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Letters

Louisiana: Teachers Scrap Recycled Curriculum

Molleen Matsumura

When the school board of Louisiana's Tangipahoa Parish decided not to adopt a creationist "Models of Origins Curriculum Guide" (see *NCSE Reports*, 13(4)/14(1), 4-5; 14(2)8), its sponsors didn't pick up their marbles and go home. Instead, like a traveling shell game, they revised the text slightly and moved to the next block, neighboring Livingston Parish.

This second attempt by the New Orleans-based Origins Resource Association (ORA) hasn't received an unqualified welcome by the local school board; one member commented, "When people don't adopt something, they come to Livingston Parish and say, 'You be the guinea pig.'" (*Denham Springs-Livingston Parish News*, June 4, 1995) Still, community support of creationism is strong enough that the curriculum has been given serious consideration. The ORA was told to present their curriculum and supporting materials to a committee of 25 teachers, including elemen-

tary teachers, and junior high and high school science teachers.

The leading critic of the ORA curriculum, NCSE member Dr. Barbara Forrest, was also told to present the committee with curriculum materials for teaching evolution, even after she pointed out that Louisiana's state curriculum guides already require the teaching of evolution. Both proponents and critics of the curriculum prepared presentations for a public hearing by the teachers' committee.

With NCSE's help, Forrest, a professor at Southeastern Louisiana University, collected exemplary, professionally pro-

duced curriculum materials that highlighted the amateurishness of the "Models of Origins Curriculum Guide" (MOCG). But she did far more than that. With the help of Dr. Nicole Berthelemy-Okazaki, another NCSE member who had opposed the MOCG in Tangipahoa Parish, Dr. Forrest wrote a thoroughly researched, comprehensive critique of the MOCG.

The critique shows how the MOCG plagiarized state curriculum documents and demolishes the ORA's claim that it is presenting "scientific, non-religious" materials. It reveals the lack of credentials of the MOCG's authors, its pedagogical

Louisiana continued on p. 7

Dept. of Education Guidelines: Good News/Bad News

Molleen Matsumura

Responding to President Clinton's directive to develop guidelines clarifying the relationship between religion and the schools (*NCSE Reports*, 15 (2) 5), Education Secretary Richard Riley has issued a statement on "Religious Expression in Public Schools." Riley sent the statement to school district superintendents across the country, with a cover letter expressing the hope that "... this information will provide useful

Good News continued on p. 11

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This issue of NCSE Reports is very much a joint effort. It is the last issue substantially put together by the former editor John Cole. It should be no surprise to anyone that John had to be replaced by two people. As your new editors, we hope to serve you, our readers and members and friends of NCSE, in the fine tradition that John continued from his predecessors. We are pleased that John will be continuing as an advisor and contributing editor. Look for features and news items that originate from John's unique connectedness and ability to find the story under the story.

This issue also bears a little of the imprint of the new editors, Andrew Petto and Laura McMahon, both currently in the Department of Anthropology at the University of Wisconsin in Madison. Both of us are interested in the issues of scientific literacy and the fundamental role of evolution in the biological sciences from the point of view of science educators and of public policy.

Andrew Petto (Anj) is currently doing research in the population ecology of the woolly spider monkey in Brazil (UW-Anthropology) and of nonmigratory Canada geese in south-central Wisconsin (WI Department of Natural Resources). He also teaches animal biology at the Madison Area Technical College. Prior to this year he served as associate director at the UW Center for Biology Education and has been a member of the NCSE Board of Directors since 1994. Anj has been active in support of NSCE and science education since the late 1970s when he studied with Laurie Godfrey at the University of Massachusetts in Amherst and helped with the Massachusetts Committee of Correspondence.

Laura McMahon is a Ph.D. student in Anthropology at the University of Wisconsin-Madison. Her research interests are in behavioral ecology, captive management and juvenile and adolescent behavior and development of non-human primates. Previously, Laura has assisted in developing three slide sets about primates for pre-col-

lege classrooms on the taxonomy, behavior, and conservation of the Primates. Her teaching includes UW Extension's Saturday Enrichment Program and the UW College for Kids—both programs aimed at children in middle school. Laura is also finishing her teaching license in biology for grades 6-12.

One of the features that we hope will serve our readers is "In the Classroom" (see p. 9). This feature will introduce important classroom issues in teaching and learning about evolutionary biology. "In the Classroom" will feature comments from the many teachers who contact NCSE on a regular basis to ask about strategies, ideas, and support for teaching evolutionary biology. We invite our readers' ideas, comments and reactions.

We will also welcome a new feature from Dr. Leslie Chan of the Anthropology Department at the University of Toronto. Leslie has agreed to explore some of the sites available on the World Wide Web and preview them for us. His reports will appear occasionally with an evaluation and helpful hints for accessing and using the information in these sites.

We are also pleased to acknowledge the help and enthusiasm of the Madison Area Technical College in providing NCSE with office space, equipment, and an email account. Please refer to the new address in the masthead and on the letters page when trying to reach NCSE Reports or Creation/Evolution.

Of course, with all that will be *new* with NCSE Reports, we will continue the helpful and informative features that our readers rely on—Keeping Tabs, Tracking, Resources, features and articles, News, and, definitely, your letters. We are looking forward to a great year with NCSE, and we hope that you keep sending us your contributions, leads, and ideas for publication. We also encourage you to tell us what we could do to provide for you a publication that serves you in the best way possible.

—Anj Petto and Laura McMahon

New, National Science Education Standards

Molleen Matsumura

On January 9, the National Research Council, an agency of the National Academy of Science, released its *National Science Education Standards*. The *Standards* open with a "Call to Action" declaring that they "spell out a vision of science education that will make science literacy for all a reality in the 21st century." The *Standards* are not another checklist of facts students should know; they are a comprehensive discussion of what is needed to make effective science education available to all students. In addition to content standards, topics discussed include standards for science teaching, professional development for teachers of science, assessment (of "both achievement and opportunity to learn science"), and science education programs and systems.

Acknowledging the traditional emphasis on local control, and explaining that support for national standards originated in 1989 when the National Governors Association called for national goals, the authors of the *Standards* offer their report as a way to "bring coordination, consistency and coherence" to local efforts. They also provide the consensus of thousands of teachers, scientists and community leaders as to what comprises true scientific literacy.

The content standards unequivocally emphasize evolution as an element of the "knowledge and understanding" that all students must

acquire. Standards for lower grade levels discuss subsidiary concepts such as "diversity and adaptation," leading to broader theoretical discussion of evolution and other "fundamental concepts" (such as the molecular basis of heredity and the interdependence of organisms) in grades 9-12.

What will the *National Science Education Standards* accomplish when it comes to preserving and improving education at the local level? The answer depends on the foresight and activism of concerned citizens like the members of NCSE. Creationists frequently criticize any national-level standards as an attack on state and local self-determination (see related article on the proposed science curriculum in Alabama on p. 5), and this tactic can be very effective. But, properly presented, the prestige and authority of documents like the *National Standards* can help citizens who care primarily about good education to understand that teaching about evolution is crucial.

If the *Standards* become a "hot topic" in your community, it's likely that many of the questions that will be asked will be appropriate and fair. Parents, teachers and administrators *should* be openly asking how suggested changes can be accomplished in practical fashion, and how they can be financed. But dire accusations of dictatorial government interference deserve a firm rebuttal with these facts:

- In 1989, the National Governors Association requested na-

tional standards to guide local decisions.

- Throughout the 1980s, detailed definitions of scientific literacy, and proposed curricula, were proposed by a great many organizations (the American Chemical Society, Biological Sciences Curriculum Study, the Education Development Center, Lawrence Hall of Science, National Science Resources Center, Technical Education Resources Center, American Association for the Advancement of Science, The National Research Center, and National Science Teachers Association).
- Partisan politics are not an issue: Both Republican and Democratic administrations have supported development of national standards.
- Because teachers from all over the country participated in their development, the *Standards* reflect diverse local circumstances.
- Scientists and engineers all over the country assured that the *Standards* accurately reflect scientific knowledge and process.

Copies of the National Science Education Standards may be ordered from NATIONAL ACADEMY PRESS, 2101 Constitution Avenue, NW, Lockbox 285, Washington, D.C. 20055. Individual copies are \$19.95, 2-9 copies are \$16.50 each, 10 or more copies are \$13.95 each. Phone orders (using MasterCard, Visa, or American Express) to 1-800-624-6242, or 202-334-3313 from within the Washington area; fax orders to 202-334-2451. Order online at America Online, or on the Internet at <http://www.nas.edu> ■

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The
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discussion of
what is
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make
effective
science
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available to
all students.
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Evangelist Ernest Angley Censors the Content of Programs on His TV Station

Page Stephens
South Shore Skeptics,
Cleveland, OH

Tom Feran, the television critic for *The Cleveland Plain Dealer*, reported (6/7/95 p. 7-E) that "Channel 55, an independent station based in Cuyahoga Falls, declined to broadcast "Mysteries of Mankind," a scheduled presentation of the weekly *World of National Geographic* series. All of the quotes that follow are taken from Feran's article although not necessarily in the original sequence.

