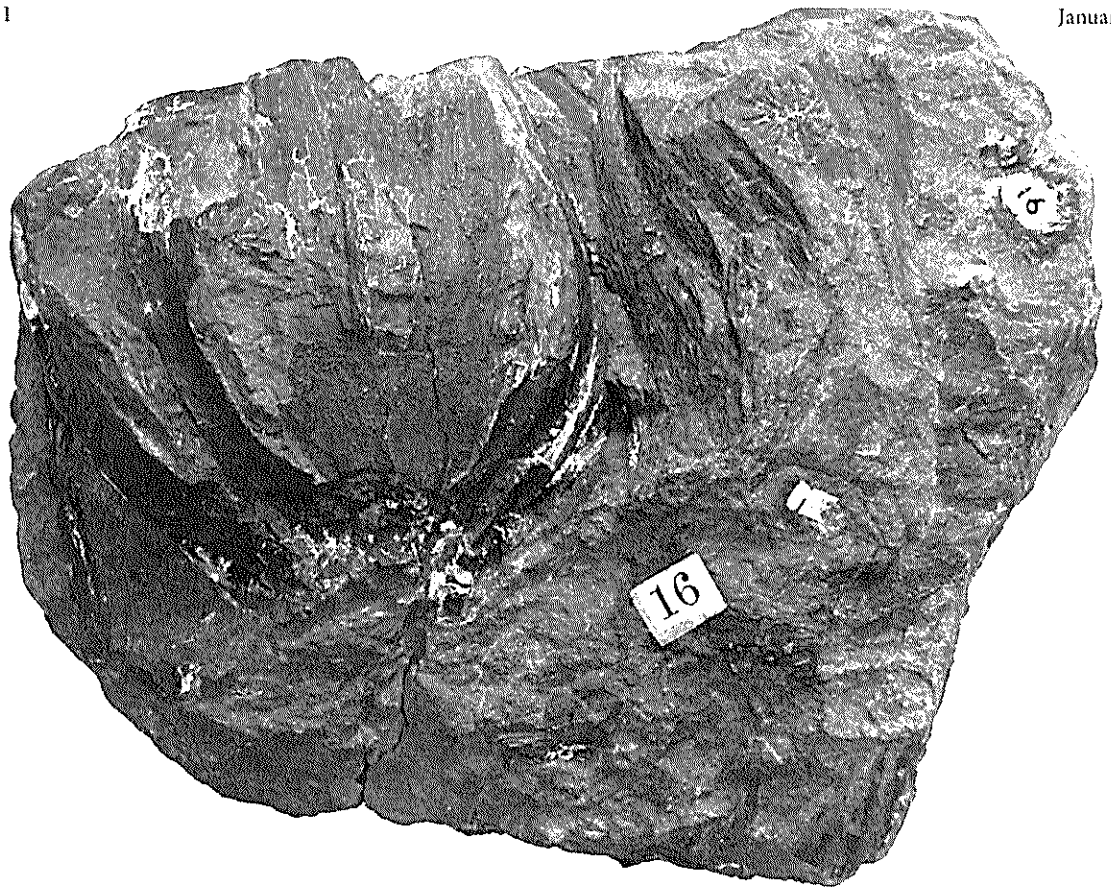

The flower-like structure of Bennettiales, from the Sedgwick Museum's collection.
Photograph: Verisimilus, via Wikimedia Commons.

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UPDATES

Kansas: Will a federal court dismiss a lawsuit seeking to prevent Kansas from adopting the Next Generation Science Standards? In documents filed on December 5, 2013, the defendants in *COPE et al v Kansas State Board of Education et al* asked the United States District Court for the District of Kansas to dismiss the suit, saying that the court lacks jurisdiction over all claims asserted in the complaint and that the complaint fails to state a claim against the defendants.

As NCSE previously reported, the complaint contends that the NGSS and the Framework for K–12 Science Education (on which the NGSS are based)

> will have the effect of causing Kansas public schools to establish and endorse a non-theistic religious worldview ... in violation of the Establishment, Free Exercise, and Speech Clauses of the First Amendment, and the Equal Protection Clauses of the 14th Amendment (p 1–2).

The lead plaintiff, COPE, Citizens for Objective Public Education, is a relatively new creationist organization, founded in 2012, but its leaders and attorneys include people familiar from previous attacks on evolution education across the country, such as John H Calvert of the Intelligent Design Network. The Kansas board of education voted to adopt the NGSS in June 2013, as NCSE previously reported, and COPE's lawsuit is evidently attempting to undo the decision.

In a memorandum supporting the motion to dismiss the suit, the defendants argued that the state board of education and the state department of education are entitled to sovereign immunity to the suit, that the plaintiffs lack standing to challenge the board's decision, that the plaintiffs failed to state any Establishment Clause claim, and that the plaintiffs failed to state a Free Exercise, Free Speech, or Equal Protection claim either.

Previously, when the lawsuit was originally filed, Steven Case, director of the University of Kansas's Center for Science Education, told the Associated Press (2013 Sep 26), "This is about as frivolous as lawsuits get." NCSE's Joshua Rosenau concurred, saying that the argument was familiar but silly. Rosenau later examined the complaint in light of Calvert's previous writings on the topic, contending that they "explain where the reasoning of his current suit fails" (see http://ncse.com/blog/2013/10/kansas-will-cope-with-cope-0015134).

Kentucky: Kentucky's governor Steve Beshear (D) recently told WKU Public Radio (2013 Oct 31) why he is supporting the state's adoption of the Next Generation Science Standards. "My job, Commissioner Holliday's job, and the Kentucky Board of Education's job [are] to make sure our children are college- and career-ready when they leave high school," said Beshear. "Part of getting them college- and career- ready is to make sure they study all the different scientific theories [that] are out there that everybody else in the world will be studying."

As NCSE previously reported, the NGSS faltered in Kentucky on September 11, 2013, when the legislature's Administrative Regulation Review Subcommittee voted 5–1 to find the standards deficient, despite the fact that they were recommended by the state department of education and the state board of education. Governor Beshear promptly announced that he planned to implement the NGSS under his own authority, and (as WFPL in Louisville reported on October 15, 2013) officially notified the Legislative Research Commission of his intention to do so.

Eight states including Kentucky have adopted the NGSS so far, but the process was most contentious in Kentucky, as NCSE's Joshua Rosenau told WFPL in Louisville (2013 Oct 22). "If Kentucky had backed away from it or turned it into a political controversy it would have shaped perceptions in other states as well," Rosenau added. And the controversy is not necessarily over: as WKU reported, "The General Assembly might consider legislation in January [2014, when it reconvenes] that would kill the new teachings."

In the meantime, one science teacher offered a passionate defense of the NGSS in the *Lexington Herald-Leader* (2013 Oct 25). "I am excited about Kentucky's new standards for science education and flabbergasted that anyone could take umbrage with them," wrote Roger Guffey.

> After reviewing the standards and the objections raised against them, I realized the fundamental problem. The naysayers cannot separate their religious and political ideologies from science. Of all the standards, these are the only ones that are intimately related to humans and their activities.

Ohio, Mount Vernon: In a 4–3 decision issued on November 19, 2013, the Supreme Court of Ohio upheld the termination of John Freshwater. In its decision, the court wrote:

> After detailed review of the voluminous record in this case, we hold that the court of appeals did not err in affirming the termination. The trial court properly found that the record supports, by clear and convincing evidence, Freshwater's termination for insubordination in failing to comply with orders to remove religious materials from his classroom. Accordingly, based on our resolution of this threshold issue, we need not reach the constitutional issue of whether Freshwater impermissibly imposed his religious beliefs in his

> classroom. We affirm the judgment of the court of appeals because there was ample evidence of insubordination to justify the termination decision.

