

State Approval Implied? No, but

ICR Settles Lawsuit With California

Eugenie C. Scott

CALIFORNIA has not put its stamp of approval on creation "science."

However, the state *has* agreed to some questionable statements and agreed to pay part of the legal expenses of the Institute for Creation Research to the tune of \$225,000.

The ICR program is not validated, as they will claim, but the story is more complicated than a media soundbite allows.

On January 28, 1992, the Institute for Creation Research signed an agreement with the California State Department of Education

regarding its two-year-old Federal District lawsuit. The suit protested the department's handling of the ICR's request for approval to grant masters degrees in science. As discussed in earlier issues of *NCSE Reports* [9(1):21; 10(1):1; 10(1):14; 10(2):15; 10(4):8; 10(5):6; 10(6):6], the ICR is currently licensed to grant degrees by the state of California with no reference to or implication of accreditation.

In California all unaccredited institutions must seek periodic reapproval from the state Council on Private Postsecondary and Voca-

ICR, continued on p. 5

Called "Loose Cannon" by Judge

Peloza Lawsuit Dismissed by Federal Judge!

Eugenie C. Scott

John Peloza, the San Juan Capistrano (CA) High School biology teacher suing the Orange County District over his "right" to teach creationism [see *Reports* 11(2):1 and 11(3):9], had his first day in court on December 6, 1991, as Federal District Judge David W. Williams heard arguments from the District for dismissal of the case, and rebuttals from Peloza's lawyer. On January 17th, Williams dismissed the case, calling Peloza a "loose cannon."

Peloza's complaint against the District grows out of a reprimand given him last year directing him to not teach "intelligent design theory," to teach evolution, and not to proselytize to students. Like many creationists, Peloza defines evolution as part of the "religion" of secular humanism. He claimed that

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Editor's Desk

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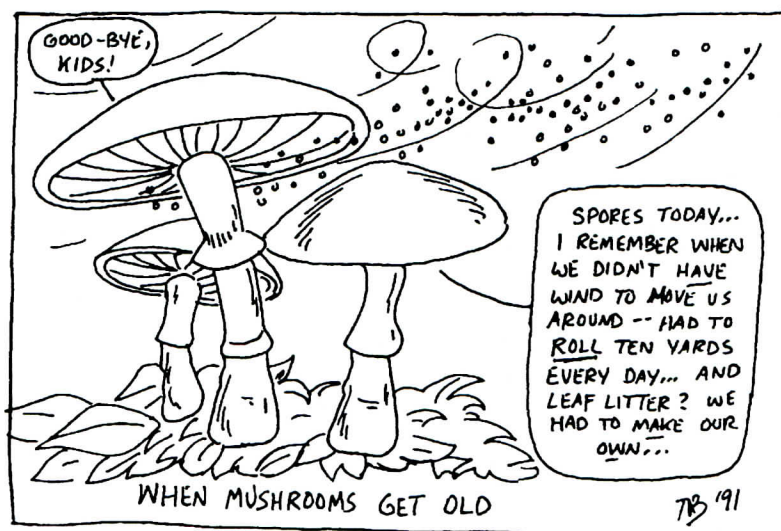
With this issue of *Reports* I complete my first year as editor of NCSE serials—this and the *C/E* journal. It is gratifying that I have not been impeached, so far. On the other hand, I would, in fact, appreciate more reader reaction, both positive and negative. I try to incorporate reactions via the “letters” section, and beyond trying to print letters, I do take feedback seriously.

I also try to use “I” judiciously; I is me, not NCSE, and not a group of editorial consultants. Although I sometimes lapse into the “editorial we,” I try to remember Mark Twain’s dictum that “we” should be reserved for God, royalty, and people with tapeworms. Still, we (oops!) do occasionally transgress and trust readers will make allowances.

Editorship itself is widely regarded by writers as a sort of fall from grace—editors mess up what they produce, deflecting Pulitzer Prizes quite often, I’m sure (I didn’t receive one for my writing edited by my predecessor, as a case in point). I also recall that Twain once wrote about a gunman who shot into a crowd but fortunately only killed an editor—though I hasten to add that my experience has been quite nonviolent and that I wish it no other way!

In the last issue I noted our (*sic!*) misspelling of Archbishop Ussher’s last name with only one “s” brought to my attention by an alert reader. An even more alert reader called to note that the preferred, standard spelling in his field of Biblical scholarship is “Usher.” He advised me to use a dictionary, which is always a good idea of last resort. (Or maybe it was “Uffher?”) Another option is to paraphrase T.E. Lawrence’s reply to an editor of his *Seven Pillars of Wisdom* who questioned his multiple spellings of the same man’s name: “It is no matter—he’s dead and can no longer sue.” We try to be accurate. (By the way—my Webster spells it “Ussher,” so I’ll just give up for now.)

John Cole



Letters

[Many teachers may feel pressured to present the "scientific" creationist case; having myself been asked to present "the other side,"] I spoke the week after the creationist. . . . I also mentioned to the teacher that I wondered about the "fair play" argument for including religion in a public school—did that mean that if I mentioned equality of the races, he would have to have a Nazi [in] for "fair play?"

[As a speaker in such a situation,] I . . . recommend following the creationists whenever possible.

Christine Hanson
University of Alaska,
Anchorage

The "design argument" is an old and rather persuasive tool in the creationists' toolbox. An old reply has been to comment on the intricate design of predators and parasites. Heretofore, this line of attack did not advance the evolution cause directly. It merely made believers queasy about the omnibenevolence of God. The argument had the disadvantage of seeming to give in to the "argument from design."

I think there is a new vulnerability to this argument. The Institute for Creation Research in recent months has been pushing strongly for "no death before the Fall" [no death before Adam and Eve bit the apple]. (For example, Kenneth Ham's "Adam and Ants" in "Back to Genesis" September 1991.) The "scientific creationist model" now appears to include 1) No

death before the Fall, and 2) God's creative effort [was] completed in six days (*Gen. 2:1, 2*). This model is testable—in Karl Popper's terms, falsifiable. Not from the fossil record: the brief period of immortality enjoyed by the animal kingdom wouldn't show up. However, a necessary consequence of the [nouveau creationist] model is *no design for death*—death is an aspect of the corruption and increased disorder that resulted from the Fall. (On the other hand, an early 19th Century geologist, William Buckland, promoted the concept of design for death . . .).

Examine the biota for evidence of design for death.

Thus, I encourage pro-evolution debaters to [explore striking aspects of design for death]. Dawkins' review of bat echolocation in *The Blind Watchmaker* is an excellent example [of a mechanism for locating flying prey]. Gould's Chapter 2 in *Hen's Teeth and Horse's Toes* is outstanding.

William B. Lindley
La Jolla, CA

Ed: Lindley refers to some issues which seem outlandish, but in fact some creationists HAVE adopted the idea that critters are both perfectly designed by their Creator to be predators and yet did not kill for food until that fatal apple messed things up. He asks in shorthand for us to look for evidence of "design for killing," not just for death. For example, mushrooms are real specialists in the area, making their living by feasting off dead organisms—and

there are a million or more species; did they photosynthesize before the Fall or just wait around? If the former, isn't this "macroevolution," to use the creationists' term?

Getting *Reports* is a real treat for the mind. You do a good job of keeping people connected. Keep it up. . . . Any chance we'll see more coverage of [Lynn Margulis and] the Gaia idea in *Reports* or in the journal?

Pete Devine
Yosemite, NY

Ed: Nothing is on hand or in press, but yes, I want to pursue the issue. Dr. Margulis is a friend of science education.

Creationists have a legitimate point of view, but it does not belong in natural science classes; rather, it should be taught in history, literature, religion and philosophy of science classes. This is because [they] use scientific data to buttress the philosophical and theological propositions that God exists in objective, extra-mental reality, and that he created man and the universe.

Creationists are admirable and well-intentioned; they seek to demonstrate that there is order, meaning and purpose in the universe, and that there is something sacred about man and the world in which we live.

The difficulty . . . is that physical science, because of its own limitations and restrictions, simply cannot

deal with the questions of God and creation. When natural scientists either affirm or negate the objective reality of God and creation, they step outside their field of expertise and enter different and no less intellectually respectable and legitimate branches of knowledge, namely, theology and the philosophy of science.

. . . We simply cannot and must not supply theological and philosophical answers to scientific questions, even as we cannot and must not provide scientific answers to theological and philosophical questions.