"Program director Anne Keith said that the episode would have been dropped as a matter of course because it dealt with human evolution, adding that she would not comment further without seeing the program."

"Asked about policy on program content, Keith said 'It's just part of the family focus.' Channel 55 promotes itself with the slogan, 'We're Family.'"

"Several viewers who called the station about the program said that they were told that its content was judged unsuitable." The problem is that Channel 55 (WBNX) is owned and operated by Ernest Angley, a right-wing fundamentalist preacher with a worldwide following.

To quote Tom Feran once again: "Channel 55, while operating primarily as a commercial station, is run by Winston Broadcasting, which is affiliated with the charismatic fundamentalist Ernest Angley Ministries."

National Geographic did not challenge the station's decision to kill the broadcast. Spokesperson Ellen Stanley only said "It's up to them. . . . They're under no obligation to run every single film in the package." And they are not under any obligation to run any program that might expose their viewership to any ideas that contradict their own.

Channel 55 programs are mainly such things as reruns of *Gunsmoke*, *Gilligan's Island*, etc., and some programs I have never heard of except for the 90

and 9 Club which is Angley's own evangelical show.

There is nothing members of NCSE can do about the programming of a television station such as WBNX because it is privately owned and run according to A.J. Liebling's principle that freedom of the press belongs to the people who own the presses. I do think, however, that we can write to our local newspapers when such an event occurs and compliment people like Tom Feran for exposing their practices, or in case they have not done so, encourage them to do so in the future. ■

Jamaica Invites Bible-Science Association to Train Teachers

John Cole

Together with the Jamaica Teachers Association, the Jamaican Ministry of Education has invited the Bible-Science Association to teach the BSA view "in a totally secular setting" in high schools and at Monique Teachers College. In addition, according to a BSA fundraising letter, they will speak before seminarians and church youth groups.

BSA Director Greg Hull writes, "Wouldn't it be wonderful if we could do this kind of thing in America? . . . Here [Jamaica] we have the secular head of an educational system inviting us to teach Creationism . . . with his encouragement!"

To do this good work BSA urgently needs \$6000, if you are interested. Their fundraising letter notes their new international "Opportunities

. . . Opportunities . . . Opportunities" since the Iron Curtain came down. Hull notes that they have not been able to afford to take advantage of their "opportunities" fully, but his plea to supporters should jolt NCSE members. The creationist cause seems to be endorsed by yet another prominent Third World country's government. NCSE members with Jamaican connections might want to contact friends and colleagues there with a Paul Revere-like message: "The Yankees are coming! The Yankees are coming!"

The BSA is vague about timing and similar details about this post-summer plan whose most interesting aspect is the assertion that there is sponsorship from the Minister of Education and the Teachers Association. US Constitutional issues are not the point in Jamaica—just good, old bad science not being good! ■

News Briefs

Molleen Matsumura

Oregon: Creationism Continues to Simmer in the Pacific Northwest.

In Oregon, whenever a school board considering creationism requests advice from the state's Attorney General, they are told it's illegal. Then the same question pops up in another district. Now in *Reedsport*, another tactic is being tried—"equal time" for "another scientific point of view." Longtime readers of *NCSE Reports* can probably guess the next words—a local parent is advocating "intelligent design theory," a citizen's group is reviewing *Of Pandas and People*, and while the Superintendent is consulting an attorney, he also says he's "pretty excited about student opportunities to debate issues from all sides." (Eugene *Register-Guard*, September 26, 1995) Local activists have called NCSE for help. Stay tuned. . . .

Finds 38% of Americans Favor Teaching Creationism

In August, 1994, Public Agenda, an organization founded to conduct opinion research to educate the public and community leaders about public opinion, conducted a survey on expectations for public schools. In a survey of four groups—the general public, and parents of public school students subdivided into white, African-American, and "traditional Christian" groups—researchers asked interviewees their opinion of, "Teaching in science class that the biblical view of creation and Darwin's theory of evolution are equally valid." Responses were

similar for all groups: general public—38%, white parents—39%, African-American parents—40%, traditional Christians (described as either Biblical literalists or "born again")—37%. The significance is a bit ambiguous; the question could be interpreted as giving creationism as much time as evolution, or the reverse. But the similarities among all groups do seem to suggest that creationist arguments for "fairness" and "equal time" have been all too effective. (Source: *FIRST THINGS FIRST: What Americans Expect from the Public Schools*, New York: Public Agenda, 1994)

Update: Alabama, Round III

In previous issues we reported that advocates of creationism, led by the Eagle Forum, had significantly weakened Alabama's new science guidelines (*NCSE Reports*, [15] 1) and that the leading creationist spokesperson on this issue, Norris Anderson, had been appointed to the State Textbook Commission (*NCSE Reports*, [15] 2). The list of textbooks the Commission considered was not a problem in itself; of course, they were of varying quality in many respects, including their coverage of evolution, but all were standard publishing house offers; none was creationist. In fact, that's just what the Eagle Forum complained about at public hearings, citing the previously weakened curriculum guidelines as a reason for eliminating texts that didn't treat evolution as "only a theory." Although the deadline for textbook submissions had passed, Norris Anderson attempted to in-

troduce two creationist books, *Darwin on Trial* and *Of Pandas and People* [see "Watch for the Gish Wish List," p. 18].

When alert educators contacted NCSE, we sent them extensive information about both books. At press time, we learned that, in what may have been seen as a compromise, the Textbook Commission had voted not to adopt either creationist textbook, but had also rejected at least one book with particularly strong coverage of evolution. The School Board is slated to act on the Commission's recommendation. The Eagle Forum has begun another anti-evolution mail campaign, and NCSE has notified friends and members of the need to act. Whatever is decided will determine the content of science education in Alabama for the next seven years.

Ed: As this issue of NCSE Reports goes to press, new developments in Alabama are the subject of national press coverage. A more detailed, in-depth update will be included in the next issue of Reports. ■

News From AAAS

There will be a special issue of *SCIENCE* devoted to science education in Europe scheduled for publication on February 16, 1996. Readers may be interested in reviewing the articles in this special edition in anticipation of the Spring 1996 issue of *Creation/Evolution* which will feature articles on creationism outside the U.S.

Pat Buchanan Says Truth = Creationism

H. Page Stephens
South Shore Skeptics
Cleveland, OH
John Cole
Sunderland, MA

Campaigning for the Republican Presidential nomination in New Hampshire, Patrick Buchanan has come out in favor of requiring schools to teach the "truth." Buchanan reportedly (quoted in *The Nation* [June 26, p. 915] and daily newspapers) defines this as "creationism." He opposes teaching "theories" and endorses a hard line definition of what he calls "pro-family" positions.

Another GOP primary candidate, Allan Keyes, claims to be the staunchest supporter of the Christian Coalition and its positions. Former UN Ambassador Keyes has so far not replied to specific inquiries about his stance on teaching creationism (nor have the other candidates we have queried).

California Representative Robert Dornan is challenging Keyes and Buchanan for the mantle of "most unswerving conservative Christian ideologue." "B-1 Bob" openly accuses some opponents of treason and has been publicly rebuked on the House floor for his insulting personal comments. Dornan has not, to our knowledge, officially endorsed creationism education, although his embrace of the Christian Coalition agenda suggests that he would do so.

While none of these three are expected to seize the nomination

from Senator Robert Dole, Senator Phil Gramm, or perhaps other, somewhat more moderate candidates, their extreme stances have driven potentially more "centrist" candidates further into the arms of the Christian Coalition. Senator Gramm, for example, has been sending out fundraising letters alluding to the imminent "second coming" (of Christ)—he says, "And when He comes back, He's not going to need government's help to get the job done" (*New York Times* 9/23/95). (This is a theological and evangelical faction known as "premillennialism" dedicated to the idea that we are on the verge of "end times" and need to plan accordingly—or perhaps not bother to make any long-range plans, since the end is coming soon!) Senator Dole, asked by reporters if he supported the efforts by Christian Coalition members to insert creationism into the Manchester, NH public schools, replied awkwardly that he thought people were probably more interested in economic is-

sues, according to *Mother Jones Magazine* (November 1995).

Skeptics may question such latter-day conversions by people like Gramm and Dole, but these candidates are zealously courting Christian Coalition voters.

It remains to be seen how effective the counter-reaction may be, as the public tends to reject extreme positions, but the leadership of the Religious Right is now talking openly of opposing any GOP nominee who does not hew to their line on church/state and other issues—even if that would mean splitting the GOP vote in 1996.

Most of the GOP candidates spoke at an Iowa summer barbecue and sought votes from a straw poll. Senator Arlen Specter was overwhelmingly booed when he called for moderation on hot-button "social issues" designed to divide the electorate. Divisiveness seems to be in—with each agent confident he (sic) can ride the largest division to electoral victory.