In a section headed "Teaching of Creationism and Intelligent Design Alongside Evolution Generally Disfavored," the court commented, "We recognize that this case is driven by a far more powerful debate over the teaching of creationism and intelligent design alongside evolution." After briefly reviewing the relevant case law, including *Edwards v Aguillard* and *Kitzmiller v Dover*, and implying that Freshwater's use of anti-evolution methods and materials might have been permissible, the court added, "Here, we need not decide whether Freshwater acted with a permissible or impermissible intent because we hold that he was insubordinate, and his termination can be justified on that basis alone."

The three dissenters on the court in effect endorsed Freshwater's claims on appeal, writing that the case was not about his insubordination but about his being

> singled out by the Mount Vernon City School District Board of Education because of his willingness to challenge students in his science classes to think critically about evolutionary theory and to permit them to discuss intelligent design and to debate creationism in connection with the presentation of the prescribed curriculum on evolution.

Their dissent also credited Freshwater's claim, "I do not teach ID or creationism," discounting the ample evidence in the record to the contrary.

The case began in 2008, when a local family accused Freshwater, a Mount Vernon, Ohio, middle school science teacher, of engaging in inappropriate religious activity and sued Freshwater and the district. Based on the results of an independent investigation, the Mount Vernon City School Board voted to begin proceedings to terminate his employment. After thorough administrative hearings that proceeded over two years and involved more than eighty witnesses, the presiding referee issued his recommendation that the board terminate Freshwater's employment with the district, and the board voted to do so in January 2011. (The family's lawsuit against Freshwater was settled in the meantime.)

Freshwater challenged his termination in the Knox County Court of Common Pleas in February 2011. When the challenge was unsuccessful, he then appealed the decision to Ohio's Fifth District Court of Appeals in December 2011. NCSE filed a friend-of-the-court brief with the appellate court, arguing that Freshwater's materials and methods concerning evolution "have no basis in science and serve no pedagogical purpose." In March 2012, the Fifth District Court of Appeals upheld the lower court's rejection of Freshwater's challenge. Freshwater then appealed to the Ohio Supreme Court in April 2012, and when his appeal was accepted, NCSE filed a friend-of-the-court brief again.

Documents relevant to Freshwater's termination and the subsequent court case are available on NCSE's website. Extensive blog coverage of the Freshwater saga, including Richard B Hoppe's day-by-day account of Freshwater's termination hearing, is available at The Panda's Thumb blog (http://pandasthumb.org/); search for "Freshwater". Hoppe contributed "Dover comes to Ohio"—a detailed account from a local observer of the whole fracas, from the precipitating incident to Freshwater's appeal—to *RNCSE* 2012;32(1):2.1–2.9. And Rob Boston reviewed the case in the November 2012 issue of Americans United for Separation of Church and State's magazine *Church & State*. ■

Textbook Adoption in Texas

During the second half of 2013, the state of Texas was in the process of evaluating science textbooks for adoption for statewide use. It is always a disputatious process in the Lone Star State, and evolution is historically among the contentious areas, with climate science increasingly added to the mix. And because Texas is such a huge market, decisions about the contents of textbooks there affect the contents of textbooks around the country. At the end of the day, all of the proposed textbooks for high school biology and environmental science courses were adopted. But it was a struggle.

Part of the reason for the struggle was the current set of Texas state science standards, adopted in 2009. Although creationists were unsuccessful in inserting the controversial "strengths and weaknesses" language from the old set of standards, they eventually prevailed with a requirement that students examine "all sides of scientific evidence." Additionally, the board voted to add or amend various standards in a way that encourages the presentation of creationist claims about the complexity of the cell, the completeness of the fossil record, and the origin of life.

The worry, for those concerned with the scientific integrity of Texas's science textbooks, was that publishers would be pressured to compromise their treatment of evolution in order to comply with the flawed standards. The worry was compounded, as the Texas Freedom Network Education Fund explained in a press release issued on August 13, 2013, by the fact that "[s]ome of the country's most prominent evolution deniers got influential positions on official state review panels examining the next textbooks and online materials." Those panels were then in the midst of conducting their reviews.

The TFN Education Fund commissioned its own detailed review of the treatment of evolution in the textbooks and instructional materials submitted by publishers. The reviewers discovered that "creationists on the [Texas] State Board of Education (SBOE) have failed to pressure publishers into including 'junk science'

that questions evolutionary theory in the new high school biology materials. Indeed, all of the publishers have submitted biology instructional materials that honestly address and support the science of evolution and that do not include pseudoscience intended to water down or 'disprove' evolution."

Kathy Miller, the president of the TFN Education Fund, commented,

> It appears that publishers have done a good job resisting political pressure to weaken instruction on evolution with junk science in their new textbooks ... That should be reassuring for parents who want their kids to get a science education that prepares them for college and a 21st[-]century economy.

"But," she added, "we're already seeing signs that the pressure on publishers will increase in the coming months." Miller was prescient about the increase of pressure, and about its sources.

When the official state review panels completed their reviews, it was clear, as the Texas Freedom Network and the National Center for Science Education charged in a joint press release issued on September 9, 2013, that "reviewers made ideological objections to coverage related to evolution and climate change in textbooks from at least seven publishers, including several of the nation's biggest publishing houses." TFN's president Kathy Miller warned, "Once again culture warriors on the state board are putting Texas at risk of becoming a national laughingstock on science education."

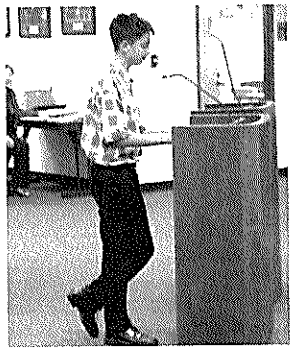
"The arguments in these reviews are the same discredited claims anti-science activists have pushed for years," commented NCSE's Joshua Rosenau. Among those claims, various reviewers:

- called for the inclusion of "'creation science' based on biblical principles"
- asserted that "no transitional fossils have been discovered"
- insisted that there is no evidence for a human influence on the carbon cycle
- claimed that there is no evidence about the effect of climate change on species diversity
- promoted a book touting "intelligent design" creationism as a reliable source of scientific information
- denied that recombination and genetic drift are evolutionary mechanisms
- mischaracterized experiments on the peppered moth as "discredited" and as "fabrication[s]"

"This is scary because of Texas'[s] big influence on publishers and on textbooks used across the country," Rosenau said. "Publishers should listen to real experts, not unqualified reviewers who don't seem to understand even basic scientific terms."

TFN's president Kathy Miller agreed, commenting,

> What our kids learn in their public schools should be based on mainstream, established science, not the personal views of ideologues, especially those who are grossly unqualified to evaluate a biology textbook in the first place. What we see in these documents makes it imperative that the board finally establish genuine qualifications for those entrusted with reviewing textbooks or curriculum standards for our kids.



A ninth-grader testifies about the need for evolution in textbooks. Austin, Texas, September 17, 2013
Photograph: Joshua Rosenau

As the press release observed, it was members of the SBOE who nominated the reviewers, including the evolution and climate deniers. While members of the board typically nominated reviewers with relevant credentials in science or in science education, few of the reviewers critical of the inclusion of evolution and climate change possessed any scientific credentials. Among those who did, several—Ide Trotter, Walter Bradley, and Ray Bohlin—are active in state or national anti-evolution organizations such as the Discovery Institute.

The SBOE conducted its first hearing on the textbooks in Austin on September 17, 2013. NCSE's Rosenau attended and testified. His testimony is posted on NCSE's blog (http://ncse.com/blog/2013/09/my-testimony-before-texas-board-education-0015045), as is his report of the hearing (http://ncse.com/blog/2013/09/texas-textbook-hearings-view-from-ground-0015062). He observed in the latter, "it felt like there were three or four speakers in support of evolution and climate change education for every creationist or climate change denier who spoke."

Also testifying was Don McLeroy, the self-avowed young-earth creationist who used to chair the board. McLeroy urged the board, "Support the Bible, and adopt these books." His reasoning was that the evidence for evolution presented in the books was unconvincing:

> Let the students, the inquisitive students, the ones that are not blind, look at the evidence in these books. They don't even give a hint to explain the complexity. ... I'm just hoping that a young creationist ... will sit there and say, "Look, is this all the evidence they have? Well, maybe God didn't use evolution to do it."