Perhaps, though, our institutions of learning will incorporate into their natural science classes an intense study and discussion of the philosophy of science so that creationism may be legitimately examined.

Haven Bradford Gow
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columnist for *Christian News* and *Chinatown News*
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Whether or not a person believes in evolution almost always depends upon whether or not such a belief would conflict with deeply held religious convictions. And so I think anyone who defends evolution should always point out that belief in God and evolution are not mutually exclusive, before even bothering to mention scientific evidence.

Letters, continued on p. 10

Darwin on Trial at Yale

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Phillip Johnson, of UC-Berkeley's law school and author of *Darwin on Trial*, has been on a speaking tour and recently visited Yale where I and fellow NCSE member David Daegling spent an evening listening to him. I also attended a lunch meeting with Johnson where I tried to question him less formally.

Johnson is by way of training a lawyer. However, the prospect of intellectually retooling in order to make a serious contribution to the scientific literature of a distant discipline does not appear to have daunted him. Satisfied after reading just a few textbooks and many semi-popular articles, he found himself prepared to write and lecture on the inadequacy of evolution as an explanatory paradigm. His pretensions here are noteworthy, as he is apparently anticipating greater credibility for his poorly-informed scientific opinions than a cab driver or grocery clerk would for theirs because of his status. After all, it is rather difficult to imagine a biologist writing a book challenging fundamental aspects of American law after reading a couple of textbooks and a few magazine articles. Be that as it may, Johnson's argument consists of flogging the usual interpretive disagreements about evolutionary modes and phylogenies. He is an experienced rhetorician, however, which makes him particularly wily in ad-lib exchanges.

Johnson is ostensibly trying to make some sort of theologic-philosophic contribution to our understanding of the world, as generations of the thoughtful pious have before him. Though he begins by saying that he is not an adherent of young-earth Biblical literalism, his talk was sponsored by the Campus Crusade for Christ, and it does not take a great cynic to suspect that he is in bed with the radical religious right. His goal, however, appears to be fairly mundane: a large table in the hall was selling his book at a discount, and he made an embarrassingly great number of references to the fact that it was on sale there. Scratch a would-be Augustine, it seems, and reveal Jim and Tammy.

For a man who talks a lot, Johnson says surprisingly little. He trots out the old warhorse of "transitional forms," but we have heard it all before, and better. When pressed, he is elusive and evasive, and he's good at it. But then, I suppose that's his professional expertise. An inveterate name-dropper, he casually referred to conversations with "Steve" Gould, "Doug" Futuyma, and "Tom" Jukes as if he had them all over for beer and metaphysics the night

before. [Ed: "Tom" has, in fact, been very actively attacking Johnson's argument!]

At his lunchtime discussion (co-sponsored by Yale's Faith and Science Colloquium), I pressed Johnson on exactly *what* it was he found wanting in contemporary biology. The closest I got to an answer was (1) the extreme gradualist caricature, and (2) the proposition that heredity is not sufficiently explained by genetics. If genes are not responsible for heredity, he gave no indication of what he thinks *is*.

One of Johnson's major beefs is with materialism, which he criticizes as being both an assumption and conclusion of evolution. I tried to press him on this, pointing out that materialist or naturalist theories have consistently supplanted mystical ones in science over the last half-millennium. For example, the germ theory of infectious disease appears to be more useful than the evil-spirits theory. He objected that my use of "mystical" implied a pejorative, and I offered to let him choose his own antonym to "material." He refused. When I then pressed him to name a single instance in which a non-materialist theory has proved itself more useful than its materialist counterpart, he took another question.

After his evening talk articulating his feeling *that* evolution was not sufficiently justified by evidence, though not *how* it failed, I caught the eye of the moderator and asked the first question. It was simply whether he believed the earth goes around the sun, and if so, why he believed it. Johnson by this time had me pegged in the enemy camp of naturalism, if not a full-fledged lieutenant of Ol' Slewfoot himself. He derided my question as simply an attempt to ridicule him. I responded that in science we often accept with surprisingly little evidence propositions such as heliocentrism that may seem counterintuitive. If he thought the earth *does* go around the sun, I wanted him to explain *why* he thinks so; and if he could not defend the proposition, I wanted to know why he was so concerned with evolution when heliocentrism did not measure up to his observational standards, either. He replied, "I stand by my previous answer."

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"Scratch a
would-be
Augustine..."
~

To my surprise and relief, the audience was quite unreceptive to Johnson. A couple of sympathetic questions came up about the 2nd Law of Thermodynamics and the origin of life, but they were handled very competently by paleobotanist Leo Hickey who shared the dais with Johnson as a friendly antagonist. More of the questions from the floor concerned his rhetorical tactics, knowledge of biology, familiarity with science, etc.

His answers, coupled with the incessant huckstering ("That's covered in chapter 4 of my book, available outside at a discount"), seemed to disappoint the audience and resign them to consider him a moun-

tebank: someone who lacked the depth of expertise advertised and trying to exploit popular anti-intellectual sentiments—and possibly cash in on them. It's worked before.

Johnson is fond of quoting Thomas Huxley. I didn't get a chance to ask him about this Huxleyism: "We grudge no man either the glory or the profit to be obtained from charlatanerie, . . . but a book may, like a weed, acquire an importance by neglect that it could have attained by no other mode." I wasn't sufficiently impressed to buy his book, but I'm glad to note that it *has* been reviewed devastatingly by David Hull [cf., Resources], Jukes, and others. □

ICR *continued from p. 1*

tional Education (CPPVE) in order to operate. Although recently accredited by the Transnational Association of Christian Schools (TRACS) [see *Reports*, 11(3):4], ICR is not considered accredited in California because the State Department of Education only recognizes a different accrediting association, the Western Association of Schools and Colleges (WASC). ICR must still seek approval from the state of California to grant degrees.

In 1988, ICR was reviewed by a committee of scientists which voted 3-2 to approve its licensing, although its report listed many problems with ICR. California Education Superintendent Bill Honig, based on this tepid report plus two strongly-worded minority opinions protesting the approval of ICR, requested one of the scientists to reconsider his vote, and the decision became 3-2 *opposing* approval. ICR complained, and the decision was made to send a second review team in 1989. This team of scientists wrote a forceful document condemning the ICR for multiple educational sins (document available from NCSE for \$6.00), and the Private Postsecondary Education Division (the forerunner of today's Council on Private Postsecondary and Vocational Education) recommended that ICR not be approved [see *Reports* 10(1):1]. Subsequently, the ICR filed administrative appeals and a federal lawsuit.

In 1991, California's Attorney General decided not to hear the administrative appeals case [see *Reports* 10(6):6] which would have dealt more directly with the issue of whether the ICR could teach creationism with a state license. The AG's decision effectively put ICR back into its previous status, which was as an approved institution.

But the federal lawsuit continued. According to sources in the Department of Education, the state

decided to settle rather than go to trial because the lawsuit did not bear on the important question of whether the ICR could or could not grant degrees: this issue will be determined by the Council on Private Postsecondary and Vocational Education (CPPVE) when it next reviews ICR. It is also possible that political considerations came into the decision, since Superintendent Bill Honig has been under fire from the Board of Education and other government entities for alleged misuse of office, among other charges.

On January 30, 1992, the State Department of Education and the ICR agreed to resolve the Federal District Court lawsuit. The agreement contained several troubling statements. Perhaps to avoid future personal litigation, Honig and his direct representative to the CPPVE agreed that they "will abstain from voting on ICRGRS's application for approval to grant science degrees." The agreement noted that the strongly-worded 1989 visitation report which recommended the rejection of ICR's status as a degree-granting institution "should have no force and effect, and that defendants [the state] will recommend to the Council for Private Postsecondary and Vocational Education that it should withdraw by physical removal or notation the 1989 Visiting Committee report. . . ." (We can only hope that the CPPVE will not act on the "recommendation" and leave the report in the file, where it belongs.)

One statement agreed to by the state is directly relevant to ICR's accreditation by TRACS. "That defendants acknowledge that a private postsecondary educational institution may specify a statement of belief and a statement of purpose for both faculty

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ICR not
considered
accredited
by
California
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ICR, *continued on p. 21*

Supreme Court Challenge to *Lemon* Decision

Eugenie C. Scott

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“Future
legal
decisions
about
creationism
and
evolution . . .
could be
significantly
affected”
~

All of the prominent court cases involving the creation/evolution controversy have been decided at least in part on a 1971 Supreme Court decision, *Lemon v Kurtzman*. The *Lemon* test, as it is called, involves judging a law or activity on three points: 1) does the law have a secular purpose?; 2) does the law have a secular intent?; and 3) does the law require unacceptable entanglement between religion and the state?