As presidential and other political campaigns heat up, the Editors (and these reporters) would appreciate it if other members of the NCSE would send in reports of where other candidates stand on (or speak on) this issue so we can inform readers of their ideas on the subject. Remember also that many more creationists are running for school boards and other local positions and that our readers need to know about these campaigns as well as national ones. ■



Louisiana continued from p. 1

cal shortcomings, and numerous scientific inaccuracies. Dr. Forrest contacted scientists and educators around the country. Nobel chemist Dr. Ilya Prigogine responded with a letter stating, "Regarding the Models of Origins Curriculum Guide prepared by the Origins Resources Association, I would like to note in particular that my theories on the origin of order do not in any way find an exception to the second law of thermodynamics." Other scientists wrote to the school board, and Louisiana scientists and educators testified to the teachers' committee.

The teachers had clearly done their homework, too. When one teacher asked, "The mechanism of evolution is natural selection; what is the mechanism of intelligent design?" The ORA's Charles Voss answered, "You caught me off guard." After adding that the answer was too complex to be presented to the teachers, and being pressed, "Then how can we teach it?" Voss asked for more time and spent much of the rest of the meeting attempting to draft an answer.

At the end of the hearing, 23 of the 25 teachers voted to reject the

MOCG or any creationist curriculum; one voted "no" and one abstained. Further votes must be taken by a committee of the school board, and then the full board. If they accept the curriculum, they'll have a lot of explaining to do—beginning with telling their science teachers how to teach pseudoscience. Many district residents are hopeful, however, that the teachers' decision will strengthen the position of those board members who already have doubts.

Best of all, the experience seems to have been an inspiration to the teachers. After the hearing, a teacher was overheard commenting, "We'd better teach evolution really well. It's the only way we can prevent going through this all over again." That's good advice for us all!

[Ed: As NCSE Reports goes to press, the School Board committee that heard the teachers' recommendation has not taken action. Instead, the decision has been referred to the full Board.] ■

One-Third of Fairfax, VA School Board Candidates in Support of Creationism

Eugenie C. Scott

Fairfax County, Virginia is the 11th largest school district in the nation with 143,000 students. Bordering Washington, DC, the generally affluent district counts among its residents many government workers and decision-makers. According to a recent Washington Post Article, "at least" 12 of the 35 declared candidates for the seats on the county's school

board support the teaching of creationism in the schools (O'Harrow, "Creationism Issue Evolves in Fairfax School Election," Oct. 21, 1995). Candidates quoted in the article claimed "a large body of science backing up creationism" and protested children's growing up "with a Christian belief and then in the classroom, that belief is stepped on." NCSE will keep you posted. ■

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"We'd better teach evolution really well. It's the only way we can prevent going through this all over again."
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Dole on Vouchers

John Cole

According to a November 4th wire service report, Senator Robert Dole said in a speech at a Christian Academy in Cedar Rapids, IA, that federal parochial school funding was essential. He will soon introduce legislation to provide federal money in the form of vouchers which parents could use to spend as they wanted for education. He specifically said he

wanted to encourage attendance at church-sponsored schools by middle class students who could not otherwise afford them. In addition, he proposed direct aid to parochial schools in order to break down what he and other conservatives have called the "myth" of a wall between church and state being required by the Constitution. Dole's voucher and subsidy plan seems to go further than other announced

GOP plans, although details will not be available for a month or two.

According to the presidential candidate, the vouchers could also be used by parents who choose to do home schooling as an incentive to remove children from public schools. One of his goals, Dole said, was to cripple the left-wing teachers' unions by defunding the public schools which support them. ■

Darwin Under Attack

Rasoul Sorkabi
Department of Geology
Arizona State Univ., Tempe

Atacking Charles Darwin seems to be a re-emerging intellectual fashion. Two magazine articles critical of Darwin were published in the spring of 1995, one in the environmentalist magazine *Worldwatch* (March/April, 1995) and the other in the anti-environmentalist magazine, *21st Century Science & Technology* (Spring, 1995). Although the articles were written by two different authors, both applaud the work of Alexander von Humboldt, a famous German explorer and scientist of the 19th Century.

Carol Hugunin, identified as "a biologist on the staff of *21st Century*," praises Humboldt in her article, "It Is Time to Bury Darwin and Get on with Real Science." She writes that his was a "quest for knowledge of the harmonies of nature," and she contrasts this "continental" science approach with the "Darwinian." According to Hugunin, "continental science" was based, for example, on the concept of a directedness and purposefulness of evolution and that humans are both the pinnacle of

evolution and in the image of God. In contrast, she argues, "Darwinian science" was based on the concept of change and randomness in evolution, so that all species are "equal" and humans just another "beast" among them. To illustrate what she means by "Getting on with Real Science," Hugunin writes, "Life could not have possibly begun without bringing in miracles from the outside" (p. 40).

Aaron Sachs, identified as "a research associate at the Worldwatch Institute," writes in his article, "Humboldt's Legacy and the Restoration of Science" that Humboldt "struggled to recognize unity in the vast diversity of physical phenomena" (p. 30). Sachs appears to be unhappy about the 20th Century approach to science which seeks to contribute to our knowledge of the whole through careful study of the parts—an approach which certainly characterized the work of Charles Darwin.

The introductory paragraphs of these two articles make interesting reading. Sachs writes, "In its fascination with the pieces, modern science has distorted our view of the whole. More than a century after Darwin set the trend in motion, our mania for specialization

is poisoning our economies and the environment. But it was one of Darwin's mentors [Humboldt] who achieved the integrated vision we now need" (p. 28). In a similar vein, Hugunin writes, "For more than a century, Darwin has dominated the biological sciences, but his hypothesis for the evolution of life does not cohere with natural history and leads to a philosophical morass" (p. 32).

We need to understand Alexander von Humboldt's ideas and scientific legacy, since he obviously had a significant effect on 19th (and now 20th) Century natural philosophy. Perhaps, we have an even greater need of an integrated vision or holistic view of science to grasp the wider picture as 20th Century science becomes more specialized and less accessible to the general public. However, reading these articles gives the impression that Darwin is misrepresented in order to promote the authors' particular ideologies. What is most remarkable, perhaps, is that the two are using Humboldt to promote contradictory conclusions. It reminds us that Darwin's work was used as conclusive by both Marxists and capitalists that their economic systems were more "natural." But more important, Darwin's work, and that of any other scientists, needs to be evaluated in the context of its scientific premises and predictions, not on how well it serves ideology.

[Ed: For readers interested in the original articles, see Aaron Sachs, *Humboldt's Legacy and the Restoration of Science*, *Worldwatch* 8(2):28-38; 1995. Carol Hugunin, *It Is Time to Bury Darwin and Get on with Real Science*, *21st Century Science & Technology* 8(1): 32-45, 1995.] ■



Customized Registration Plate

Courtesy of Dr. Richard Firenze, State University of New York, Binghamton

Erasmus Darwin

John Cole

Creationists demonize Charles Darwin's grandfather Erasmus as a founder of evolutionary thought, and some evolutionists have indeed cited him as a major player in the development of theory. In fact, Erasmus Darwin strikes me as more of a man of his times—a period when intellectuals were enthused with the idea and prospect of change. His poetry and other writings reflect this tenor, but they lack his grandson's modern scientific sensibility.

Several of Erasmus Darwin's writings bear on the topic, at least obliquely. His *Zoomania* (Third Edition 1801) may be most prominent. In Part 1, Chapter 39, Section 4.8 he wrote:

From thus meditating on the great similarity of the structure of the warm-blooded animals, and at the same time of the great changes they undergo both before and after their nativity; and by considering in how minute a portion of time many of the changes of animals above described have been produced; would it be too bold to imagine, that in the great length of time, since the earth began to exist, perhaps millions of ages before the commencement of the history of mankind, would it be too bold to imagine, that all warm-blooded animals have arisen from one living filament, which THE GREAT FIRST CAUSE endowed with animality, with the power of acquiring new parts, attended with new propensities, directed by ir-

ritations, sensations, volitions, and associations; and thus possessing the faculty of continuing to improve by its own inherent activity, and of delivering down those improvements by generation to its posterity, world without end? (C.L.Harris, 1981. *Evolution and Genesis*, Albany: SUNY Press, p. 138.)

This is not a proposal of evolutionary mechanisms or rates or causes or explanations, as are Charles's ideas. However, it fits nicely within the Enlightenment idea of a Great

Chain of Being, bridging into a general "Lamarckian" idea that change happens and is hereditary. Perhaps slightly precocious for its day, it also illuminates the family culture into which Charles Darwin was born. ■

CORRECTION

In *Creation/Evolution* issue 35, author Lawrence S. Lerner's institution was incorrectly cited. Dr. Lerner teaches physics at Long Beach State University.

IN THE CLASSROOM

On Science Teaching . . .