The spectacle of creationists and climate change deniers' reviewing textbooks belatedly attracted the attention of *The New York Times* (2013 Sep 28):

> As Texas gears up to select biology textbooks for use by high school students over the next decade, the panel responsible for reviewing submissions

> from publishers has stirred controversy because a number of its members do not accept evolution and climate change. ... Some Texans worry that ideologically driven review panel members and state school board members are slowly eroding science education in the state.

The *Times* observed, "By questioning the science—often getting down to very technical details—the evolution challengers in Texas are following a strategy increasingly deployed by others around the country," adding, "There is little open talk of creationism. .. Instead they borrow buzzwords common in education, 'critical thinking,' saying there is simply not enough evidence to prove evolution." TFN's Kathy Miller commented that the strategy "is like lipstick on a Trojan horse."

Meanwhile, the publishers were asked to submit their proposed changes in response to the panels' comments by October 4, 2013, and the Texas Education Agency made the proposed changes available to the public on October 11, 2013. After examining the proposed changes, TFN reported, in a press release issued on October 16, 2013, that "editorial changes from all 14 publishers that submitted high school textbooks for adoption this year do not reflect" the arguments and beliefs of the review panelists who objected to the textbooks' treatment of evolution.

Arturo De Lozanne, a professor of molecular, cell, and developmental biology at the University of Texas at Austin, was quoted in TFN's press release as saying, "From what I can see so far, publishers are resisting pressure to do things that would leave high school graduates in Texas ill-prepared to succeed in a college science classroom." NCSE's Rosenau agreed, saying, "I'm glad to see that publishers didn't succumb to pressure from unqualified ideologues, standing firm to ensure that students in Texas—and every other state—have access to accurate, thorough, honest textbooks."

Further pressure came from the executive director of the National Science Teachers Association, who called on the SBOE to "reject any pressure to promote any nonscientific views in its textbooks or classrooms." Writing on Live Science (2013 Nov 8), David Evans insisted, "presenting non-scientific or religious ideas in science class or in science textbooks is simply wrong and blurs the line about what is and what is not science. This will only confuse and mislead students and does nothing to improve the quality of science education and everything to weaken it."

As the SBOE prepared for its final public hearing on science textbook adoption, the *Dallas Observer* (2013 Nov 14) published a marvelously detailed look at Texas anti-evolutionism past and present, beginning with a profile of Raymond Bohlin, Vice-President of Vision Outreach for Probe Ministries and a Fellow at the Discovery Institute's Center for Science and Culture. "Bohlin looks like a college biology professor, pale, square-jawed, peering out through glasses beneath an Indiana Jones fedora emblazoned with the words 'Grand Canyon.'"

Rally in support of the textbooks, Austin, Texas, September 17, 2013.
Photograph: Joshua Rosenau

The professorial mien is understandable: Bohlin earned a master's degree in population genetics and a doctorate in molecular and cell biology. But he "never accepted the hypothesis central to his discipline, hardened in the crucible of 150 years of experimentation, validated by the advent of modern genetics." Bohlin told the *Observer* that he undertook his studies in order to be able to debunk evolution: "If I'm going to be a critic of evolution, I have to make sure I understand in detail how it's supposed to work." His most recent peer-reviewed scientific publication is from 1982.

Bohlin is especially relevant to the Texas science textbook adoption because, the *Observer* explains:

> His great investment in a field he entered to debunk had led him to the Texas State Board of Education, where he was appointed to be an expert reviewer of high-school biology textbooks. This, he believes, is where the war against secularism will be won or lost.

On the review panel in 2013, Bohlin was a primary offender, offering misguided advice about evolution and climate science alike. (Of the latter, NCSE's Rosenau commented, "Essentially each sentence in these criticisms is wrong or misleading.")

Ron Wetherington, Professor of Anthropology at Southern Methodist University, noted, "There are no intelligent people on the side of creationism who are still urging the teaching of creationism in form or function," adding, "It's not worth it for them to do that, so they're putting all their eggs in the basket of undermining evolution." But the signs were that the publishers are not willing to capitulate: presumably paraphrasing, Wetherington described one publisher as responding to a creationism-inflected critique of its textbook by replying, "Up yours, we're not going to change anything."

The board's decision is not as important as it once was, the *Observer* suggested, since "school districts are free to make their own purchasing decisions now ... A thorough vetting from the state board still represents a 'Good Housekeeping Seal of Approval' that smaller districts will rely on to ensure their books meet Texas'[s] curriculum standards. The board's vote will be influential for years to come, but is no longer the edict [it] once was." In the future, battles over Texas textbooks may occur at the level of the individual school district—of which there are over one thousand in the state—rather than at the board.

When the SBOE held its final public hearing on science textbook adoption on November 20, 2013, NCSE's Rosenau was on hand to present the board with a statement urging the adoption of the textbooks

endorsed by no fewer than fifty-one scientific and educational societies. The statement observed,

> Evolution is the foundation of modern biology, an explanation for the diversity of life on earth which has opened up tremendous scientific and technological opportunities. It is central to fields as diverse as agriculture, computer science, engineering, geology, and medicine. The teaching of evolution and—for similar reasons—climate change should not be undermined in textbooks, whether by minimizing, misrepresenting, or misleadingly singling them out as controversial or in need of greater scrutiny than other topics are given ... By adopting textbooks recommended by the top scientists and teachers in Texas, you will give students and teachers the foundation for an exemplary science education, the sort of education that they will need to succeed in the 21st century.

Among the signatories were the National Academy of Sciences, the American Association for the Advancement of Science, the National Association of Biology Teachers, and the National Science Teachers Association.

Rosenau also submitted separate but concurring statements from the Geological Society of America, the American Society for Microbiology's Education Board and Committee on K–12 Outreach, and the American Geological Institute, all urging the board to adopt the textbooks under consideration. The Texas Freedom Network also submitted a petition signed by 25 000 Texans, and organized a "thunderclap"—a simultaneous on-line demonstration via Twitter, Facebook, and Tumblr—for November 21, 2013.

The SBOE gave its final approval to all of the proposed textbooks for high school biology and environmental science courses at its November 22, 2013, meeting. NCSE's Rosenau commented, "These textbooks were recommended by the top scientists and teachers in Texas. By adopting them, the board is helping to lay the foundation for the sort of science education that Texas's students need in order to succeed in the twenty-first century." But the triumph was slightly tainted by two attacks launched against one biology textbook and one environmental science textbook.

The biology textbook, written by Kenneth R Miller and Joseph Levine and published by Pearson, was previously criticized by a state review panel for twenty supposed errors in its treatment of evolution. In response, the publisher denied that the passages contained errors and declined to make the suggested changes. At the November 21, 2013, meeting, the board quarreled about whether to heed the panel's criticisms of the textbook (which Ron Wetherington already thoroughly debunked). Eventually the board voted to adopt it contingent on the outcome of a further review by a panel of three outside experts.

The environmental science textbook, published by Houghton Mifflin Harcourt, was attacked by Becky Berger, a geologist and Republican political aspirant testifying at the November 21, 2013, meeting, for supposed factual errors about pollution caused by hydraulic fracturing ("fracking") and the problem of carbon emissions and global warming, although the state review panel identified no such errors. Although there were calls for the textbook to be rejected, the board finally voted to adopt it when the publisher agreed to revise outdated material identified by the state geologist.

Rosenau credited the victory to the Texas Freedom Network, Texas Citizens for Science, NCSE members and allies in Texas, and the various scientific, scholarly, and education societies that urged the board to adopt the textbooks. Rosenau added that special credit was due to the publishers who refused to compromise their integrity of their textbooks to satisfy unscientifically warranted demands. "What happens in Texas doesn't stay in Texas," he observed. "Bad textbooks in Texas mean bad textbooks across the country. So this is really a victory for science education in the whole United States."