The 1987 Supreme Court case, *Edwards v Aguillard*, for example, was decided on the purpose prong of *Lemon*: the purpose of the legislation requiring the teaching of creationism in Louisiana was to advance religion. *Lemon* has figured in 21 Supreme Court church/state separation case since 1971.

In March of 1991 the Supreme Court decided to hear a graduation prayer case from Providence, RI, *Lee v Weisman*. The district court of appeals in that case ruled that such prayers violate the first amendment's establishment of religion clause, based on *Lemon v Kurtzman*. The Bush Justice Department filed a brief with the Supreme Court encouraging it to hear the case, and to look carefully at the *Lemon* test as a foundation for

first amendment establishment cases. The administration's position is that such publicly-sponsored prayers are constitutional as long as a student is not “coerced.” The Court heard oral arguments on the case on November 6, 1991. As reported in the 11/7/91 *New York Times*, p. A22, both Justice Kennedy and Justice O'Connor were skeptical of the government's position that prayers at a high school graduation would not be “coercion.” They questioned whether attendance at graduation was truly optional for a student. Justices Scalia and Kennedy (among others) sought to distinguish between prayer in a classroom and prayer at a graduation convocation.

Political commentators, though aware of the danger in second-guessing the Supreme Court only on the basis of oral arguments, predicted that *Lemon* would not be scrapped, but would undergo serious modification.

Already, several justices have indicated a willingness to tamper with *Lemon*. In his dissent to the 1987 *Edwards v Aguillard* creationism decision, Justice Scalia took pains to sharply criticize the “purpose” prong of *Lemon*, stating that “abandoning *Lemon's* purpose test—a test which exacerbates the tension between the Free Exercise and Establishment Clauses, has no basis in the language or history of the amendment, . . . would be a good place to start.”

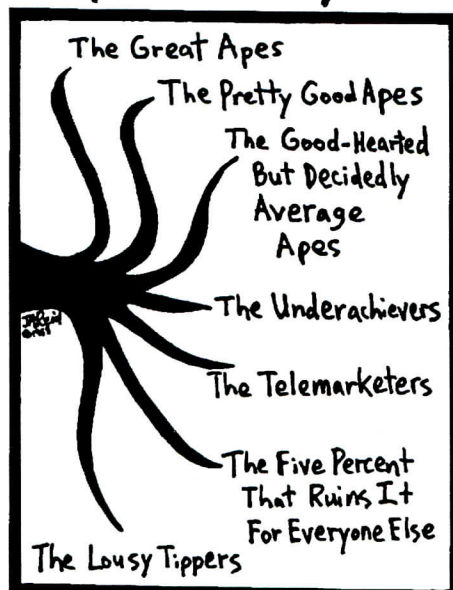
Chief Justice Rehnquist, in dissent in *Wallace v Jaffree*, said that the purpose prong is “a Constitutional theory [that] has no basis in the history of the amendment it seeks to interpret, is difficult to apply and yields unprincipled results.”

Justices O'Connor and Kennedy are “soft” on *Lemon*, and, as usual, no one knows where Justice Souter stands. Nor has the newest Justice, Clarence Thomas, revealed his position on such issues, although it is widely speculated that he will be on the side of softening or over-ruling *Lemon*.

Future legal decisions about creationism and evolution—and other church/state separation issues—could be significantly affected by what the Supreme Court does in *Lee*. NCSE will keep you informed. □

Cartoons by Jeff Reid are copyrighted and reproduced with permission. They are available in postcard form from the artist; a catalogue is \$1.00 from Card Attack, Box 10264, Chicago, IL 60610-0264. Reid is also author of a satirical self-help book, *Cat-Dependent No More!* just published by Ballantine Books.

Evolution fails to work in mysterious ways



Mosaic Evolution

John Cole

Mosaic, the National Science Foundation's semi-popular quarterly, devoted its entire Fall 1991 issue (vol. 22, No. 3) to aspects of evolution. The special issue is devoted to the topic, "Nontraditional Inheritance." Editor Walter Kornberg writes, "The insights of Gregor Mendel, the nineteenth-century cleric who wrote the book from which the modern world learned genetics, still underlie mainstream thinking about biological inheritance. But Mendel's is far from the last word; there are more things twixt sperm and egg, it appears, than were known to his philosophy. . . . The story . . . is still unfolding."

"Mechanisms Mendel Never Knew," by Joann Rodgers, explores "What once were thought to be exceptions to the biological laws that govern inheritance are turning out to be laws unto themselves." Gail McBrides's "The Clinical Implications" discusses "Some of the unfathomables in human medicine" which are yielding to an understanding of new ways that characteristics can be influenced by mitochondrial and other mechanisms.

In two articles, Ben Patrusky and Charles Petit explore new aspects of the idea first advanced by Lynn Margulis that more complex cellular organisms are the result of "an essential intruder" of genetic material which changed unnuclated cells (prokaryotes) into cells with specialized parts (eukaryotes) which are the result of this merger. Here they discuss the invasion of eukaryotes by prokaryotes which resulted in mitochondria and chloroplasts.

Roger Lewin reports on the debate about Mitochondrial Eve and the "Biochemical Route to Human Evolution," and Edward Edelson summarizes research on "Tracing Human Lineages" via mitochondrial DNA.

Sixty-three pages cannot be summarized here, so I strongly recommend the entire issue to anyone concerned about these things. It is certainly not the final word on anything, but it brings together in one place a wealth of the serious debate about evolution, as opposed to the carping by anti-evolutionists on the sidelines to the effect that "evolutionists argue with each other." Of course they do, proving science is alive!

Mosaic is available in many libraries. Subscriptions are \$9.50 per year (25% more foreign) from the US Superintendent of Documents, Gov't Printing Office, Washington, D.C. 20402-9371. (And see **Resources** section, this issue.) □

Science for Teachers, Volunteers

John Cole

A summer camp for teaching math and science in elementary, secondary and higher education will be held Friday and Saturday, June 5 and 6, 1992, at Pratt Community College, in Pratt, KS. The purpose of the summer camp is to review trends in math and science instruction, and examine published literature related to math and science teaching at all levels of education. One hour of academic credit may be available through Pratt CC. The cost is \$49 for the camp, \$20 for board, and \$10 for room. Write Dr. Dave Lemire, Coordinator of Residential Life, Pratt Community College, Highway 61, Pratt, KS, 67124, (316) 672-5641.

The Smithsonian Institution, emulating Earth-Watch, is expanding opportunities for volunteers to spend a working vacation of a week or two doing scientific research. Housing and some meals are included in the fees which range from the hundreds of dollars to \$1000 and more. For information, write the Smithsonian National Associates Research Expedition Program, 490 L'enfant Plaza, SW, Suite 4210, Washington, DC 20560.

A local note (for Massachusetts members): The Acid Rain Monitoring Project and the Massachusetts Water Watch Partnership have hundreds of volunteers around the state involved with environmental monitoring and biological field research, year-round. For information contact coordinators Marie-Françoise Walk (ARM Project) or Jerry Schoen (MassWWP), WRRRC, Blaisdell, UMass, Amherst, MA 01003. Also, the "Five-College Consortium" around Amherst integrates college professors, area teachers, and students in programs ranging from visiting speakers to weekend workshops. Similar projects are blossoming around the country, and national directories are being developed. Meanwhile, I'm pleased to be associated with a couple of model examples. Such programs involve interested citizen volunteers in doing real research rather than just reading about it. □

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Learning
science by
doing it
~

Molecular Gas Shows How Galaxies Form

Astronomers have discovered the first evidence of a cloud of molecular gas from a distant group of stars at the edge of the observable universe. It appears to be a reservoir of material from which a second generation of stars are forming, say astronomers Robert Brown and Paul Vanden Bout of the NSF-funded National Radio Astronomy Observatory in Charlottesville, VA in the December issue of *Astronomical Journal*. Their observations show that second-generation star formation is indeed preceded by the accumulation of an enormous reservoir of molecular gas—residue from a now-dead, first generation of stars.

If 12 billion year-old light has obvious ancestry in earlier, exploded stars, the age of the universe must be quite a bit older to allow for ancestral stars. "Young Earth" and "recent creation" theories are tested and yet again shown wanting.