Gene Rostker, a science teacher at Grady High School in Brooklyn, NY, wrote in the March 20, 1995 *New York Teacher*, p. 12, "[I]t is not the desire to inject religion into the science curriculum that motivates most religionists to object to the teaching of evolution. It is, rather, opposition to teaching the theory of evolution to impressionable elementary and high school students as though it were unassailable fact. This is especially remarkable because, by its very nature, evolution is among the weakest of scientific theories. . . . If scientists sometimes have difficulty establishing with certainty what is taking place before their eyes in the laboratory, what can be said of the arrogance of those who claim certainty about the origins of life and the process by which it came to exist in its present form? . . . Certainty simply does not exist with respect to scientific theories and it is not the function of the science curriculum to tell students...what to believe. It is the function of that curriculum to expose students to the scientific

process and to describe and explain the current state of scientific knowledge. . . . Theories of creationism have no place in the science curriculum, but statements of a dogmatic nature concerning evolution likewise have no place. In other words, teach the theory of evolution exclusively since science recognizes no other. But teach it as the theory it is, with opinions of truthfulness eliminated."

[Ed: Should we tell students that scientific theories are "true?" What does it mean if we say a scientific theory is "true?" Can we reconcile the idea of "truthfulness" with the requirement that all our scientific constructs must be falsifiable? If, indeed, "science recognizes no other" alternative explanation for the observed patterns of variation and adaptation in living and fossil species, then what should we be telling our impressionable students about evolutionary explanations of these patterns?] ■

TV: Dumb and Dumber?

Robert Mac West

ABC Television recently announced some changes in its Saturday morning programming. In a masterpiece of public relations, a successful animated science program, *CRO*, was replaced by a cartoon version of the mindless movie, *Dumb and Dumber*.

The Children's Television Workshop, which used *CRO* to penetrate the commercial TV networks, now is shopping the program (without a taker, as of mid-March 1995) to various cable networks. The National Science Foundation's Informal Science Education program provided major funding for *CRO*; the possibility of future funding clearly is in jeopardy as a result of ABC's pulling the plug.

In its second year on ABC, *CRO* had the highest rating of all shows in its time slot, and evaluations by the Children's Television Workshop indicate that it is attracting high numbers of girls. Its six-to-eleven-year-old audience surpasses those for *Beakman's World* and *Bill Nye—The Science Guy*; in addition, 22 percent of viewing households are African American (double the percentage of the American population at large). ABC contends that *CRO* "was not showing growth" (*Science* 3 Mar 1995, p. 1269).

The program is based on David McCauley's book *How Things Work*. It takes place during the Stone Age, and features a Cro-Magnon boy who discovers and uses the laws of science to solve various problems (such as how to punch a window into a cave dwelling, how to make a boat,

how to move a statue up hill). *CRO* is accompanied by a cast of Neanderthals and varicolored woolly mammoths.

Although the dropping of *CRO* and the addition of *Dumb and Dumber* were announced simultaneously (Washington Post 7 Mar), ABC stressed that the latter is not replacing *CRO*; however, it apparently will occupy the same

time slot. . . . ABC is adding *The New Adventures of Madeleine* to its lineup of purportedly educational programming.

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Mac West is an NCSE Director and the Publisher of The Informal Science Review, Washington, DC ■

Research Shows That Little Genetic Change is Needed for the Evolution of a New Species

Laura L. McMahon

For decades, evolutionary biologists have pondered and debated the question of how much genetic change constitutes the evolution of a new species. On September 5, 1995, the *New York Times* reported that Dr. Toby Bradshaw, Dr. Sibylle Wilbert, Kevin Otto and Dr. Douglas Schemske have published data in the journal *Nature* which may help to answer that question. The authors examined the DNA of two species of monkey flower which have very different flower morphologies, and therefore presumably different pollination strategies.

The two species of monkey flower that the researchers studied were Lewis's monkey flower and the cardinal monkey flower, both found in the western United States. Lewis's monkey flower has a pale pink flower with an abundance of nectar and a landing platform that is usually associated with bumblebee-type pollinators, while the cardinal

monkey flower has a more diluted nectar located in a well in a red flower, characteristic of hummingbird pollinators. The researchers found that for each of eight qualities of the flower (eg. color, shape, nectar) there was at least one region of the genome that appeared to have a strong effect on the resulting flower. The authors stated that each region most likely contains a single responsible gene. These very small changes in the wild-flower's genome have resulted in large differences in morphology and ecological strategies.

However, the limitations of evolutionary reconstructions keep the researchers from any definitive answers about the evolution of these two species at this time. They now know what genetic changes have occurred between the two species, but they cannot say what evolutionary pressures drove that evolution. Dr. Schemske said that the new work should be thought of as "a small piece of mortar in a very large brick wall."

NCSE's Past President Honored

Molleen Matsumura

NCSE's past-president Jack Friedman was recently honored for a life time of achievement in science education when he received the "Professional Excellence Award" of the Adjunct Faculty Association of Nassau Community College on May 20, 1995. Among the accomplishments the award recognized were more than thirty years of teaching science in high schools and community colleges; writing for Biological Sciences Curriculum Study, whose biology textbooks pioneered in emphasizing evolution as a theme; and service on a National Science Foundation grant Committee. The proof of

the teaching is in the work of the student, and Friedman has also been the Teacher-Sponsor of a Westinghouse Awardee. The "Professional Excellence Award" recognizes not only past achievements, but continued dedication to science education. NCSE is fortunate that Jack Friedman shows his dedication by continuing to serve on our Board of Directors. Jack is a master at finding new opportunities to contribute to our work and introduce us to other people working to promote good science education. ■

New NCSE Liaison in New Jersey

Richard Trott, a long-time member of NCSE and contributor to *NCSE Reports* and *Creation/Evolution*, has agreed to represent NCSE in New Jersey—and none too soon. Not only will the Institute for Creation Research be bringing its "Back to Genesis" lecture series to New Jersey this November, but Phillip Johnson, author of *Darwin on Trial* will be visiting as part of a book tour for his latest work. A flurry of creationist activity is certain to follow. Richard is looking forward to gathering with other NCSE members to defend good science education. Letter-writing party, anyone?

Good News continued from p. 1

guidance to educators, parents and students. . . ."

The statement concisely discusses First Amendment Law and the Equal Access act, explaining, for example, that while, "Students may also speak to, and attempt to persuade their peers about religious topics . . . [s]chool officials, however, should intercede to stop student speech that constitutes harassment. . . ." However, when explaining the limits on "teaching about religion," the Statement of Principles only covers literature, history and school holidays. What about science instruction?

First, the good news: The Statement says nothing about the evolution/creation controversy. Given this silence, district superintendents, and school district attorneys, must rely on existing court deci-

sions which have uniformly found that creationism violates the First Amendment. According to case law, creationism is religion, not science, and the Department of Education's Statement does insist that "Public schools may not provide religious instruction. . . ."

Now, the bad news: The Statement says nothing about the evolution/creation controversy. It would have been immeasurably valuable if every school superintendent, nationwide, had received a document *explicitly stating* that teaching "creation science" as factual is illegal. For some it would have corrected personal misconceptions; for others, it would have been a useful tool in responding to creationist pressure groups. Instead, school administrators and teachers will have to read between the lines and do the research themselves.

There is one more bit of good news for NCSE members. If you need to explain how teaching creationism violates the First Amendment, you don't have to go to a law library and rummage through the stacks doing the legal research; NCSE has done it for you. If anyone advocates creationism in your school district, you can tell them confidently both that it's unscientific, and that it's illegal. Then call us up—we'll back you up.

Readers who would like to obtain copies of the Department of Education's statement, "Religious Expression in the Public Schools," can call 1-800-USA-LEARN. (While this number is one digit longer than ordinary phone numbers, you do have to dial the "n" to complete your telephone connection). ■