When the experts reviewing the Miller and Levine textbook were identified, it was encouraging: Ronald Wetherington, a professor of anthropology at Southern Methodist University; Arturo De Lozanne, a professor of molecular, cell, and developmental biology at the University of Texas, Austin; and Vincent Cassone, a professor of biology at the University of Kentucky (and formerly at Texas A&M University). All three have a history of defending the teaching of evolution in the public schools; Wetherington in fact already debunked the panel's criticisms of Miller and Levine's textbook.

The reviewers were appointed by three members of the board: Wetherington by Sue Melton-Malone, De Lozanne by Martha Dominguez, and Cassone by Barbara Cargill. Since Cargill was involved in previous efforts to undermine the teaching of evolution in Texas, it was odd that she selected a reviewer who is on the record as asserting, "The theory of evolution is the fundamental backbone of all biological research."

Subsequently, the panel gave "unanimous approval to the Pearson biology textbook whose adoption by the Texas State Board of Education ... last month had been tripped up by allegations that it contained 'factual errors,'" according to the TFN in a December 17, 2013, blog post. "A Texas Education Agency (TEA) spokesperson told us that it has forwarded the panel's report to Pearson. TEA won't release the report publicly until Pearson has had a chance to review it, but our sources said all three panelists dismissed the claims of factual errors and recommended no changes to the textbook."

Assessing the outcome, TFN concluded:

> The panel's approval of the Pearson textbook essentially marks the end of efforts by anti-evolution activists to hijack this year's science textbook adoption. Throughout the process, they and their board allies—including [the board's chair Barbara] Cargill—tried to pressure publishers into watering down and distorting the science on evolution and climate change. They failed

completely when publishers resisted their pressure while TFN, the National Center for Science Education and other science education advocates rallied support for the textbooks.

NCSE's Rosenau commented,

> Our goal has always been to protect publishers from political pressure, and to keep the board from politicizing textbooks, so that 'Texas edition' would be a mark of quality and not a warning label. With this decision, Texas teachers and students can finally be confident that any Texas edition science textbook reflects good science and a thorough presentation of evolution.

And so the controversy over science education in the Lone Star State subsides—for now. In 2016, the state will start to revise the science standards again.

EDWARD T OAKES DIES

The Catholic theologian Edward T Oakes SJ died on December 6, 2013, at the age of 65, according to the Catholic News Agency (2013 Dec 6). A fierce critic of "intelligent design" creationism, especially in his essays and reviews in the popular press, Oakes was known among scholars primarily for his work on theology, such as *Pattern of Redemption: The Theology of Hans Urs von Balthasar* (1997) and *Infinity Dwindled to Infancy: A Catholic and Evangelical Christology* (2011).

Speaking to the independent Catholic news agency Zenit in 2005, Oakes was happy to endorse evolution in the sense of descent with modification and natural selection as a driving force in evolution, while insisting "that doesn't mean that any of the conclusions that so many boring positivists draw from evolution is true." He also told Zenit that the "intelligent design" movement

> conflates the Thomistic distinction between primary and secondary causality. The advocates of this movement claim that if it can be proved scientifically that God must intervene on occasion to get various species up and running, then this will throw the atheist Darwinians into a panicked rout.

He added, "I disagree. My view is that, according to St Thomas, secondary causality can be allowed full rein without threatening God's providential oversight of the world." Reviewing Phillip Johnson's *The Wedge of Truth* in *First Things* in 2007, Oakes lambasted the theological inadequacies of the "intelligent design" position:

> Who, pray tell, is this artificer? The God of Genesis 1–3? Visitors from outer space expert in cell engineering? David Hume's clumsy craftsman who botched the job? Malign Sartrean gods who, to paraphrase Gloucester's lament in King Lear, kill us for their sport as wanton boys do to flies?

Johnson and a host of his allies responded in a subsequent issue, and Oakes replied in turn, dismissing the underpinnings of "intelligent design" by saying, "Paley did far more damage to nineteenth-century Christianity than Friedrich Nietzsche ever managed to do to twentieth-century religion."

Oakes was born in Kansas City, Missouri, on May 18, 1948. He entered the Society of Jesus in 1966 and was ordained a priest in 1979. He attended St Louis University, from which he received his BA in 1971 and his MA in 1976, both in philosophy; the Jesuit School of Theology in Berkeley, California, from which he received his MDiv in scripture in 1979; and the Union Theological Seminary, from which he received his PhD in theology in 1987. He taught at New York University, Regis University, and the University of Saint Mary of the Lake/Mundelein Seminary in Chicago.

IAN BARBOUR DIES

The distinguished scholar of science and religion Ian Barbour died on December 24, 2013, at the age of 90, according to Carleton College (2013 Dec 27). Often credited with founding the academic field of science and religion, Barbour was the author of *Religion in an Age of Science* (1990), *Ethics in an Age of Technology* (1993), *When Science Meets Religion* (2000), and *Nature, Human Nature, and God* (2009) among other books.

In *When Science Meets Religion*, after reviewing the contentious history of efforts to undermine the teaching of evolution in the United States, Barbour wrote, "I believe that creation science is a threat to both religious and scientific freedom," adding, with respect to Phillip Johnson and Michael Behe,

> though these authors are not biblical literalists they err in assuming that evolutionary theory and theism are incompatible. They, too, perpetuate the false dilemma of having to choose between science and religion.

Barbour expanded on his disagreement with "intelligent design" in a 2000 talk (published in *Zygon* in 2001) critical of his fellow scholar of science and religion Huston Smith's sympathy for the position, writing:

> Philosophical proponents of intelligent design, such as William Dembski ... and Stephen Meyer ... , write in the tradition of natural theology, in which science is used as evidence of the existence of a designer. My own approach is not natural theology but a theology of nature, in which one asks how nature understood by science is related to the divine as understood from the religious experience of a historical community.

Describing "intelligent design" at least in Behe's and Smith's versions as assuming "intermittent divine intervention", he warned, "The God of the gaps has steadily retreated in the history of modern science." In the same talk, he noted that "[s]cientists have to assume methodological naturalism", that "intelligent design" proponents "do not offer testable hypothesis for scientific research", and that "virtually the entire scientific community agrees on descent with modification from earlier ancestors."

Barbour was born in Beijing, China, on October 5, 1923. He studied physics, receiving his BA from Swarthmore College, his MA from Duke University in 1943, and his PhD from the University of Chicago in 1950. He then earned a BD from Yale Divinity School in 1956. After a few years teaching physics at Kalamazoo College, he went to Carleton College, where he spent the rest of his career in the physics and religion departments, retiring in 1986. Among his honors were the Gifford Lectureship in 1989–1991 and the Templeton Prize for Progress in Religion in 1999.

NCSENEWS News from the Membership *Glenn Branch*

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

Dwight Fine contributed a column to *The Desert Sun* (2013 Sep 30), published in Palm Springs, California, responding to a column arguing for the inclusion of "intelligent design" in public school textbooks and classes. "Intelligent design theory is a modern successor to creation science," Fine explained, and its teaching was ruled to be unconstitutional in *Kitzmiller v Dover.* He concluded by observing,

> There is indeed controversy over mechanisms of evolution, otherwise evolutionary biologists would be unemployed. True scientists, however, when they do not know the cause of something, are not content to label the cause "God" or "intelligence", but work to find natural causes.

Fine is a retired research chemist.