While most of the stars in this forming galaxy are in an early life stage, at least one generation of stars had already completed its life cycle when observed. Light from this group of stars and gas "in" the constellation *Ursa Major* (the Big Dipper) has been traveling towards the earth for more than 12 billion years. □

A Welcome Discover Recovery

Discover Magazine has been sold and resold, as reported in our last issue. Its newest incarnation looks to be excellent. The popular tone is continued, the wierd pseudoscience ads are missing, and editorial content is rigorous and a fine addition to the weekly *Science News* and monthly *Scientific American*.

The January 1992 issue is an end-of-year issue which surveys many aspects of science news for 1991; it has a 2-page "Evolution 1991" section with articles on Coelacanth molecular biology and butterfly mimicry, a section on human origins, plus several other excellent biology and earth science-related sections. The next issue features a lead article on Neanderthal. The best news is that the newest incarnation of the magazine, now being published by Walt Disney Co., seems to be as good or better than its first incarnations. It has shed its recent version's cheesy anti-scientific advertisements while adding contributing editors such S.J. Gould, Lewis Thomas, and Jared Diamond. *JRC*

Name Your Planet

The *Old Farmer's Almanac* has discovered that the only planet we know of not named for a god is our own, and furthermore, our moon is anonymous, too. Instead of Ganymede or Titan or Demos, it's just "the moon." Bo-o-oring, they decided.

For that matter, not only are we stuck on earth, we revolve around one of billions of suns, so what do we do? We call it "the sun," as if it were the only one, and it's not a proper name, even if we're egocentric—it's virtually never capitalized.

But back to earth, so to speak. The Almanac editors are accepting nominations for monikers for the earth and its moon, with an alleged 1 February deadline (if true, we've all missed it, but write anyway—maybe send a copy to us). Write: Name the Earth and the Moon, *Old Farmer's Almanac*, Dublin, NH 03444. Results will be forwarded to the International Astronomical Union which really does assign names to astronomical features.

Currently the IAU are in a search for the names of enough worthy, deceased women from around the world after which to name all of the mountains and rifts and so forth recently discovered on Venus. (Since Venus is supposed to be female, they want this to be the first all-woman map.) This does not have an immediate deadline, but sooner is better. Send them names with identifying information c/o NCSE or directly. Nominees should be dead several years and praiseworthy (Eva Braun, for example, probably need not apply). □

Want a Tax Break? Computer Needed

NCSE is still looking for someone (or some company) to donate a computer. Our wants are modest: we'd be happy with an IBM compatible AT (and delerious with a 386). . . . Is your company perhaps upgrading to 386's or 486's? If so, it may be a good economy move to donate an AT or 386 or 386SX rather than junking it or selling it for peanuts. A donation to NCSE would be tax-deductible for an individual or corporation. And please ask around. We seriously need another machine.

~
Help map
Venus
~

NCSE Board and Members Not Bored

In August and September, Executive Director Dr. Eugenie C. Scott appeared on WHA radio opposite anti-evolutionist Phillip Johnson, author of a recently-published antievolution book, *Darwin on Trial*. The two-hour Wisconsin Public Radio show was heard on close to 20 stations in Wisconsin, Minnesota, Illinois, and Iowa. She also appeared on the Phoenix-based *World View Perspectives* opposite physicist and minister Hugh Ross of *Reasons to Believe Ministries*. Ross has been strongly criticized by the Institute for Creation Research, the Bible Science Association, and other young-earth creationists because of his rejection of their young-earth creationist views. Ross also appeared opposite California State-San Diego biologist (and NCSE member) William Thwaites in a southern California radio broadcast this summer. An old-earth creationist, Ross accepts some limited forms of change.

Scott also gave invited presentations on evolution and the creation/evolution controversy to California teachers, first in a teachers' in-service workshop sponsored by the Lawrence Hall of Science in Berkeley, CA, and later at a "camp out conference" organized by the California Science Teachers Association. In December, she lectured about creationism in textbooks to science teachers at the National Science Teachers Association meeting in Reno, NV. She also conducted workshops for legal and other personnel in Orange County concerned with a creationist teacher's lawsuit.

Scott published a review of Michael Ruse's *The Darwinian Paradigm. Essays on its History, Philosophy and Religious Implications* in the *American Journal of Physical Anthropology*, 84(4):490-491. NCSE Director Laurie Godfrey (with fellow NCSE member Jonathan Marks of Yale) published "The Nature and Origins of Primate Species" in *The Yearbook of Physical Anthropology* (34: 39-68), leading to John Cole's bad joke that, unlike Darwin, they have published on the origin of species.

Godfrey spent the summer doing paleontological fieldwork in Madagascar with an ongoing joint research project with Duke University, SUNY-Stonybrook, UMass, and the University of Antananarivo. Technical publications on related work appeared in the *Proceedings of the National Academy of Sciences* and *Journal of Zoology* (London).

NCSE Director Kevin Padian spent his summer in the wilds of Montana searching for fossils at the Cretaceous-Tertiary transition, and also in possibly less-wild Italian museums. In Montana, the field team discovered a Triceratops skull and several other fossils which will be discussed in the scientific literature. In Italy, Padian continued his studies of flying reptiles.

Editor John Cole managed to keep up somewhat with his editorial chores, despite what he reports as several medical incarcerations and dwindling access to his frontal lobe, let alone his computer. He had to forego planned participation as a U.S. (and NCSE) representative in the Karl Ernst von Baer 200th anniversary conference at Tartu, Estonia, and related lecture and seminar invitations. He *has* submitted a lengthy abstract about NCSE organization and activities for their *Proceedings*. Anti-evolutionism is reportedly very active in Eastern Europe now.

Jack Friedman, NCSE Secretary-Treasurer, has met a number of times with the New York Science Council, a CC-subcommittee working towards changes in the New York state science curriculum and Regents Exams. He spoke to a very receptive audience at the November Science Teachers of NY State meeting on "Where Have All the Creationists Gone?" The session was attended by a vocal creationist whose comments helped immensely to underscore his point that they have *not* gone away!

Bookwatch Reviews editor, Gordon Uno, reports the receipt of an NSF grant taking him to Colorado Springs to work with the publishers of the Biological Sciences Curriculum Studies. Their goal is to design curriculum frameworks in biology for high schools, community colleges, and 4-year colleges, and we look forward to the results.

E.I. Sillman, PA Liaison, debated Duane Gish at California University of Pennsylvania October 22nd—site of a new lawsuit by a creationist college teacher claiming his free speech rights have been inhibited by a university prohibition against his classroom distribution of fundamentalist Christian literature. Dilawar M. Edwards has filed a suit supported by the Rutherford Institute International, a religious legal organization based in Charlottesville, VA. (The Rutherford Institute is a name to watch for—it is becoming an increasingly active leader in the "religious right" movement now that Moral Majority has disbanded.)

As announced earlier, NCSE moved its Berkeley office to a more spacious (and less expensive) office

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NCSE-ers
publish "On
the Origins
of Species"
~

~
NCSE
videos—
teaching
how science
works, not
just what to
memorize
for the next
exam
~

in a building composed entirely of other non-profit organizations. Most correspondence comes through our P.O. Box, but if you need to write the office directly, or visit, the new address is: 2530 San Pablo Avenue, Ste. D (as in "Darwin," of course . . .), Berkeley, CA 94702-2013. The phone area code has been changed by Ma Bell—it was 415; now it's 510. The number is thus (510) 843-3393 (same number, different area code). □

Recycling

Have you recently received a book, brochure, tape, or other item from NCSE's national office? You might notice that it came in an envelope or box with a big RECYCLED! stamp on it. NCSE is trying to be kinder and gentler to the environment by re-using paper as much as possible. If the container in which you receive your NCSE materials is a little wrinkled, or looks like it has passed through the post office once already, don't be offended, be glad you're helping to save trees and other natural resources as NCSE recycles.

We are using recycleable (i.e., non-plastic, although some paper recyclers don't yet recognize the distinction) glassine windows in our window envelopes and will be shifting to the use of more recycled paper for our stationery and brochures, as cost allows.

Letters *continued from p. 3*

Whether we like it or not, we must acknowledge that emotions, not scientific evidence, are what sway most people. . . . [T]he first step NCSE could take in dealing with this fact would be to start selling books by theistic evolutionists. . . . NCSE sells books [by "scientific" creationists, so why not those by theistic evolutionists]? As an example, I recommend the book by Episcopal Bishop John Shelby Spong, *Rescuing the Bible from Fundamentalism: A Bishop Rethinks the Meaning of Scripture*, published by Harper/San Francisco. Although the book is not exclusively concerned with creationism, it is an excellent attack on literalism in general.