• RESOURCES •

Books

LIST MEMBERS			LIST MEMBERS		
Berra, <i>Evolution and the Myth of Creationism</i>	8.95	7.25	McGowan, <i>In the Beginning... A Scientist Shows Why the Creationists Are Wrong</i>	19.95	16.00
Bowler, <i>The Non-Darwinian Revolution</i>	12.95	10.35	McIver, <i>Anti-Evolution, An Annotated Bibliography</i>	15.95	12.75
Cartmill, <i>A View to a Death in the Morning</i>	*29.95	23.95	McKown, <i>The Mythmaker's Magic</i>	25.95	20.75
Clark, <i>Evolution and Cultural Literacy</i>	7.00	5.60	Miller & Van Loon, <i>Darwin for Beginners</i>	9.00	7.00
Dalrymple, <i>The Age of the Earth</i>	24.95	19.95	Moore, <i>Science as a Way of Knowing: The Foundations of Modern Biology</i>	32.50	26.00
Dawkins, <i>The Blind Watchmaker</i>	10.95	9.50	Nesse & Williams, <i>Why We Get Sick</i>	*24.00	19.25
Dawkins, <i>River Out of Eden</i>	*20.00	16.00	Newell, <i>Creation and Evolution: Myth or Reality?</i>	12.95	10.35
Deford, <i>A Reparation: Universal Gravitation a Universal Fake</i>	6.00	4.80	SPECIAL Quammen, <i>The Flight of the Iguana</i>	*19.95	9.00
Dennett, <i>Darwin's Dangerous Idea</i>	*30.00	24.95	Raup, <i>Extinction: Bad Genes or Bad Luck?</i>	10.95	8.75
Desmond & Moore, <i>Darwin. The Life of a Tormented Evolutionist</i>	*34.00	27.25	Robinson & Tiger, eds. <i>Man and Beast Revisited</i>	17.95	14.50
Diamond, <i>The Third Chimpanzee</i>	13.00	10.40	Sagan & Druyan, <i>Shadows of Forgotten Ancestors</i>	*23.00	18.50
Ecker, <i>Evolutionary Tales</i>	14.95	12.00	NEW Shreeve, <i>The Neanderthal Enigma</i>	*25.00	20.00
Eldredge, <i>The Miner's Canary</i>	*20.00	16.00	Strahler, <i>Science and Earth History, the Evolution/Creation Controversy</i>	*51.95	41.50
Eve and Harrold, <i>The Creationist Movement in Modern America</i>	13.95	11.15	Strahler, <i>Understanding Science</i>	*27.95	22.25
Godfrey, <i>Scientists Confront Creationism</i>	11.95	9.50	Tattersall, <i>The Fossil Trail</i>	*25.00	20.00
Goldsmith, <i>The Biological Roots of Human Nature</i>	16.95	13.50	Tattersall, <i>The Human Odyssey</i>	*27.50	22.00
Gould, ed. <i>The Book of Life</i>	40.00	32.00	NEW Thomson, <i>H.M.S. Beagle: The Story of Darwin's Ship</i>	*25.00	20.00
Gould, <i>Bully for Brontosaurus</i>	11.95	9.55	Toumey, <i>God's Own Scientists</i>	16.00	13.00
Gould, <i>Ever Since Darwin</i>	10.95	8.75	Webb, <i>The Evolution Controversy in America</i>	*34.95	28.00
Gould, <i>The Panda's Thumb</i>	10.95	8.75	Weiner, <i>The Beak of the Finch: The Story of Evolution in Our Times</i>	13.00	10.50
Gould, <i>Hen's Teeth and Horse's Toes</i>	10.95	9.50	NEW Whitfield, <i>From So Simple a Beginning: The Book of Evolution</i>	19.95	15.95
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Gould, <i>Wonderful Life</i>	10.95	8.75	Kids' Books		
Gould, <i>8 Little Piggies</i>	10.95	8.75	Barker, <i>Maybe Yes, Maybe No</i>	12.95	10.25
Gross & Levitt, <i>Higher Superstition</i>	25.95	23.95	Cole, <i>Evolution</i>	4.50	3.60
NEW Harrold & Eve, <i>Cult Archaeology and Creationism</i>	13.95	11.25	Jackson, <i>The Tree of Life</i>	*14.95	11.95
Holton, <i>Nonscience and Anti-science</i>	14.95	11.95	Peters, <i>From the Beginning, The Story of Human Evolution</i>	*14.95	11.95
Howells, <i>Getting Here</i>	19.95	15.95	Stein, <i>The Evolution Book</i>	12.95	10.35
Jones et al. <i>The Cambridge Encyclopedia of Human Evolution</i>	34.95	28.00	Stein, <i>The Science Book</i>	9.95	7.95
Kauffman, <i>The Origins of Order</i>	33.75	27.00	*cloth		
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Matson & Troll, <i>Planet Ocean</i>	19.95	15.96			
Maynard Smith, <i>Did Darwin Get it Right?</i>	18.95	16.25			
Mayr, <i>One Long Argument: Charles Darwin and the Genesis of Evolutionary Thought</i>	14.00	11.25			
McCollister, ed., <i>Voices for Evolution</i>	10.00	8.00			
McGowan, <i>Dinosaurs, Spitfires and Sea Dragons</i>	14.95	12.00			

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1987 Annual Meeting, Full Symposium	2 tapes	10.00
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with presentations by Scott, Moore, Skoog, Dalrymple, Beard, and Petit.		

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1976 K. Mather, <i>The Scopes Trial</i>	1 tape	4.00
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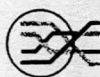
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Listing items here or offering to distribute them does not imply NCSE endorsement; annotations are by the editor or various contributors.

These listings often include items available from NCSE, but the list changes with each issue. Consult back issues for other resources—they are still in our files and available for distribution even if we can't keep listing them!

Averof, M. and M. Akam. *Hox* genes and the diversification of insect and crustacean body plans. *Nature* (August 3, 1995) 376:420-423.

Bohler, C., P. E. Nielsen and L. E. Orgel. Template switching between PNA and RNA oligonucleotides. *Nature* (August 17, 1995) 376:578-581. See also: Piccirilli, J. A. RNA seeks its maker. *Nature* (August 17, 1995) 376:548-549. The precursor of the RNA world may have been PNA (Peptide nucleic acid).

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Bower, B. Pruning the Family Tree. *Science News* (September 2,

1995) 148(10):154-155. Revision of the fossil species of hominids.

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Carroll, S. B. Homeotic genes and the evolution of arthropods and chordates. *Nature* (August 10, 1995) 376:479-485.

Videotapes of "In the Beginning"

Videotapes of the PBS two-part special "In the Beginning" have been almost completely sold out since we reported their availability in the last issue (*NCSE Reports*, 15:2, p.4). Those remaining tapes still available at press time are being sold for educational use only; cost is \$119.95, plus \$6.50 shipping, for the two hour set. Orders must be on a purchase-order form, and/or accompanied by a business check. Use order number IBCC000. Order address is PBS Video; P.O. Box 791; Alexandria, VA 22313-0791; Attention: Mike Wolf. To order by phone, call 1 (800) 343-4727.

Clarke, R. J. and P. V. Tobias. Sterkfontein Member 2 Foot Bones of the Oldest South African Hominid. *Science* (July 28, 1995) 269:521-524. See also: Oliwenstein, L. New Foot Steps Into Walking Debate. *Science* (July 28, 1995) 269: 476-477. Beard-sley, T. These Feet Were Made for Walking—and? *Scientific American* (October, 1995) 273(4):36-37; Bower, B. Hominid bones show strides toward walking. *Science News* (July 29, 1995) 148(5):71.

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RNA enzymes produced by test-tube evolution.

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Fletcher, C. A Garden of Mutants. *Discover* (August, 1995) 16(8):48-53. Research on the origin of flowers.

Holmes, B. Message in a Genome? *New Scientist* (August 12, 1995) 147(1990):30-33. Concerns the nature of "junk" DNA.

Hou, L-h, Z. Zhou, L. D. Martin and A. Feduccia. A beaked bird from the Jurassic of China. *Nature* (October 19, 1995) 377:616-618.

Hunter, C. P. and C. Kenyon. Specification of anteroposterior cell fates in *Caenorhabditis elegans* by *Drosophila Hox* proteins. *Nature* (September 12, 1995) 377:229-232.

Krumenaker, L. Rhythm Section: The pulse of planetary cycles, recorded deep in New Jersey shale. The *Sciences* (November/December, 1995) 14-17. Milankovitch climatic cycles are detected in the Newark Basin deposits representing 25 million years of continuous deposition.

Lipkin, R. Early Earth may have had two key RNA bases. *Science News* (July 1, 1995) 148(1):7.

Logan, G.A., J. M. Hayes, G. B. Hieshima and R. E. Summons. Terminal Proterozoic reorganization of biogeochemical cycles. *Nature* (July 6, 1995) 376:53-56. See also: Walter, M. Faecal pellets in world events. *Nature* (July 6, 1995)

World Wide Web Resources

Just published on the WWW (and never before, anywhere)—the journal of Syms Covington, Darwin's assistant aboard the Beagle: <http://www.asap.unimelb.edu.au/bsparcs/covington/contents.html>

The Arkansas federal court decision on scientific creationism in the classroom is available online at: http://cns-web.bu.edu/pub/dorman/McLean_vs_Arkansas.html

For access to many PBS programs and connections to a number of other science-related resources, try: <http://www.pbs.org>

The alt.talk.origins group has a homepage with lots of connections: <http://rumba.ics.uci.edu:8080/origins/other-links.html>

376:16-17. As a result of the evolution of unidirectional guts and waste matter packed into fecal pellets that sank to the bottom of the sea rapidly, oxygen built up in the overlying waters contributing to the Cambrian radiation.

Marden, J.H. How Insects Learned to Fly. The *Sciences* (November/December, 1995) 26-30. See also: Marden, J.H. and M.G. Kramer. Locomotor performance of insects with rudimentary wings. *Nature* (September 28, 1995) 377:332-334.

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Monastersky, R. Eruptions Spark Explosions of Life. *Science News* (July 1, 1995) 148(1):4.

Monastersky, R. The Edicaran Enigma: Were the oldest animals actually lichens? *Science News* (July 8, 1995) 148(2):28-30.