Although he died in 2002, **Stephen Jay Gould** (a late member of NCSE's Advisory Council) continues to attract scholarly attention, as shown by the recent publication of a new book about him: *Stephen J Gould: The Scientific Legacy,* edited by Gian Antonio Danieli, Alessandro Minelli, and Telmo Pievani (Berlin: Springer, 2013). According to the publisher,

> Stephen J Gould's greatest contribution to science is a revised version of the theory of evolution which offers today a useful framework for understanding progress in many evolutionary fields. His intuitions about the conjunction of evolution and development, the role of ecological factors in speciation, the multi-level interpretation of the units of selection, and the interplay between functional pressures and constraints all represent fruitful lines of experimental research. His opposition to the progressive representations of evolution, the gene-centered view of natural history, or the adaptationist "just-so stories" has also left its mark on current biology.
>
> In May 2012, at the Istituto Veneto di Scienze, Lettere ed Arti in Venice, an international panel of scientists and philosophers discussed Stephen J Gould's legacy, ten years after his death. This book presents a selection of those contributions, chosen for their interest and importance. A broad range of themes are covered: Gould's contribution to evolutionary theory, including the concept of punctuated equilibria and the importance of his pluralism; the Gouldian view of genome and development; Gould's legacy in anthropology; and, finally, the significance of his thought for the human sciences.
>
> This book provides a fascinating appraisal of the cultural legacy of one of the world's greatest popular writers in the life sciences. This is the first time that scientists including some of Gould's personal friends and co-authors of papers of momentous importance such as Niles Eldredge have come together to strike a balanced view of Gould's intellectual heritage.

Among the contents is a chapter by **Niles Eldredge** (a member of NCSE's Advisory Council) on "Stephen J Gould in the 1960s and 1970s, and the origin of 'punctuated equilibria'."

Photograph: Ohio State University.

Steve Rissing

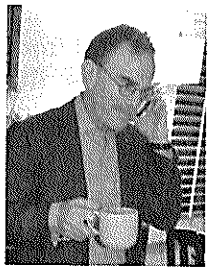
Steve Rissing contributed "Correlation between MCAT biology content specifications and topic scope and sequence of general education college biology textbooks" to *CBE Life Sciences Education* 2013;12(3):429–440. The main finding, as a September 4, 2013, press release from the Ohio State University explained, was that "[c]ollege biology textbooks cater to the needs of pre-med majors and not those of the majority of students who take introductory science classes." Rissing expressed concern for the implications for students not bound for medical schools:

> These general education students are getting a lot about cell division mitosis from their textbooks when they really should be learning about things like personalized medicine, evolution and the impact of climate change ... We need to have biology education for citizens and voters, not just for future doctors.

One area of particular concern was human evolution. The press release noted, "In one text for biology majors, the timeline showed 13 ancestors and close relatives of modern humans. But in a comparable general education text, five of the human ancestors and close relatives had been taken out." Rissing added, "Based on that timeline, some students may believe the evidence for evolution is not as strong as it really is." Rissing, a recipient of NCSE's Friend of Darwin award, is Professor of Biology at the Ohio State University.

NCSE is delighted to congratulate **Randy W Schekman** for receiving the 2013 Nobel Prize for Physiology or Medicine. Along with James E Rothman and Thomas C Südhof, Schekman was honored for his work on "the mystery of how the cell organizes its transport system." According to a press release issued by the Nobel Assembly on October 10, 2013:

Glenn Branch is NCSE's deputy director.



Photograph: Carol Ness
University of California, Berkeley

Randy W Schekman

Randy Schekman was fascinated by how the cell organizes its transport system and in the 1970s decided to study its genetic basis by using yeast as a model system. In a genetic screen, he identified yeast cells with defective transport machinery, giving rise to a situation resembling a poorly planned public transport system. Vesicles piled up in certain parts of the cell. He found that the cause of this congestion was genetic and went on to identify the mutated genes. Schekman identified three classes of genes that control different facets of the cell's transport system, thereby providing new insights into the tightly regulated machinery that mediates vesicle transport in the cell.

A member of NCSE, Scheckman is Professor in the Department of Molecular and Cell Biology at the University of California, Berkeley, and a Howard Hughes Medical Institute Investigator. He was elected to the National Academy of Sciences in 1992 and as president of the American Society for Cell Biology in 1999.

NCSE congratulates **Judy Scotchmoor** for winning the 2013 Stephen Jay Gould Prize from the Society for the Study of Evolution. The Director of Education and Public Programs at the University of California Museum of Paleontology, Scotchmoor is a long-time member of NCSE as well as a recipient of its Friend of Darwin award. Scotchmoor received the Gould Prize and presented a public lecture on June 21, 2013, at the Evolution 2013 conference in Snowbird, Utah. Scotchmoor is famous for her work on UCMP's highly regarded evolution program, including the popular Understanding Evolution and Understanding Science websites, which clock over a million visitors per month. She was also the moving force behind the National Conference on the Teaching of Evolution in 2001, which galvanized scientists and educators to take the growing attacks on evolution education seriously. The Stephen Jay Gould Prize is awarded annually by the SSE "to recognize individuals whose sustained and exemplary efforts have advanced public understanding of evolutionary science and its importance in biology, education, and everyday life in the spirit of Stephen Jay Gould." NCSE's executive director **Eugenie C Scott** was the recipient of the first Gould Prize, in 2009, followed by **Sean B Carroll** and **Kenneth R Miller**—both members of NCSE's Advisory Council—in 2010 and 2011, respectively, and David Quammen in 2012.

Judy Scotchmoor

from THE STAFF

MINDA BERBECO writes: Did you know that NCSE has interns? We do, and they are awesome. When I first proposed an internship program early last year, the question around the office was, what would interns do? Now the question is: what won't they do? Well, they won't do the windows, because it's illegal to ask them to do that. But housekeeping aside, our first batch of interns this fall semester has been amazing.

What have our interns been doing? Everything from investigating education policies and assisting at conferences to researching and writing about global change issues. This past October, Mark McCaffrey was lucky enough to have one of our interns, Preunky Akther, join him for the Power Shift conference in Pittsburgh. He reported back that without her help he would have never been able to handle the questions from the six thousand students ambushing our booth wanting to know more about NCSE. In return, she used her time and research here at NCSE for the foundation of her final report for a graduate-level education course.

Meanwhile, I had two fantastic interns working with me at the University of California Museum of Paleontology on a UCMP/NCSE joint project called Understanding Global Change. I kept the interns busy, having them research complex scientific concepts surrounding global change such as ozone depletion and ocean acidification, and then convert those ideas into bite-size stories understandable to a high school audience. With their help, we were able to make huge strides in the project, and in return they learned more about how to communicate complex scientific ideas to a general use audience.

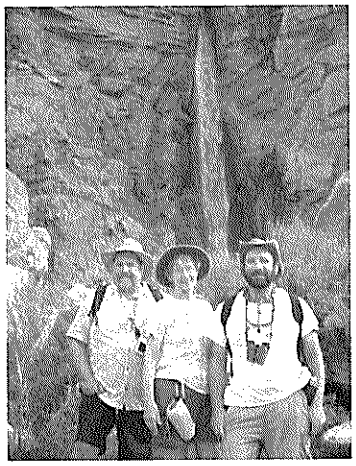
Armita Razieh Manafzadeh, Holly Rebecca Waite, Minda Berbeco, Preunky Akther, and (in back) Mark McCaffrey

So for all this work, how did we express our gratitude? Well, we can't pay except in the form of course credit, which they were all able to get through the University of California, Berkeley's education department, but we were able to thank them with an intern lunch at

Berkeley's own space-age vegetarian diner, Saturn Café. Over vegan diablo burgers and soy vanilla frappes, we thanked them for an incredible semester of hard work, with some excellent payoffs.

Who will be in our next crew of interns? We've just posted the internship positions for the spring. It's not many people who would work for university credit and a vegan BLT, but fortunately for us UC Berkeley has a lot of really bright students who are absolutely passionate about science education (and soy burgers!). I think they'll find a good home with us.

JOSH ROSENAU writes: When I woke up on July 14, 2013, I had no idea that I'd spend much of the next week and a half covered in red dust, soaking wet, a mile and more inside the earth.



NCSE's Steve Newton, Eugenie C Scott, and Josh Rosenau in the Grand Canyon

Not long after waking up, I got a call from Genie Scott, NCSE's executive director. "Josh," she asked puckishly, "how'd you like to go to the Grand Canyon?" Knowing she was scheduled to leave the next day for NCSE's annual trip down the canyon, I was confused. "When?" I wondered.