Jeffery J. Lowder
Silverdale, WA

Ed: NCSE does not take stands on religious issues, as such, and thus tries to avoid general critiques of "fundamentalism," for example. We have praised and offer for sale some books such as you suggest (see centerfold for a Davis Young, et al example).

NCSE Videos Released!

NCSE is proud to announce the recent release of its first two videotapes, *How Scientists Know About Human Evolution* and *How Scientists Know About Punctuated Equilibria*. The color videos are intended for junior high, high school and freshman-sophomore college science courses and run 20 minutes each. Each video sells for \$175, or both may be purchased for \$310 from UC Extension Media Center, 2176 Shattuck Avenue, Berkeley, CA 94704 (510-642-0460).

The videos were made with the assistance of a number of foundations, including Carnegie Corporation of New York, the Richard Lounsbery Foundation, and the William H. Donner Foundation. Both videos not only attempt to teach about a subject in evolutionary biology, but they stress science as a way of knowing. The *Human Evolution* video, for example, begins with a close-up of a skull, and asks, "What kind of fossil is this? How do we know?" It then leads viewers through the steps a paleontologist would take to identify the specimen first as a mammal, then as a primate, then as a member of the ape/human family, and finally, as a hominid. It also illustrates the variety of scientific disciplines that are drawn upon to understand the human past, including comparative anatomy, primate social behavior, archaeology, geology, and cultural anthropology.

The *Punctuated Equilibria* videotape also focuses on science as a way of knowing. Niles Eldredge relates how he and Stephen Jay Gould formulated the theory of punctuated equilibria—from initial disappointment that he had not discovered the sought-after "right" fossils that would show gradual evolution, to his recognition that the pattern he found actually reflected a non-gradual rate of evolution. Professor Jere Lipps of the UC Berkeley Museum of Paleontology described the video as "A crisp, enlightening explanation of how science works."

We hope to find funding for more videos in the *How Scientists Know About*. . . . series. Meanwhile—let us know what you think about these first two attempts! They are designed for school use, and the University of California is one of the principle suppliers of audiovisuals, nationwide. They will be advertising them, but please recommend them to your local schools if you have the chance. □

NCSE on Computer? An Invitation to Fora & BBSs

David C. Wise, Tustin, CA
[CIS 72747,3317]

While *Reports* is a rich source of timely information about creation/evolution, I often find myself wishing for a more direct channel of communication. Fortunately, in the decade since the CCs started establishing grass-roots communications networks for exchanging ideas, experiences, and information, another medium for information exchange has developed: computer bulletin boards.

There are a number of computer services, bulletin board systems (BBSs), and special-interest groups (SIGs) out there that either support creation/evolution exchanges or could be put to that use. Two such services are the Compu-Serve Information Service and the Students for Origins Research BBS.

On the Compu-Serve Information Service (CIS) there are two SIG fora which have dealt with creation/evolution: the Science & Math Forum (GO SCIENCE) and the Religion Forum (GO RELIGION) [these are not competing cheers, but rather the CIS commands to go to these fora]. There is no extra cost for joining these fora; only the normal connect charges apply (about \$16 per hour). The "SCIENCE & RELIGION" section of the Religion Forum enjoys much more activity and opportunities for dialogues with creationists and a well-stocked file library. The Science Forum provides a quieter environment for NCSE/CC members to exchange ideas and information without constantly engaging in debate and a better chance to get technical questions answered by qualified people. In both fora, messages roll off very quickly, in about a week.

The creationist group, Students for Origins Research (SOR) runs the SOR-BBS at (719) 528-1363. There is no charge for joining the SOR-BBS nor for the connect time, but you do still have to pay the long-distance phone bill yourself. The files available for downloading include articles from back issues of their newsletter, *Origins Research*, and files uploaded by other users. The message area is divided into sections for general messages and announcements, as well as "dialogues" on such sub-

jects as natural selection, age of the earth, and polonium halos (including messages posted by Ontario Liaison J. Richard Wakefield). There appears to be far less activity on the SOR-BBS than on Compu-Serve, with many messages having been posted as many as three years ago.

I hope that other readers will also share their "watering holes." Through my own sampling of the waters, I have been able to converse with other opponents of "creation science" and to inform them of NCSE. Even more importantly, by conversing with creationists I have been able to follow their current arguments more directly and to practice responding to them, which has come in handy in local debates.

Ed: We have been trying to develop a BBS since last winter when an active supporter offered to plug us into the Cleveland area FREENET which is actually nationwide via various interconnections. They maintain an international "skeptics" bulletin board already and would provide system maintenance and supply a huge amount of computer memory space at Case-Western Reserve. I hope we can report positively on this in the next issue. We must provide a part-time "sys-op" with the time and energy to supply them with info via modem—free via INTERNET, BITNET, and other communication systems using local phone calls. Contact Bob Schadewald (13204 Parkwood Drive, Burnsville, MN 55337 if you can volunteer!]

Error in *Science*, 11 October 1991, p. 277

Reprinted in part, as a public service:

In reference 5 of the report "Defining protective responses to pathogens: Cytokine profiles in leprosy lesions," . . . some of the primer sequences were given in the 3'-5' rather than the 5'-3' direction. The correct sequences should have been as follows: IL-3, ATGAGCCGCTGCCCCGTCTG and AAGATCGCCGAGGCTCAAAGTCGTCTGTGTTG; IL-5, ATGAGGATGCTTCTGCATTTG and TCAACTTTCTATTATCCACTCGGTGTT-CAT-TAC; . . .," etc.

Look the rest up yourself—it's hard to replicate protein sequences this late at night.

Books

	LIST	MEMBERS
Berra, <i>Evolution and the Myth of Creationism</i>	7.95	6.35
Birx, <i>Interpreting Evolution</i>	*29.95	24.00
NEW Dalrymple, <i>The Age of the Earth</i>	*49.50	39.50
Dawkins, <i>The Blind Watchmaker</i>	8.95	7.15
Dietz and Holden, <i>Creation/Evolution Satiricon</i>	9.95	7.95
†Ecker, <i>The Dictionary of Science and Creationism</i>	*34.95	27.95
Edey and Johanson, <i>Blueprints</i>	*19.95	15.95
Eve and Harrold, <i>The Creationist Movement in Modern America</i>	11.95	9.55
Godfrey, <i>Scientists Confront Creationism</i>	9.70	7.75
Gould, <i>Bully for Brontosaurus</i>	*22.95	18.35
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McGowan, <i>In the Beginning... A Scientist Shows Why the Creationists Are Wrong</i>	17.95	14.35
McIver, <i>Anti-Evolution, An Annotated Bibliography</i>	*39.95	33.95
Montagu, <i>Science and Creationism</i>	15.95	12.75
Morris, <i>Biblical Basis for Modern Science</i>	*24.95	19.95
Morris, <i>Genesis Record</i>	*24.95	19.95
Morris, <i>The Long War Against God</i>	*21.95	17.55
NEW Newell, <i>Creation and Evolution: Myth or Reality?</i>	12.95	10.35
NEW Robinson and Tiger, eds. <i>Man and Beast Revisited</i>	16.95	13.55
Ruse, <i>But is it Science?</i>	*27.95	22.35
NEW Scherr, ed. <i>The Best of The Journal of Irreproducible Results</i>	9.95	7.95
Smith, <i>Did Darwin Get it Right?</i>	*25.00	20.00
†Strahler, <i>Science and Earth History, the Evolution/Creation Controversy</i>	*46.95	37.50
UNESCO, <i>700 Science Experiments for Everyone</i>	*13.95	11.15
Van Till, Young, and Menninga, <i>Science Held Hostage</i>	9.95	7.95
Willis, <i>The Hominid Gang</i>	*21.95	17.55

Kids Books

Barker, <i>Maybe Yes, Maybe No</i>	11.95	9.55
Haught, <i>Science in a Nanosecond</i>	12.95	10.25
Stein, <i>The Evolution Book</i>	12.95	10.35
Stein, <i>The Science Book</i>	9.95	7.95

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Man and Beast Revisited

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Papers from a symposium on sociobiology, the study of the genetic and evolutionary bases of social behavior. The writing is described by *Science* as "uncommonly and almost consistently good," with contributions from E.O. Wilson, Richard Dawkins, Robin Fox, and others.