Monastersky, R. Birds: Lightweights in the genetic sense. *Science News* (October 7, 1995) 148(15):229. See also: Hughes, A.L. and M.K. Hughes. Small genomes for better flyers. *Nature* (October 5, 1995) 377:391. Birds have smaller introns in their structural genes.

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Renne, P. R., Z. Zichao, M. A. Richards, M. T. Black and A. R. Basu. Synchrony and Causal Relations Between Permian-Triassic Boundary Crises and Siberian Flood Volcanism. *Science* (September 8, 1995) 269:1413-1416. See also: Kerr, R. A. A Volcanic Crisis for Ancient Life? *Science* (October 6, 1995) 270:27-28.

Robertson, M. P. and S. L. Miller. Prebiotic 5-Substituted Uracils and a Primitive Genetic Code. *Science* (June 30, 1995) 268:1832.

Root-Bernstein, R. S. Darwin's Rib. *Discover* (September, 1995)

Resources continued on p1 16

NEW BOOKS

The Neanderthal Enigma: Solving the Mystery of Modern Human Origins

James Shreeve

What is the relationship of Neanderthals to modern humans? If we lived at the same time, in the same places, were we the same species? Shreeve suggests reproductive behavior and social organization hold the key to unlock these mysteries. Popularly written, but accurate scientifically.

From So Simple a Beginning: The Book of Evolution

Phillip Whitfield

A large-format, beautifully (and abundantly) illustrated book that

explains evolution from genetic, fossil, and geological perspectives. An excellent general introduction for nonspecialists, at a great price.

Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past

Francis B. Harrold
and Raymond A. Eve

Now in Paperback! New chapters (including one on multicultural pseudoscience) have been added to this classic work which is also now more affordable. A must for every student of the creation/evolution controversy! ■

Resources continued from p. 15

16(9):38-41. A persistent creationist myth about the number of ribs in humans.

Roush, W. Embryos Travel Forking Path As They Tell Left From Right. *Science* (September 15, 1995) 269:1514-1516. See also: Wolpert, L. and N. A. Brown. Hedgehog keeps to the left. *Nature* (September 14, 1995) 377:103-104.

Simons, E. L. Skulls and Anterior Teeth of *Catopithecus* (Primates: Anthroidea) from the Eocene and Anthropoid Origins. *Science* (June 30, 1995) 268:1885-1888. See also: Culotta, E. New Finds Rekindle debate Over Anthropoid Origins. *Science* (June 30, 1995) 268:1851. What was the common ancestor of apes, monkeys and humans?

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Travis, J. The Ghost of Geoffroy Saint-Hilaire. *Science News* (September 30, 1995) 148(14):216-218. See also: Hogan, B. L. Upside-down ideas vindicated. *Nature* (July 20, 1995) 376:210-211; Holley, S. A., P.D. Jackson, Y. Sasai, B. Lu, E. M. De Robertis, F. M. Hoffman and E. L. Ferguson. A conserved system for dorsal-ventral patterning in insects and vertebrates involving *sog* and *chordin*. *Nature* (July 20, 1995) 376:249-253; Gonzalez-Reyes, A., H. Elliott and D. St Johnston. Polarization of both major body axes in *Drosophila* by *gurken-torpedo* signalling. *Nature*

REVIEW

A NOTEWORTHY NEW BOOK, especially for readers with a bent toward history of science, is *HMS Beagle: The Story of Darwin's Ship*, by Keith Stewart Thomson (Norton, 1995). This is the first full biography of the ship from its construction to its modification under Captain Fitzroy's scientific command, through its three historic voyages, to its eventual decommission and destruction. Along the way Thomson recounts the details of naval architecture, Fitzroy's exacting chronometric and geographic standards (he was a founder of the science of meteorology), why Darwin was on the *Beagle* in the first place, and the scientific value of its collections. The people, events, encounters, geography, and naval politics are described in Thomson's usual engaging and perceptive style. The book got a well-deserved round of praise from *Nature* on its publication several months ago. This one is well worth adding to the library. —Kevin Padian

ture (June 22, 1995) 375:654-658. New genetic findings support the idea that vertebrates are upside-down invertebrates.

Zimmer, C. First Cell. *Discover* (November, 1995) 16(11):70-78. Origin of the cell membrane.

Zimmer, C. The Descent of Birds. *Discover* (October, 1995) 16(10):40-41. Did modern birds spread after the Cretaceous extinction? ■

Dr. Knowzalot Answers Questions

Q: How can organized structure appear without an “organizer” or designer?

A: “Argument from Design” is a current hot topic among creationists. Although it dates to pre-Darwinian times; it has attracted major attention to law professor Phillip Johnson, who evades the title of “creationist” while advancing the “design” argument. There is probably no refutation of the idea that an all-powerful God could perform miracles—including the miracle of making evolution His or Her mechanism of creation and on-going change. However, the very nature of chemical elements and compounds dictates patterns and structure. For example, setting a match to a hydrogen balloon (or the Hindenburg Zeppelin!) produces water—the result of mixing oxygen and hydrogen in the presence of a spark or heat. Chemical compounds interact with others because of their very structures, and this allows seeming orderliness to appear out of disorder. A great example is ice—which forms liquid water

into radically re-“designed” and more complex ice crystals. Chemical reactions of all sorts rely upon the “shapes” of interacting molecules. Do they have the proper predilection to form compounds based upon their structures? YES—unless one concedes that there are no laws of chemistry and predictable patterns of recombinations given changed circumstances such as different temperatures, volumes, available catalysts, etc. To paraphrase a bumpersticker, “complexity happens.”

Q: I’m going into business, working on my M.B.A. I hear a lot about “survival of the fittest” and how it applies to business competition, survival of companies, etc. Can you comment?

A: I think there IS such a thing as cultural evolution, and it may have some clear parallel with biological evolution, but it is not the same thing. Economies or businesses don’t “mutate,” and the genetic analogy is just a metaphor which can be useful in an analysis but which is not justified by Darwinian

evolution. Early 20th Century businessmen, as well as Marxist-Leninists, argued that evolution justified their often opposite agendas. Current understanding of “fitness” reduces the idea to differential reproductive success—and the success of offspring to reproduce adequately in the natural environment. Applications to business issues are analogies; Darwinism does not justify or explain robber barons or Mother Theresa thriving or vanquishing rivals! Businesses do not survive or fail because of “natural selection.”

Q: Am I descended from monkeys?

A: While I do not know you personally and could be wrong, No. But you and I and monkeys share a distant common ancestry in the gene pool of early primates or proto-primates. We humans share closer common ancestry with apes (chimps and gorillas, most closely), and there seems to be some validity to the idea that we ARE another kind of ape.

Office Biz

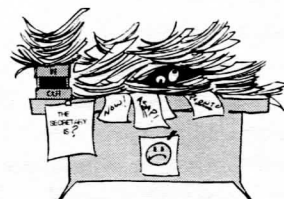
Erik Wheaton

Many people who call and or come to visit the NCSE are amazed at just how small this organization really is. There are only 2 full time employees (Executive Director and Office Manager) and 3 part time staff (bookkeeper, book orders, and Network Project Director) to do everything here in Cali-

fornia, with the help of our over-worked newsletter/journal editors in Wisconsin.

To help direct you to the right person, here’s who to call: for memberships, subscriptions, donations—ask for Erik, Tuesday through Friday (and most Saturday mornings if you care to call on the weekend); for book or-

ders—ask for Teresa (as she is a student, her hours and days vary). For help with creationist incidents, general information, press releases, or research—ask for Molleen, Monday through Thursday. ■





Watch for the GISH WISH LIST

Molleen Matsumura

In the tide of publications constantly flowing from the Institute for Creation Research, the leading "young-earth" creationist organization, ICR vice-president Duane Gish's short book, *Teaching Creationism in the Public Schools* may be the most significant entry in 1995. Many creationist editorials appearing around the country have clearly borrowed from this source, and creationist activists are following Gish's advice.

In Alabama, for example, books that Gish lists among "Suggestions for Further Reading" were proposed for consideration by the state textbook adaptation committee [see related story on p. 5, "Update: Alabama, Round III"]. This list is further divided into lists of books "Suitable for Private Schools and the General Public" and those "Suitable for Use in the Public Schools." NCSE members will want to watch for titles on the second "wish list" when texts or supplemental books are proposed to state or local committees.

It also helps to distribute copies of the list to administrators and textbook reviewers who are supporting of education. Then, when any of these books are proposed for adoption, NCSE can provide critical reviews. For example, in Alabama, Dr. John Frandsen gave copies of the list to a number of administrators, and when one member of the state textbook committee proposed two books from Gish's list, another member

recognized the titles and called NCSE for information.

Because the public school book list is less obviously creationist or religious in orientation, it is especially important to make critical reviews available. Proposing these books follows the strategy of presenting "arguments against evolution," which doesn't obviously advocate creationism, but tries to create the impression that evolutionary theory is shaky. In fact, the Løvtrup and Hoyle books do not attack evolution at all, but argue that natural selection is not its primary mechanism. Presenting such books is an attempt to make it seem to the readers—high school students—that evolution itself is a dubious proposition.