It turned out that a last minute cancellation had opened up for one of the twenty-four seats on the boats, and if I wanted to take the voyage of a lifetime, I had to get my wife's and toddler's agreement to my sudden disappearance, get supplies, and get packing.

Less than twenty-four hours later, I was flying off to the Canyon.

The rest of the passengers had come prepared, having read books about the Canyon and its geology, traced its rapids on maps and through photos and video, and learned its rafting lore. I was hastily skimming a copy of John Wesley Powell's *Exploration of the Colorado River and its Canyons*, which I grabbed off the shelf as I ran out the door. Powell's account, the first written description of a boat voyage through the Canyon, was fascinating, but was tricky to match up against the map. Apparently he didn't know the names of landmarks like Ten Mile Rock, 185 Mile Rapid, or the Bright Angel Suspension Bridge.

Like Powell, then, I never quite knew what was behind the next meander, and each campsite and side canyon was virgin territory to explore. While Genie and my colleague Steve Newton gave their famous "two-model" tour of the geology (Genie explaining the creationist view, Steve explaining the real story), I started figuring out what I could about the Canyon's ecology. With my fellow rafters' help, I hunted antlions and scooped up water beetles, watched for condors, evicted a toad from my tent, and tracked our fuzzy transitions across the blurred biogeographic borders between the Great Basin, Mojave, and Sonoran deserts.

Along the way, the rafters discussed creationism and evolution, climate change, and the state of American education. There were several teachers in the group, and some college professors, and more advanced degrees than should be allowed on any river at once. By the time we pulled out, eight days, 225 river miles, and a billion or so years of strata later, we could hardly bear to leave.

I'm pleased and excited to know that I'll be going back next summer, to add a biologist and naturalist's take to our discussions. And this time I'll know what to expect.

EUGENIE C SCOTT writes: I was recently proud to receive the inaugural Charles Chilton Moore/John Scopes Freethought Award from the Kentucky Freethought Convention, along with Joe Nickell, Edwin Kagin, Helen Kagin, Emmett Fields, Frank Lovell, Dick Renfro, and Charles Sohner. Charles Chilton Moore (1837–1906) was a Kentucky atheist famous for publishing the freethought newspaper the *Blue Grass Blade;* John Scopes (1900–1970), of course, was the Kentucky-born teacher prosecuted in 1925 under Tennessee's Butler Act for teaching evolution. Alas, I wasn't able to attend the October 26, 2013, ceremony in Louisville, Kentucky, in person, but here is the text of my acceptance letter:

Eugenie C Scott

I am very honored to be awarded the CC Moore/John Scopes Freethought Award for my contributions to science education. Such good company to be in! You honor me in particular as one of the first recipients of this award, which is humbling.

Indeed, the struggle back in the early 1980s to keep creationism out of the Lexington schools was successful, but it was the product not only of my efforts, but those of many people holding different stakes in the outcome. We all worked together, setting aside the areas where we differed, and concentrating on those where we had the same goals. Scientists, teachers, clergy, business leaders, and civil libertarians all worked together to provide the rationale—and the political will—to reject teaching creationism in the schools. I learned a lot from my Lexington experiences, and have applied what I learned there to our success at the National Center for Science Education in subsequent years.

I am also honored to still be remembered as a Kentuckian, as even though I've moved from the state, I still feel it is one of my homes. So thank you, my friends, and I'm very sorry I am not able to be there to accept the award in person. ■

Yes, Bobby, Evolution is True!

Joseph E Armstrong and Marshall D Sundberg

Each fall the Botanical Society of America (BSA) calls for symposia to be held during the annual meeting. Since the 2013 meeting was scheduled to be held in New Orleans, Louisiana, we thought that "teaching evolution" would be a good topical subject for a symposium that both the Historical and Teaching Sections could jointly support.

Louisiana has a long history of legislation opposing evolution education, from the 1981 Balanced Treatment for Creation-Science and Evolution-Science Act to the 2008 Louisiana Science Education Act (LSEA). We decided that as botanical scientists and educators, it was our responsibility to confront this law directly by providing resources to help local teachers effectively teach evolution using plant examples.

As biological scientists, our basic position is that creationism and "intelligent design" aren't just wrong, they're useless, and any explanation that can't be used to do science is not part of science. This basic position is elaborated in the BSA's official statement on evolution (BSA 2003; Armstrong and Jernstedt 2003). We also thought that it would be important to motivate educators at all levels to attend the symposium, even if they were not themselves members of the Botanical Society. Thus we purposely chose a title that made direct reference to the governor of Louisiana, Bobby Jindal, alluding to the time-honored "Yes, Virginia, there is a Santa Claus."

We envisioned the symposium as having two parts, historical and educational. It is unfortunate that the majority of research scientists pay little attention to educational controversies in the schools, even less so in states other than our own. An introduction to the history of the controversy in the state of Louisiana would be generally applicable to the ongoing controversy throughout the country.

How fortunate for our symposium that two of the most vocal proponents for teaching evolution in the classroom, Zack Kopplin and Barbara Forrest, were both in Louisiana and accepted our invitation to present their historical and activist perspectives on this critical science education problem.

The majority of the presentations focused on how plants and plant biology can be used to effectively teach evolution. For this part of the symposium, we chose four plant scientists with various areas of expertise but long-standing commitment to effectively teaching about evolution. Stanley Rice, a plant ecologist from Southeastern Oklahoma State University, gave examples of his efforts focusing on ecological adaptations. James Hancock, an agricultural evolutionary botanist from Michigan State University, demonstrated that one cannot do modern plant breeding and agricultural research without a thorough understanding of evolutionary biology. Mitchell Cruzan, a molecular botanist at Portland State University, explained how evo-devo and molecular biology provide some of the strongest evidence for evolution. Finally, Gordon Uno, chair of the Department of Microbiology and Plant Biology at the University of Oklahoma, a national leader in the movement to improve biology education in the US, provided a number of resources available to teachers that can be used to incorporate more evolution throughout their courses.

In addition to the local and national press releases, which focused exclusively on the first two talks, the Huffington Post also included a much more balanced blog by Chris Martine (2013), who attended the entire symposium. Overall we were pleased with the results of the symposium. It helped to educate our membership about some of the problems facing science teachers in the schools and it provided useful information for the BSA members and local teachers and instructors in attendance to effectively employ plants in teaching evolutionary concepts. Finally, we feel that the Botanical Society of America has set an important example for other discipline-based professional scientific societies to engage the public in this important debate.

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Authors's addresses

Joseph E Armstrong
School of Biological Sciences
Campus Box 4120
Illinois State University
Normal IL 61790-4120

Marshall D Sundberg
Department of Biological Science
Campus Box 4050
Emporia State University
Emporia KS 66801

Joseph E Armstrong is a Professor of Botany and Head Curator of the Vasey Herbarium, School of Biological Sciences at Illinois State University, where he directs the Laboratory for Plant Identification and Conservation. He is an award-winning educator, recognized by his school, college, university, and the Botanical Society of America.

Marshall D Sundberg is Professor of Botany in the Department of Biological Sciences at Emporia State University. He is best known for his research on the evolution of the maize ear and for student-active learning. He has received teaching awards from the Botanical Society of America and the National Association of Biology Teachers.

Summary of *RNCSE* 2014;34(1):1.1-1.4; the full text is available from http://reports.ncse.com/index.php/rncse/article/view/258/436

Louisiana's Love Affair with Creationism

Barbara Forrest

As a gubernatorial candidate and a governor, Bobby Jindal has supported teaching creationism for over a decade. One of the first legislative bills he signed was the Louisiana Science Education Act (LSEA), which permits Louisiana public school science teachers to use creationist materials to promote "critical thinking skills" concerning "scientific theories being studied including, but not limited to, evolution, the origins of life, global warming, and human cloning" (SB 733 2008; Forrest 2008). Despite his Ivy League biology and public policy degree, Jindal's anti-science politics ensure the continuation of Louisiana's decades-long love affair with creationism.