The Best of The Journal of Irreproducible Results

George H. Scherr, ed.

The best of the "journal" parodying scientific publications. Over 90 articles, including classics such as "The Faculty Phrase Finder," and "The Inheritance of Death." A must for any scientist or science lover.

Diskettes

NCSE now offers computer diskettes on topics of interest to our members. To order see list at right.

The Origin of Theses

Kevin Henke

An analysis of two masters theses in geology "highly praised" by ICR officials, but sadly lacking in scholarliness, according to Henke. Discusses why the works fail as science and as geology.

An Evolutionist Goes to the Creationist Movies

Frank J. Sonleitner

Analysis of 10-part "Origins" movie series. Counter arguments to the Flood, human evolution, thermodynamics, etc. References.

What's Wrong with Pandas?

Frank J. Sonleitner

Meticulous, almost page by page analysis of creationist textbook, *Of Pandas and People*. References.

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1976 K. Mather, *The Scopes Trial*

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Resources

This section briefly notes publications of interest without necessarily endorsing or criticizing them. Where indicated, copies are available from the NCSE Resource Center for nominal charges.

Angier, Natalie. 1991. Biologists Advise Doctors to Think Like Darwin. *New York Times*, 24 December, pp. C1 and C8. Excellent review article about the need for MDs to understand evolution, based on a recent journal article by George C. Williams and Randolph M. Nesse, "The Dawn of Darwinian Medicine" in *The Quarterly Review of Biology*. A book on the topic is tentatively scheduled for 1992.

Blank, R.K., and M. Dalkilic. 1991. State Indicators of Science and Mathematical Education. Council of Chief State Officers. \$12 from CCSO, 400 N. Capitol Street, Suite 379, Washington, DC 20001. Results of recent survey re: teacher qualifications, student enrollments, gender, ethnicity, etc.

Bower, Bruce. 1991. Darwin's Minds. *Science News* 140: 232-234, 12 October. Summary article about recent evolutionary psychology exploring sex differences, language and the mind, jealousy, etc.

Brande, Scott. 1991. *Pandas Attack Science Education*. *Free Inquiry* 11(3): 28-31. Review of Alabama textbook adoption story [see *Reports* 9(6): 5, 10(1): 8]. Available from NCSE for SASE + \$1.00.

Cavalli-Sforza, L.L. 1991. Genes, Peoples and Languages. *Scientific American* 265(5): 104-110. 3 Lines of evidence point to an African origin of humanity.

Cullotta, Elizabeth. 1991. How many Genes Had to Change to Produce Corn? *Science* 252: 1792-1793, 28 June. News report on recent molecular data which suggest that mutations in as few as five key genes may have done the evolutionary trick. Nice argument against creationist claims that endless numbers of complex, simultaneous changes are needed for evolution to take place.

Dalrymple, G. Brent. 1991. *The Age of the Earth*. Stanford University Press. 474 pp. One of America's foremost geochronologists explains the current state of the art of his specialty, radiometric dating. Available from NCSE—see centerfold; [also see the "Tracking . . ." article in this issue]

Dasa, Sadaputa. 1991. Primordial Alphabet Soup. *Back to Godhead*, September-October, pp. 51-54.

Hare Krishna critique of evolution from "primordial soup." SASE + \$1.00 from NCSE.

Davies, Paul. 1991. *The Mind of God. The Scientific Basis for a Rational World*. NY: Simon and Schuster. Davies' latest book on cosmogenesis—"God" is a sort of law of physical order to him.

Day, S. 1991. The First Gene on Earth. *New Scientist* 132: 36-40. Latest info on RNA being the precursor of life.

Edelson, Edward. 1991. Tracing Human Lineages. *Mosaic* 22(3). SASE + \$1.00 from NCSE.

Godfrey, Laurie. 1990. The New Anti-evolutionism. *Reviews in Anthropology* 15: 149-159. Essay on the history and cultural nature of "scientific" creationism in the guise of reviews of books by Dorothy Nelkin and Marcel LaFollette. Written in 1986, slightly updated recently and actually published in 1991, the article is nevertheless an excellent summary of the similarities and differences between old and new creationism and a critique of the idea of letting courts decide what is or is not science. SASE + \$2.00 from NCSE.

Godfrey, Laurie. 1991. Review of E. Caudill, *Darwinism in the Press; The Evolution of an Idea*, in *American Scientist* 79: 285-286.

Gould, S.J. 1991. Fall in the House of Ussher. *Natural History*, Nov., pp. 12-21. How Ussher arrived at his recent-creation date.

Grant, P. 1991. Natural Selection and Darwin's Finches. *Scientific American* 265(4): 82-87.

Halliwell, J.J. 1991. Quantum Cosmology and the Creation of the Universe. *Scientific American* 265(5): 76-85. Attempting to look beyond the instant of "creation."

Hull, David. Review of *Darwin on Trial*, by Philip Johnson. *Nature*, 8 August 1991. See Marks, this issue, for commentary. SASE + \$1.00 from NCSE.

Iowa Committee of Correspondence. 1991. Videotaped presentations of March 1991 symposium with M. Zimmerman, G. Shroyer, W. Harris, S. Weinberg. All 4 tapes: \$35, single tapes \$10 @. Write Wm. A. Forsee, 4942 Greene Ave., Omaha, NE 68257.

grass to
maize
(corn)—as
few as five
mutations

Resources

Lewin, Roger. The Biochemical Route to Human Evolution. *Mosaic* 22(3), NSF. Survey of some of the latest on "Mitochondrial Eve." SASE + \$1.00.

McMasters, John H. 1989. The Flight of the Bumblebee and Related Myths of Entomological Engineering. *American Scientist* 77: 164-169. Much more detailed than our note in the last *Reports*. The author also looks at the myth of supersonic deerflies and the fact that for efficiency, flying over a canyon beats bicycling off the cliff.

Ostrom, J.H. 1991. The Bird in the Bush. *Nature* 353: 212. Ostrom expresses disappointment with Chatterjee's recent publication about "Protoavis."

Raup, David M. 1991. *Extinction: Bad Genes or Bad Luck?* NY: W.W. Norton. 210 pp, \$19.95, hardcover. Overview of extinction theories written for the public. Intro by S. Gould.

Rennie, John. 1992. Living Together. *Scientific American* 266(1): 122-133. Review article about the evolution and nature of parasites and symbiosis. Case studies include malaria and sickle cell anemia and many less familiar examples.

Robinson, Michael H., and Lionel Tiger, Eds. 1991. *Man and Beast Revisited*. Washington: Smithsonian Institution Press. xxiv + 386 pp, paperback. \$16.95. A fairly technical symposium volume with adherents surveying the state of sociobiology today. See **Centerfold**.

Scott, Eugenie C. and Henry P. Cole. 1991. The Elusive Scientific Basis of Creation "Science." Reprinted in *The Writer's Audience*, ed. by N.G. Anderson. Originally published in the *Quarterly Review of Biology* (1985), a classic discussion of creationism plus results of surveys showing that "scientific" creationists do not publish their "model" in standard scientific journals. SASE + \$2.00 from NCSE.

Stephensen, Frank. 1990. The Foram Fossils: A Classic Tale of Transition. *Research in Review* Summer/Fall, pp. 11-15, 27. Foraminifera microfossils show gradualism as well as punctuation occur. Non-technical, lots of info. SASE + \$2.00 from NCSE.

Symonds, N. 1991. A Fitter Theory of Evolution? *New Scientist* 132: 30-34. A review of recent experiments supposed to support "Lamarckian" evolution.

Toumey, Christopher P. 1991. Modern Creationism and Scientific Authority. *Social Studies of Science* 21(4): 681-699. Cultural attitudes and forces, not just fundamentalism, underlie modern creationism. Scholarly but non-technical article by an NCSE member who wrote his anthropology doctoral dissertation on the creationist movement. SASE + \$2.00 from NCSE.

Travis, John. 1991. Electronic Ecosystem. *Science News* 140: 88-90 (10 Aug). Article about "electronic life" program developed by Thomas S. Ray, a biology Ph.D. turned artificial intelligence expert. The program, "Tierra," is said to demonstrate evolution and to behave in such a way that people debate whether or not it is, in fact, alive. Mutations occur, as do speciation and extinction events, and even parasites develop "naturally."