However, the scathing reviews of these books should leave no doubt in the minds of any responsible textbook reviewer. One review reports a creationist's complaint that his work had been plagiarized in *The Neck of the Giraffe*, whose

author also believes in Atlantis and pyramidology. *Kirkus Reviews* (50[Aug. 1, 1982]: 919) complains that in *Evolution from Space*, "Hoyle and Wickramasinghe adduce no evidence to support their theory—and push their attack on evolution beyond all reason. (e.g., the lack of intermediate fossil forms is . . . made possible by random DNA fallout from the skies.)" Look for these books on suggested reading lists near you. . . .

1. Henry Morris and Gary Parker. *What is Creation Science?*
2. Michael Denton. *Evolution: A Theory in Crisis*
3. Søren Løvtrup. *Darwinism: The Refutation of a Myth.*
4. Percival Davis and Dean Kenyon. *Of Pandas and People.*
5. Charles Thaxton, Walter Bradley, Roger Olsen. *The Mystery of Life's Origins.*
6. Francis Hitching. *The Neck of the Giraffe.*
7. Norman Macbeth. *Darwin Retried.*
8. Phillip Johnson. *Darwin on Trial.*
9. Sir Fred Hoyle and Chandra Wickramasinghe. *Evolution from Space*

Watch for these books, and if any of them should appear or be suggested in your schools, school board meetings, PTOs, or even in

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"Young-Earth Creationist Bibliography" Published by ICR

John Cole

Impact #269, November 1995, consists entirely of a bibliography compiled by ICR Director Henry M. Morris, soon-to-be-former President of the Institute for Creation Research in El Cajon, CA. This 4-page flyer, presumably the best list of references available, is remarkable in that every item is published by a creationist or religious publisher! There is not a single refereed article from a scientific journal! No books from secular presses! The only possible exceptions to this

are a couple of items which do not indicate the publisher and Wendell Bird's mammoth *Origin of Species Revisited* from Thomas Nelson Co. Oddly, Morris intentionally limits his selection to items "of 75 or more pages in length." Since research fairly seldom shows up in book form out of the blue, unlike creationist tomes, this exclusion of journal articles would seem to mask what other scholars have found—that "scientific" creationists do not publish in refereed journals except in brief messages, letters to editors, etc. Morris hedges by

writing that the biblio is "incomplete," and he does not want to vouch for the relative merits of different titles, but I would assume he thinks these books are the cream of the crop. The ICR sells single copies of *Impact* for ten cents; order from ICR, PO Box 2667, El Cajon, CA 93021. Better still, write the same address and along with your dime, ask to be added to the mailing list for their monthly *Acts and Facts* and its various inserts—it's free, and it lets people see directly what the ICR is doing—or not doing. ■

Ussher-ing In the Creation

Jim Shea
Editor, *Journal of Geological Education*

Archbishop Ussher, the primate of Ireland, and his English colleague John Lightfoot added up the genealogies listed in the Old Testament, finding that when all the "begats"

and ages of people were tallied, the Earth was created in 4004 BC. This has become a dogma of Biblical literalism (although some latterday "scientific" creationists like to allow another few thousand years). One of the central points of an article by WR Brice (1982) on Ussher in the *Journal of Geological Education* (1982;

38:18-19) is that most accounts get it wrong. [Ed: *They think it is Oct. 23, 4004 B.C.*] Brice says that, in his "Annales," Ussher puts the beginning of creation "upon the entrance of the night preceding the twenty-third day of October in the year of the Julian calendar, 710." This translates to Saturday evening, 22 October, whenever the "entrance of the night" is. Anyone seriously interested in this matter would do well to read the Brice article in its entirety in *JGE*, "Bishop Ussher, John Lightfoot, and Creation."

[Ed: *The most commonly reported date of October 23 (and at 9 a.m.) has long been associated with a possibly apocryphal explanation that this was the traditional date and time of the beginning of the Oxford and Cambridge academic year. Did God, like the Dons and students, start preparations the night before? I wonder. —John Cole*] ■



Customized Registration Plate
Courtesy of Dr. Patrick McKim, California Polytech

UPDATE Hemet Hedges On Evolution

Susan Jordan

Have you wondered what it would be like if your school board has a Religious Right majority? In Hemet, a Southern California town of about 60,000, we are all too familiar with the results. Since 1992 the board majority has abandoned sexuality education, tried to institute mandatory drug testing, censored library books, and enforced its policies with reprisals against individual teachers. Now the members are adding good science education to their list of victims.

In June, my husband and I heard about a high school teacher who gave an assignment on the pros and cons of evolution. We met with the teacher and principal. When we reviewed the source materials the teacher provided the students, we found that they included many authored by Duane Gish and Henry Morris, and an anti-evolution video that was shown during class. The principal suggested we file a complaint. We did! Within days, we learned that for the past few years, an eighth grade teacher has assigned a debate on evolution v. creationism. We were unlawfully denied access to the eighth grade classroom and material. Once again the principal suggested we file a complaint. We did!

We filed complaints not against the teachers, but against the district, because one of the teachers had received administrative approval for his assignment. We also felt that a genuine, long-term solution depended on clear policy guidelines from the district, which we requested in our complaint. A review of our complaint was scheduled for the school

board meeting of September 5; at the same meeting, a final vote on a district science policy would be taken. Meanwhile, *any* teaching about evolution was suspended — not a good sign.

Luckily the press was involved from the very beginning. Letters to the editor came pouring in, including one from a school administrator who called us agents of Satan, although we are both church-going Christians.



Since 1992 the board majority has abandoned sexuality education, tried to institute mandatory drug testing, censored library books, and enforced its policies with reprisals against individual teachers. . . . Now the members are adding good science education to their list of victims.



Although my husband is a physics professor at the local community college, we are not experts on evolution. We called NCSE and with their help we have felt supported and informed every step of the way. We were so pleased to have Dr. Kevin Padian, President of NCSE's Board of Directors, attend the September 5th Hemet School board meeting. Dr. David

Resnick of the University of California, Riverside also attended and spoke to the board. Both men were eloquent and calm in a hostile environment. Having them speak to the board gave us tremendous credibility.

Before the meeting, with NCSE's help, we had drafted an amendment to the policy, a single sentence requiring that all classroom resources be based on research published in reputable scientific journals. At the first reading of the proposed policy, a board member presented a much longer (four pages!) alternative policy proposal that included a definition of three meanings of evolution attributed to Dr. Keith Thomson. Dr. Padian, a professor of paleontology at U.C. Berkeley and a former student of Dr. Thomson's, urged the Board to omit this section. He pointed out that the definitions paraphrased Thomson inaccurately and suggested that either Thomson should be quoted directly or that his name and any reference to him should be removed from the policy. The Board rejected our amendment and Dr. Padian's suggestions.

The end result is that our school board adopted a vague document that leaves teachers open to personal complaints and lawsuits. Teachers aren't sure what to teach. My son's eighth grade science teacher simply left evolution out of the course syllabus. Students in this district need to have accurate information. Our hopes are not high that we will be able to avoid another round of complaints, come spring.

Thanks to Nan Creighton and Molleen Matsumura for assistance with this article. ■

CBS' "The Incredible Discovery of Noah's Ark" Bobs Up Again

Molleen Matsumura

More than three years ago, on February 20, 1992, CBS TV aired the two-hour special, "The Incredible Discovery of Noah's Ark." The program featured dramatizations of Noah's family, safely aboard and listening to the storm, and interviews with a number of self-proclaimed creationist "experts." At the time, *Reports* editor John Cole commented, "[W]e wonder if [videotapes of the program] will show up soon in classrooms. . . ." (12(4):22).

Now we know that it *has* happened: despite national coverage debunking the program's pseudoscientific claims, including an expose in *Time* magazine revealing that the producers had uncritically accepted as genuine a chunk of wood supposedly taken from the Ark, which the "discoverer" later admitted was a hoax. NCSE has learned that a science teacher in Ecu, Mississippi has been showing the tape in class, and now the question is not *whether* it has been used, but where and how often?

Ecu, Mississippi may ring a bell for some readers; this is the town that received national attention when townspeople reacted with great hostility to a family that protested the reading of prayers in the public schools. This is a reminder that the efforts to bring creationism into the curriculum are especially likely to occur in communities where school prayer, religiously based sex education, or other issues on the agenda of the "religious right" are in the forefront. This reappearance of "Noah's Ark" is also a

reminder that often, no matter how thoroughly critics sink a bit of creationist "evidence," it will bob up again. Claims that come as a shock to newer members of NCSE, such as "Darwin recanted on his deathbed" (one that we have heard a lot lately), seem like "deja vu all over again." . . . and again . . . and again to NCSE veterans. If you should encounter any of these arguments, remember

that answers to them probably are already available in NCSE's publications or resource files. Be sure to call on us for help in answering them; it's another way of telling us, "Remember the moondust argument? It's baaack!"