Historical Ccontext

In 1987 the US Supreme Court declared Louisiana's "Balanced Treatment for Creation-Science and Evolution-Science in Public School Instruction Act" unconstitutional (*Edwards* 1987). Post-*Edwards* efforts by the Discovery Institute (DI) eliminated the young earth and Noachian flood components, and repackaged creationism as promoting "academic freedom" (DI 2006). The LSEA (SB 733) had initially been filed as the "Louisiana Academic Freedom Act."

The LSEA resurrected the Balanced Treatment Act's explicitly stated goal: to be "enacted for the purposes of protecting academic freedom"—a rationale still on the legislative web page informing readers of the law's being "held unconstitutional" (Balanced Treatment Act 1981).

Key players

The major force behind the attack on science education in Louisiana is the Louisiana Family Forum (LFF), which seeks "to persuasively present biblical principles in the centers of influence," assisted by the DI. The 2007 election ushered in a religiously conservative cohort of freshman legislators, and with Jindal's election, the LSEA's enactment was guaranteed.

Aftermath

After enactment of the LSEA, LFF convinced the Board of Elementary and Secondary Education (BESE) to strip key protections against teaching creationism. In September 2009, LFF also convinced the BESE to make it more difficult for parents to complain about creationist materials. Additionally, schools boards have been encouraged by the LSEA to try to undermine the teaching of evolution.

The pro-science community has managed some pushback. In 2011, the Society for Integrative and Comparative Biology (SICB) boycotted New Orleans because of the LSEA (NCSE 2013a). In 2010, the Louisiana Coalition for Science defeated LFF's attempt to block BESE's adoption of new biology textbooks (Forrest 2010). Every year since 2011, Senator Karen Carter Peterson, working with Louisiana student Zack Kopplin, has introduced a bill to repeal the LSEA (NCSE 2013b).

Louisiana science education still bears the imprint of LFF, but one aspect of the LSEA is perversely encouraging. Whereas using Louisiana's science standards is mandatory, teachers are completely free to ignore this misbegotten statute and do what professional integrity and competence demand: teach real science—and nothing else.

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Author's address

Barbara Forrest
SLU 10484
Hammond LA 70402
bforrest@selu.edu

Barbara Forrest is Professor of Philosophy in the Department of History and Political Science at Southeastern Louisiana University. She is on the NCSE board of directors and is a co-founder of the Louisiana Coalition for Science..

Summary of *RNCSE* 2014;34(1):2.1-2.8; the full text is available from http://reports.ncse.com/index.php/rncse/article/view/275/435

Confessions of an Oklahoma Evolutionist: The Bad, the Ugly, and the Good

Stanley A Rice

In Oklahoma, where I work, as in many other places, it is nearly impossible to teach or discuss evolution as simply a scientific matter. No matter what we do, the discussion will include religion. It is nearly impossible to teach evolution without encountering religion. Educators need to be aware of and deal appropriately with religious issues as they arise. My experiences with evolution and religion in Oklahoma have varied; some have been bad and some ugly, but there have been good ones, too.

THE BAD

There are at least two bad influences of religion on science. First, creationists wish to make evolution into a religious battlefield, and scientists have to take a lot of time to respond to them. Creationism creates an unnecessary battle line between science and religion. Second, religion can disrupt the ability to reason from evidence. For example, is the orderly deposit of fossils in discrete layers the sort of geologic record one would expect from a catastrophic worldwide flood? Despite what these two things may suggest, it is not religion itself, but creationism that is the enemy of science and reason.

THE UGLY

There is also an ugly aspect: the biological world contains an immense amount of genetically-based suffering, which fits in with the amoral process of evolution, but which presents a challenge to the idea of a beneficent Designer. Where do ugly mutations come from? How do they arise? Evolution has an answer.

Discussions of this issue are rare in conservative churches, in Oklahoma as elsewhere; at least, my students seem never to have dealt with this issue. Religion can therefore also be bad when it discourages an examination of such questions as where ugly mutations come from, a discussion that should be important (to religious people) even apart from evolution.

THE GOOD

But religion can also have a good influence upon science and education. Religious zeal can lead people to study the world more closely, as has happened with the tribal pursuit of what they consider to be knowledge of the "plants of the gods." In some cases, though too few, religion leads people to see the natural world as beautiful and valuable. If educators can guide students' religiously-based sense of wonder into a habit of questioning, the students may end up understanding and caring about the natural world, and avoiding unnecessary conflict.

MOVING FORWARD

It is unclear whether religion is innate to the human brain, or whether it is just a bunch of memes that have parasitized innate tendencies of the brain. But religion is entrenched and powerful.

I believe that what we scientists and educators should do is to guide the power of religion in constructive directions. And that is what we educators are already doing, even without taking religion into consideration. We need to continue getting students and other people outside to notice things.

If they grow into adults that notice things, they may grow into adults that question things. And from there, we just need to have faith that their habit of thinking about what they see may lead them down the paths of reason, at least sometimes. For some of our students (alas, too few), religion inclines them to view the natural world with wonder and delight.

Life is too short to spend it in open conflict with the bad or calling attention to the ugly. I recommend that we cultivate the good—wonder and curiosity, which frequently arise from spirituality—and have a good time while we are doing so.

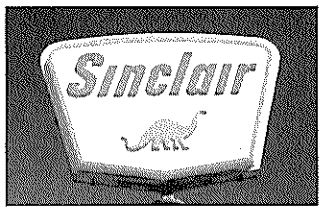
AUTHOR'S ADDRESS
Stanley A Rice
Department of Biological Sciences
Southeastern Oklahoma State University
Durant OK 74701

Stanley A Rice is a professor of biological sciences at Southeastern Oklahoma State University. His author website is http://www.stanley-rice.com, his evolution blog is http://honest.ab.blogspot.com, and his evolution YouTube channel is http://www.youtube.com/StanEvolve.

Summary of *RNCSE* 2014;34(1):4.1–4.7; the full text is available from http://reports.ncse.com/index.php/rncse/article/view/255/431

Harry Sinclair (1876–1956)

Randy Moore



Harry Ford Sinclair was born in Benwood (now a suburb of Wheeling), West Virginia. After studying pharmacy at the University of Kansas, he formed the Sinclair Oil and Refining Company in 1916 from the assets of eleven small petroleum companies. The company made Sinclair exceedingly wealthy, and he began pursuing hobbies such as race horses.

During the 1920s and 1930s, Sinclair funded several fossil-hunting expeditions in the American West, announcing each year's discoveries with a massive advertising campaign. Sinclair paid famed dinosaur-hunter Barnum Brown to search for oil while looking for dinosaurs, and one of Brown's discoveries (a previously unknown crocodile) was named *Phobosuchus sinclairi* in Sinclair's honor. Sinclair's life-size models of dinosaurs that were displayed at World's Fairs fueled America's growing interest in ancient life. The models were later donated to parks, the most famous of which reside in Dinosaur Valley State Park near Glen Rose, Texas, where Roland Bird (while working for Brown) found tracks of the real thing. In 1934, Sinclair funded a two-month, 20 000-mile aerial survey of the southwestern US by Barnum Brown aboard *Diplodocus,* a four-passenger airplane—the first such survey of its kind.

Sinclair incorporated *Apatosaurus*—a giant herbivore named and described by Othniel Marsh—into his company's logo in 1930 (shown above), and soon thereafter Sinclair gas stations began giving customers dinosaur-related stamps, stickers, and booklets. Sinclair's use of a giant dinosaur was meant to portray his company's giantism; he wanted to control all aspects of the production of gasoline.

Sinclair ads also often featured dinosaurs. The first of these ads, which appeared in 1932 in 104 newspapers and five national magazines, featured dinosaurs such as *Tyrannosaurus, Brontosaurus* (that is, *Apatosaurus*), and *Triceratops,* and were exceedingly effective. Sinclair's marketers knew that their crude oils had formed hundreds of millions of years ago, and dubiously claimed that the oils were "mellowing and filtering in the earth even before dinosaurs roamed America." The Sinclair staff used this information to link their oil with dinosaurs and to impress upon the minds of motorists the great age of crudes from which Sinclair Motor Oils were refined.