U.S. Department of Education. 1991. *Helping Your Child Learn Science*. 58 pp. FREE from Dept. 611X, Consumer Information Center, Pueblo, CO 81009. I haven't seen it.

Valentine, James W., S. M. Awramik, P. W. Signor, and P. M. Sadler. 1991. The Biological Explosion at the Precambrian-Cambrian Boundary. *Evolutionary Biology* 25: 279-356. Important, detailed look at fossil distributions and major hypotheses for metazoan expansion by leaders in the field. Technical.

Vigilant, Linda, Mark Stoneking, H. Harpending, K. Hawkes, and A. C. Wilson. 1991. African Populations and the Evolution of Human Mitochondrial DNA. *Science* 253: 1503-1507, 27 September. The clearest experimental test yet of the "mitochondrial Eve" hypothesis strongly supports the idea of a common female African ancestor or group between 166,000 and 249,000 years ago. SASE + \$1.00 from NCSE.

NOVEL NOVEL. *The Gold Bug Variations* by Richard Powers (Morrow, \$25) is a novel which tries fairly successfully and entertainingly to intertwine DNA research, computer programming, and Bach. It traces the intertwined lives of a 1950s DNA researcher and an art historian-music-lover computer programmer. The protagonist is a research librarian in 1983, looking back on things. Two lives are traced like a double helix, and in the process illuminates great swaths of biological and computer research with art and music. Great themes and information, although one critic has accused its clever science humor of "terminal cuteness."

JRC

~
Bad genes
or
bad luck?
~

Tracking Those

So How Old Is the Earth, Anyway?

G. Brent Dalrymple
US Geological Survey
Menlo Park, CA

The “scientific” creationists would have us believe that the earth is very young, and although they do not provide a specific value for the age of the earth, 6,000 to 20,000 years seems to suit them (e.g., Morris 1974, Kofahl and Seagraves 1975, Gentry 1986). Scientists, on the other hand, are quite confident that the age of the earth and Solar System is between 4.5 and 4.6 billion years (abbreviated b.y.), with 4.54 ± 0.02 b.y. being the most generally accepted value at present (Dalrymple 1991). How well is the earth’s age known, and what evidence has led scientists to the conclusion that it is billions, rather than mere thousands (or even millions) of years old?

Scientists have developed a powerful set of analytical methods that allow them to measure the elapsed time since a rock or mineral formed. These isotopic dating methods rely on the decay of a handful of naturally-occurring radioactive isotopes (^{235}U , ^{238}U , ^{40}K , ^{87}Rb , ^{147}Sm , and a few others) with half-lives of hundreds of millions or billions of years. These radioactive *parent* isotopes, some of which occur in virtually all rocks and minerals, decay to their *daughter* isotopes at a constant rate regardless of chemical or physical conditions (^{235}U to ^{207}Pb , ^{40}K to ^{40}Ar , etc.). Each parent-daughter pair thus constitutes an independent isotopic “clock” that allows geologists to determine the ages of the rocks in which they occur.

A principle problem in dating the earth is that our planet is a dynamic body and thus is ever-changing. Earth’s lithospheric plates are constantly in motion and its crust continually renewed, modified, and destroyed. As a result, rocks that record earth’s earliest history have not been found and may no longer exist. Thus, age measurements on earth’s oldest known rocks can provide no more than a minimum age for the planet.

Rocks exceeding 3.5 b.y. in age have been found on all continents, but the oldest and most thoroughly studied so far occur in Greenland, North America, Africa and Australia, where sequences of old rocks have been carefully mapped, thoroughly studied, and dated by more

than one isotopic method. Rocks at Isua in western Greenland have been dated by *four* different isotopic dating methods and are 3.7–3.8 b.y. in age. In the Minnesota River Valley and northern Michigan ancient rocks have been dated by two different methods at 3.4–3.7 b.y. in age. Ancient rocks in Swaziland have ages of 3.4–3.5 b.y. (4 methods), and those in the Pilbara area of Western Australia have ages of 3.4–3.56 b.y. (3 methods). The oldest rocks known on earth were recently found in the Slave Province in northeastern Canada with U-Pb ages of 3.93 ± 0.01 and 3.96 ± 0.003 b.y. An interesting feature of all these ancient rocks is that they originated as sediments and lava flows. The debris from which sedimentary rocks formed must have been from even older crustal rocks.

Additional information about the age of the earth can be found in studies of lunar samples and of meteorites because the evidence indicates that all of the bodies of the solar system formed at approximately the same time (even creationists agree on this). There are several hundred isotopic age measurements on the samples returned by manned Apollo (US) and unmanned Luna (USSR) missions to the moon. All but a few of these ages exceed 3 b.y. Most of the ages record the time of lava flow extrusions onto lunar maria or of meteoric impacts, but a very few, on samples from lunar highlands, appear to record the time of formation of the lunar crust. These oldest samples have been dated by two isotopic methods at 4.4–4.5 b.y.

Most meteorites are fragments resulting from asteroid collisions (although a few are thought to have originated on Mars and the Moon). The fragments are injected into earth-crossing orbits by the gravitational effects of Jupiter. Their eventual fall to earth as meteorites provides scientists with samples of the most primitive rocks in the solar system. The majority of the 70 or so well-dated meteorites have isotopic ages of 4.4–4.6 b.y. These ages, obtained by five different isotopic dating methods, record events that occurred early in the history of asteroids, including formation, collisions, heating, and volcanic activity.

Chemical Elements

(numbers indicate specific isotopes; ^{14}C , for example, is well-known as “Carbon-14,” but ^{14}C has a quick decay rate and cannot be used to date things older than a few tens of thousands of years)

Ar = Argon
K = Potassium
Pb = Lead
Rb = Rubidium
Sm = Samarium
U = Uranium

Incredible Creationists

The ages of the oldest meteorites and the oldest lunar samples indicate that the solar system (and, therefore, earth) is 4.5–4.6 b.y. in age. The best value for the age of the earth, however, comes from a model for the evolution of lead isotopes in the earth and in meteorites. The isotopic composition of lead (i.e., the ratios of the different lead isotopes) when the matter of the solar system first segregated into discrete bodies is thought by scientists to be preserved in a Uranium-free mineral (troilite) found in iron meteorites. The isotopic composition of lead in other mineral phases in meteorites, as well as in lunar and terrestrial rocks, has changed over time because of the radioactive decay of ^{235}U to ^{207}Pb and ^{238}U to ^{206}Pb . The best value for the age of the earth is based on the time required for the isotopic composition of lead in the oldest (2.6–3.5 b.y.) terrestrial ores, of which there are currently only four, to evolve from the primordial composition, recorded in meteoritic troilite, to the composition at the time (measured independently) the ores separated from their parent rocks in earth's mantle. These calculations result in ages for the earth of 4.42 to 4.56 b.y. with a best value of 4.54 b.y.

The evidence for the antiquity of the earth and solar system is consistent with the evidence for an even older universe and Milky Way Galaxy. The age of the universe has been estimated by astronomers from the velocity and distance of other galaxies as they recede from earth's perspective in the expand-

ing universe. These estimates range from 7 to 20 b.y., depending on whether the expansion is considered to be constant or slowing due to gravitational attractions of galaxies to each other.

The age of our Milky Way galaxy is estimated to be 14–18 b.y. from the rate of evolution of stars in globular clusters, which from their elements are thought to be the oldest stars in the galaxy. The best estimate of the age of the elements in the galaxy, based on the production ratios of Osmium isotopes in supernovae and the change in that ratio over time due to radioactive decay of Rhenium, is 8.6–15.7 b.y. Theoretical considerations indicate that the galaxy formed within a billion years of the beginning of the universe.

Based on all of the evidence for ages of the galaxy and the universe, the "best," i.e., most consistent and generally accepted, age of the universe is estimated to be 14–17 b.y.

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~
"Rocks
exceeding
3.5 b.y. in
age have
been found
on all
continents"
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Peloza *continued from p. 1*

his freedom of speech was being denied because he was being "forced" to teach evolution, which to him is a religion. "It is plaintiff's position that forcing him to teach the religious belief system of evolutionism as a valid scientific theory would force him to become an unwilling agent of the school district in the establishment of the religion of secular humanism, in violation of the First Amendment to the United States Constitution." In translation, Peloza claimed that evolution is a religion, therefore, advocating it in the classroom is against the first amendment establishment clause. If the District forces him to teach it, against his wishes, it is in effect forcing him to contravene the first amendment.