[Ed: See Reports 13(2) for Robert Schadewald's related report, "CBS TV's Noah's Ark Hoax Exposed."]

UPDATE Abbotsford, BC: Creationist Tries to Blow His Own Horn, Blows Whistle Instead

Molleen Matsumura

We may be about to witness the last chapter, and final defeat, of the Abbotsford School Board's attempt to impose creationism in the local schools (see NCSE Reports 15 (1): 1, 10-11). Scott Goodman, NCSE's liaison in British Columbia, reports that at their meeting of June 26, creationist Board members made extensive changes in the wording of a science education policy that had been proposed by the district's legal advisor. The policy's references to "alternative theories" and Board members' statements about "intelligent design," familiar phrases to creationist watchers, are obvious signs that the Board majority, despite their protestations, are not just expressing local values. Now, in a surprising development, Goodman has direct evidence that the Abbotsford Board has been taking its cues from creationist organizations.

Goodman reports that at a recent public lecture criticizing "creation science," creationists

attended en masse and handed out literature. Richard Peachey, a member of the Board of Directors of Canada's Creation Science Association, and an Abbotsford resident, stepped up to the microphone provided for the audience and, introducing a question directed to Goodman, announced that he was the author of the last-minute changes to the Abbotsford school board's policy!

A videotape of Peachey's announcement is on its way to British Columbia Education Minister Charbonneau. Charbonneau has already announced publicly that the policy statement adopted in June was unacceptable. He gave the Abbotsford School Board one month to comply with provincial education policy, which forbids the teaching of religious doctrines in public schools. If the school board doesn't cooperate, Charbonneau will issue a non-negotiable ministerial directive, insisting that the science teachers of Abbotsford must simply teach science.

▼
This reappearance of "Noah's Ark" is also a reminder that often, no matter how thoroughly critics sink a bit of creationist "evidence," it will bob up again. . . and again. . . and again.
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More on Debates

■ Eugenie Scott's cautions (14(2):22ff) about debating creationists are well taken. However, the view that such confrontations should generally be avoided seems to rest on the too-frequent failure of scientists to understand and make use of the special qualities of the debate format. Armed with such understanding, debates offer scientists an opportunity that should not be automatically rejected. As a strictly amateur biologist whose professional work is in rhetorical criticism and theory and for a while a debate team coach, let me offer a few suggestions:

1. The format should take into consideration the capacities of the audience by limiting the total presentation time to about an hour (perhaps followed by a question period) [rather than the 2-3+ hours creationist debaters typically favor]. This would allow opening statements of 15 minutes each followed by 10 minute rebuttals and 5 minute summaries—a format followed by organized, competitive debating.
2. No matter how the debate topic is stated, the creationist is proposing a change from the present system . . . so the burden of proof must be placed squarely on the creationist to make a positive case rather than simply to attack evolution. The scientist's first presentation should make this clear to the audience. List unanswered questions such as: What is the creationist model? What are the

mechanisms of creationism? How does their model advance our understanding of the natural world? Tell the audience to demand answers to these fundamental questions. (If they can be posted on newsprint or a chalkboard before the audience, all the better.)

3. Establish that the creationist has failed to discharge basic debate obligations and turn to what was actually said. It is likely that the presentation was some version of the "Gish Gallop," including standard topics such as the absence of transitional forms or the second law of thermodynamics bit. The evolutionist needs to make clear that these arguments have been refuted time and again by experts, so why does the creationist trot out these completely discredited arguments? . . . A more aggressive debater might cite Exodus 20:16 ("Thou shalt not bear false witness"). Challenge the audience to demand an explanation of why they have been lied to.
4. At this point the evolutionist can offer a brief exposition of the reasons that the concept of evolution is the fundamental organizing principle in virtually all the natural sciences.
5. In rebuttal and summary, press for answers to the questions that will likely be unanswered by the creationist. If answers are presented that invoke God or Scripture, the fact that these are religious rather

than scientific answers should be pointed out.

This outline would seem to place the burden of proof on the creationist where it belongs. It places the scientist on the offensive. Scott is quite correct that the defensive posture used by scientists in most debates is a losing proposition. Even if the creationist is preaching to the choir, there may be some in the audience who take the questions raised to heart and begin to think seriously about the issues. If even just a handful of people begin to think, the scientist has had a worthwhile evening.

Peter E. Kane
Churchville, NY

[Ed: These are excellent pieces of advice. However, I would also like to summarize the advice of Fred Edwords, founding editor of this journal and a fine creationist-debater. As a non-scientist trained in debate, he noted that most scientists are not trained debaters. Furthermore, he noted that someone such as he is not seen as speaking with "the voice of science," so his performance is not easily capitalized upon by creationists—they are unable to say "Gish trounces Nobel Laureate!"—whether or not there is some kind of objective "trounce" is irrelevant to true believers in their audience who view debates as a form of "witnessing" or bravely going up against the anti-Christian lions, not a true scientific debate. — John Cole]

■ In response to Dave Krupp (NCSE Reports 15(2):6), it is a historical fact (as Alfred North Whitehead pointed out long ago, and

subsequent scholarship has confirmed) that natural science as we know it was a conscious derivation from medieval Christian theology. It seems that, in contrast to views of the material world as illusory, evil, and/or eternally repetitive (and hence futile and incomprehensible), the Judaeo-Christian doctrines of a rational creator, creation in time, goodness of the material creation, and linear history were both logical and psychological prerequisites for a sustained effort to comprehend the natural world.

Whether an overtly religious foundation remains necessary for doing science today is, of course, a quite different and debatable question. It's possible on the one hand that the scientific enterprise is epistemologically self-sufficient, now able to get along nicely without further dependence on the cultural context and ancestral lineage that gave it birth. On the other hand, however, it may resemble the coyote in the Roadrunner cartoons who has run straight off a cliff and not yet noticed that he no longer has any support beneath him.

Incipient hairline cracks in the logical structure of science, such as the latter hypothesis would predict, are sometimes observed. Might one example be Krupp's extraordinary statement that "good science should steer clear of attempting to establish values"? Obviously, the very phrase "good science" presupposes the establishment of a value judgment distinguishing good science from bad science! Not all values are "moral" values; and when we forget this and slip

• LETTERS •

into the error of thinking science can somehow be totally "value-free," we weaken the immune system of science and science education, and expose them to infection by "creation scientists" and other charlatans.

Sincerely,
Daryl P. Domning
Howard University
College of Medicine
Washington, DC

■ I enjoy NCSE Reports and admire David Bloomberg's (*NCSE Reports* 13:4/14:1 p. 28) attempt to debate creationism. However, his statement that a particular creationist "confused the theory of evolution by suggesting it dealt with the rise of life from non-life" is questionable. Only strict neodarwinists still believe that evolution cannot occur without genes and that the development of the organic from the inorganic was not evolution. Rock formations evolve. Planets evolve. Whole galactic systems evolve. Nothing in

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the universe escapes evolution (Borchardt, Glenn, 1984, *The Scientific Worldview*: Berkeley, CA: Progressive Science Institute, 343 p.). Our educational mission need not sacrifice scientific principles for still another compromise with creationist gobbledygook.

Glenn Borchardt, Ph.D.
Director, Progressive
Science Institute Berkeley

■ I really don't know what the furor is about teaching scientific creationism in science classrooms. The hypotheses used for scientific creationism are perfect examples of "failed" hypotheses, i.e., hypotheses that do not pass scientific method tests. They are basically hypotheses that will not become scientific theories, and they could be used as examples of such. If proponents of scientific creationism really want

their hypotheses taught in science classrooms, they will have to deal with the results of scientific method tests that reveal that their hypotheses do not have any scientific worth. Don't we teach about alchemy? Why not teach about scientific creationism in the same way?

Dan Bridgewater
Westminster, MD

Debates and Dueling Experts

Andrew Petto

Genie Scott has cautioned our readers about the outcome of debating creationists. A recent column by Marilyn vos Savant (*Parade*, Nov. 19, 1995:18) made another important point about the dynamics of this sort of adversarial forum in which two sides present their own "experts" to engage the debate. Although vos Savant was discussing this matter from the point of view of jury trials, her

comments apply equally well to the debate forum favored by creationists.

She writes that the appearance of "matching" experts on two sides of an argument increases the tendency of their audiences to have doubts about the testimony that they hear. Her example goes as follows.

Say there are 2,000 experts who believe a certain type of evidence is

valid. Say also that there are two experts who believe it is invalid. But, the jurors, novices in forensic affairs, don't know this. So they hear two experts from each side testify, and it looks like a 50-50 proposition!

The benefits of this situation to the debater with the weaker case and the lesser support are clear. One can persuade an audience of scientific "nov-

ices" who are not aware of the "experts'" backgrounds nor whether they represent generally accepted interpretations of the scientific evidence. The creationists were probably quickest to understand these benefits to their cause, using lawyers such as Normal Macbeth and Phillip Johnson to make these presentations against scientists who clearly did not understand and had not mastered the forum.

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