For example, Sinclair Oil's advertisement in the August 13, 1932, issue of *The Literary Digest* linked Sinclair's oils with dinosaurs and the "mellowing and filtering" of millions of years:

> Down where the heat of earth's internal fires stands at 100 degrees—a mile and a quarter below the surface of Oklahoma lies a treasure trove, the Cambro-Ordovician oil pool. Millions of years have passed since Nature formed that pool—ages which saw the rise and fall of the dinosaurs—ages which played a priceless part in the mellowing filtering of this remarkable crude. Cambro-Ordovician crude oil is the oldest of the Mid-continent crudes. It has mellowed longer, filtered longer, contains less carbon than younger Mid-continent crudes. When blended in the great Sinclair refineries—de-waxed and freed from petroleum jelly, this oldest of Mid-continent crudes becomes Sinclair Opaline, a produce of 80 million years of Nature's priceless treatment.

In the early 1920s, Sinclair was arrested for allegedly giving US Secretary of the Interior Albert Fall $100 000 for the drilling rights to the US Navy oil reserves in Wyoming, which were overlaid by a geological deposit that resembled a teapot. The resulting "Teapot Dome" scandal rocked the administration of Warren Harding, and Fall became the first cabinet member to go to prison for his actions in office. During his trial in 1927, Sinclair refused to cooperate with government investigators and was acquitted of bribery charges, but convicted of contempt of court and of Congress when it was learned that he had paid detectives to investigate jurors. In 1929, Sinclair was fined $100 000 and served six months in prison, where he worked in the pharmacy. A significant outcome of the scandal was *McGrain v Daugherty,* which explicitly established the right of Congress to compel testimony.

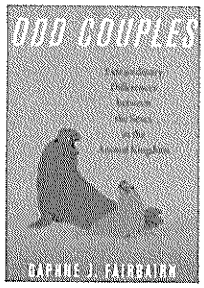
Harry Sinclair died on November 10, 1956, in Pasadena, California, and was buried in the Calvary Cemetery in East Los Angeles.

AUTHOR'S ADDRESS
Randy Moore
University of Minnesota, MCB 3-104
420 Washington Avenue SE
Minneapolis MN 55455
rmoore@umn.edu

Randy Moore is the HT-Moore–Alumni Distinguished Professor of Biology at the University of Minnesota. His latest book (with coauthor Sebova Cotner) is Understanding Galápagos: What You'll See and What It Means *(New York: McGraw-Hill, 2013).* People & Places of Evolution *is his regular column in* RNCSE.

Summary of *RNCSE* 2014;34(1):3.1–3.3; the full text is available from http://reports.ncse.com/index.php/rncse/article/view/281/412

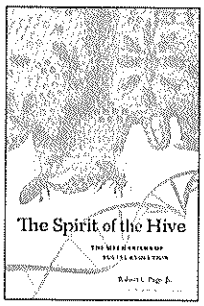
SUMMARIES OF BOOK REVIEWS



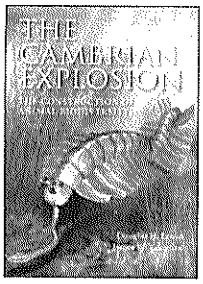
Odd Couples: Extraordinary Differences between the Sexes in the Animal Kingdom by Daphne J Fairbairn (Princeton [NJ]: Princeton University Press, 2013; 312 pages). In *Odd Couples*, writes reviewer **Robert M Cox,** "[t]he writing is accessible and the scientific jargon is usually kept to a minimum. Nonetheless, the style is very much in the tradition of scientific writing, and academics will find the comforting familiarity of tables, figures, and citations from the primary literature. But at its core, *Odd Couples* is an unapologetic celebration of the diversity of life, the intriguing scientific questions it raises, and the surprising answers that evolutionary biology provides."

Summary of *RNCSE* 2014;34(1):4.1–4.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/238/427

The Spirit of the Hive: The Mechanisms of Social Evolution by Robert E Page Jr (Cambridge [MA]: Harvard University Press, 2013; 226 pages). In *The Spirit of the Hive*, explains reviewer **James H Hunt,** Page describes his work on how "variation among honey bee colonies can reflect variation in the underlying mechanisms of behavior and development in non-reproducing individuals in ways that could underlie adaptation at the colony level," thus providing "an excellent example of how simple yet elegant experiments can be used to generate deep insights into the processes of evolution." He warns, though, that "it will be more easily accessible to scientists."

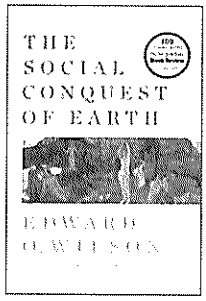


Summary of *RNCSE* 2014;34(1):5.1–5.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/262/419



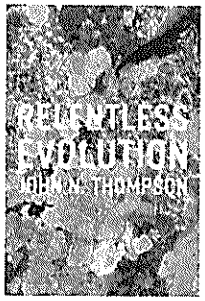
The Cambrian Explosion: The Construction of Animal Biodiversity by Douglas H Erwin and James W Valentine (Greenwood Village [CO]: Roberts and Company, 2013; 416 pages). Reviewer **Roy E Plotnick** writes that *The Cambrian Explosion* "will become required reading for anyone who wants to understand the multiple lines of evidence, from geology, geochemistry, paleontology, genetics, phylogenetics, comparative morphology, and ecology, that have to be integrated to understand one of the most important episodes in the history of life." He praises the writing and the artwork as well as the scientific content, which "will become the foundation for research ... for at least the next decade."

Summary of *RNCSE* 2014;34(1):6.1–6.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/246/430



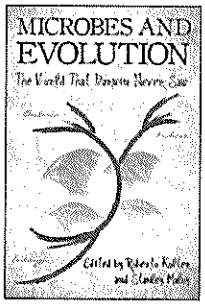
The Social Conquest of Earth by Edward O Wilson (New York: Liveright Publishing Corporation, 2012; 330 pages). Rejecting kin selection as a viable explanation for altruistic behavior, *The Social Conquest of Earth* "examines an alternative model for the evolution of eusociality and presents it in terms of two very different sets of animals—the social insects (ants, bees, wasps, and termites) and humans ... The book begins and ends with humans, with social insects and theoretical issues taking up the middle sections," writes reviewer **John H Relethford,** who found Wilson's conclusions about humanity provocative but speculative, and unduly dismissive of religion.

Summary of *RNCSE* 2014;34(1):7.1–7.3; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/162/440



Relentless Evolution by John N Thompson (Chicago: University of Chicago Press, 2013; 512 pages). *Relentless Evolution* "painstakingly details the case that evolutionary change happens rapidly, and that evolution profoundly affects interactions between species," writes reviewer **Christopher Irwin Smith.** The book offers numerous "examples where rapid evolutionary change has been observed, and presents a compelling case that these changes are important in a broad array of fields .... Although the book is primarily intended for an academic audience, educators and science enthusiasts will appreciate his review of the theory of natural selection and his extensive compilation of case studies in contemporary evolution."

Summary of *RNCSE* 2014;34(1):8.1–8.5; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/241/422



Microbes and Evolution: The World that Darwin Never Saw edited by Roberto Kolter and Stanley Maloy (Washington DC: ASM Press, 2012; 299 pages). "The book is divided up into thirty-nine short essays, written by leaders in the field," explains reviewer **Tara C Smith.** "However, this is not a textbook by any means; the essays are largely personal notes, reflecting on the writers' careers, how they ended up where they are, and the roles they and colleagues have played in advancing evolutionary theory via their study of microbes." Although the writing is uneven, Smith recommends the anthology both for biologists and for lay readers.

Summary of *RNCSE* 2014;34(1):9.1–9.2; the full text is available from: http://reports.ncse.com/index.php/rncse/article/view/204/429

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