Lest one be misled that evolution is an acceptable part of the science curriculum, rather than being a

religion, Peloza's lawyer, Cyrus Zal, cleared this up promptly: "The general acceptance of the religious belief system of evolutionism in academic circles does not qualify it or validate it as a valid scientific theory." (This begs us to ask the question, Who shall define what science is? Plumbers? Ballet dancers?)

Peloza claimed that the District conspired to deny him his rights, slander him, deny him due process, etc., because he is a Christian. He also argued his right to "privately discuss religion in conversations initiated by students" outside of the classroom, but still on campus.

The District's defense centered around proclaiming its right to require Peloza to teach the curriculum

Peloza, continued on p. 22

The Creationist Press

O*rigins Research*, published by Students for Origins Research, has long been free to students and educators. Many evolutionists have come to applaud OR's disdain for creationist excesses and willingness to consider and print responses to their articles and even to occasionally invite non-creationist contributions.

The latest issue (vol. 14, No. 1, Spring/Summer 1991) somewhat confusingly announces a new name for its organization (Access Research Network) and plans to continue *Origins Research* newsletter twice per year and add a new quarterly, *Currents in Science, Technology and Society*—still free to students but \$15 per year for educators and \$25/year for regular subscribers. *Membership* is \$50. The current issue has a multi-page critique of the California Science Framework and a long lead article criticizing "Project 2061." Their address is ARN, P.O. Box 38069, Colorado Springs, CO 80937-8069. Write and ask them about their confusing new names and rates!

The Bible-Science Association has been deluging people with fundraising letters and suspended the *B-S Newsletter* recently. Their most recent panicky letter indicated that the Newsletter might be resuscitated if it could pay its own way. They asked for donations to support wider dissemination of their "Creation Minute" radio spots which are broadcast on hundreds of stations, often as "public service" announcements.

Their pleas for massive cash infusions must have paid off, since there is a new issue of the *B-S News* just out. Its format now looks very much like *NCSE Reports*! It includes an attack on NCSE, not completely surprisingly, but it also blasts Harvard astronomer Owen Gingerich for "practicing theology without a licence!"

Gingerich is prominent in the American Scientific Affiliation, a group of evangelical scientists which has recently issued a position paper calling for the "teaching of evolution *as science*" (their italics). BSA is unhappy with Gingerich's assertion that one can be a Christian and still study evolution.

The new ASA position paper seems to want teachers to draw a line between "evidence and belief" in the classroom and attack evolution when it is taught as

an "ism" as, they assert, it usually is. (Most scientists would agree that zealotry is out of place in the classroom, but they would not agree that evolution is typically taught as an "ism.") ASA refers readers to NCSE and our *Voices for Evolution* book. Many NCSE members have been upset by their earlier publication which has recently been reissued, *Teaching Science in a Climate of Controversy*. That book also tries to straddle the line between science and theology, suggesting that evolution is often more belief than "fact." Ironically, Henry Morris and other founders of contemporary "scientific" creationism broke away from the ASA, accusing it of harboring non-literalists (its members tend to be "theistic evolutionists" or otherwise too liberal for Morris, et al). ASA tries to reconcile science and religion, while most scientists tend not to see this as a problem.

Looking elsewhere, *The Biblical Astronomer* will now be \$12 per year (\$20 for geocentricity-believing members). The latest issue notes the cancellation of the 1991 conference in Cleveland but says a group got together, anyway, at Gerardus Bouw's home. They planned to make an informal public presentation, but they enjoyed the "shenanigans" in the back yard so much, they never got around to going to the meeting hall. □

Evolution of the "World History Chart"

The ubiquitous (advertised in everything from *Biblical Archaeology* to *Scientific American*) "World History Chart" has apparently evolved. Perhaps responding to complaints from NCSE members and others [see articles in *Reports* 9(2):18, 9(4):19, 10(4):11], the publishers, "International Timeline, Inc.," are now offering a "universal" form of the chart that contains the mixed-up jumble of history, archaeology, theology and mythology (with a Mormon slant), and a new "secular" chart that presents only "documented history and archaeology." Has anyone seen it? Is the "secular" chart really good history? We still receive occasional complaints or tips about the ad, but we have not heard from anyone who has seen the newest incarnation—and we haven't invested in a copy.

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B-S
Newsletter
reincarnated
as
Bible-Science
News
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Keeping Tabs

Americans and the Gallup Creationism Poll

A December 1991 Gallup Poll asked Americans for their views on several statements, including, "*Man was created pretty much in his present form about 10,000 years ago.*" Opinion was split more or less equally, with this narrow definition of creationism supported by 47%, rejected by 49%. People with more education and income rejected this statement twice as often as poorer, less educated respondents. 39% of men and 53% of women apparently endorsed this unscientific view, perhaps reflecting greater religiosity among women and less science education.

80% of those polled who supported evolution said they believed in God.

As a nation, the US is one of the most religious states in the world—in one recent poll only 7.5% of a national sample said they had no religion. The vast majority in a 1991 poll by researchers at the City University of New York identify themselves as Christians; 1.8% were identified as religious (as opposed to "cultural") Jews, and 0.5% were Muslims. New Age faiths were virtually insignificant, with an estimated 28,000 self-identified practitioners.

More than some polls, this one seems to have taken some care to recognize that many people believe in a "Creator" without being creationists in a limited sense. Nevertheless, these surveys tend to ask more about labels than about content. There are professed "evolutionists" who probably adopt that label because of social or economic peer expectations even though they really know nothing about the topic—a form of "scientism" many creationists complain about with good reason. It is not clear from these polls whether respondents actually know much about evolution or theology with more educated people responding with the answer expected of them.

In other words, these startling results may be skewed a bit misleadingly towards *support* for evolution. □

OASIS is the newsletter of the Ontario Association for the Support of Integrity in Science, J. Richard Wakefield, ed., 385 Main St., Beaverton, ON, Canada LOK 1A0; \$10/yr

Church-going (80%), Gun-owning (54%), Nonsmoking (88%), Creationist (67%) Texas Teachers

Eugenie C. Scott

A recent poll of members of the Texas State Teachers Association by a Sam Houston State University professor, David Henderson, describes the "typical" Texas teacher as favoring creationism over evolution. His numbers show creationism winning by rather large margins. The study, reported in the *Houston Chronicle* 11/6/91, says 67% of Texas teachers "believe in the literal Biblical account of man's origin, compared with 25% who believe man evolved from lower life forms." The article did not reveal the exact question asked the teachers, and the wording of the question is always a problem in surveys of this sort.

Because many theistic evolutionists define themselves as "creationists," believing that God created through evolution, statistics are skewed unless the question is phrased carefully. The poll included teachers from all disciplines; we would predict that the percentage of evolutionists would be higher among science teachers. Still, the high percentage of "creationists" (assuming, as did the reporter, Biblical literalists) in the ranks of Texas schools is reason for concern, given the substantial influence Texas wields in the science textbook market. Of course, teachers responding to surveys like this may also err on the side of caution in a literalist, creationist political setting, but as teachers they might be subject to pressures to conform in the opposite direction, leaving creationist biases *under-represented*. □

DEPARTMENT OF CLARIFICATION. A note attributed to Jim Lippard in the last *Reports* characterized Michael Denton as a "creationist." This was not Lippard's characterization. I apologize for introducing this term editorially.

JRC

Top Scientist Read By Millions!

Eugenie C. Scott

We are pleased to report that NCSE Supporter Dr. David Morrison, chief of the Space Science Division at NASA Ames Research Center, has achieved the dubious distinction of being featured in the January 7, 1992 *National Examiner*, subtitled, "America's Favorite Family Weekly." Along with family-oriented stories such as "Madonna's Hot Nights With Sexy 90210 Hunk" and "52 Ways To Be Richer A Year From Now," on p. 29, with "Widow Digs Up Dead Hubby," we find Dr. Morrison the quote-provider for "Killer Asteroid Heading Straight For Earth."

The article itself is not an inaccurate portrayal of Morrison's research, as presented in his book with Clark Chapman, *Cosmic Catastrophes*. The probability of planet Earth being hit by an asteroid is small, but if even a moderate-sized one hits, the devastation and loss of life would be, well, astronomical. To keep us from going the way of the dinosaurs (themselves

possibly smacked by an asteroid at the end of the Cretaceous), Morrison suggests that we should spend a relatively small amount of money (as Federal budgets go) to monitor and plot the trajectories of asteroids in our part of the solar system. This would allow us to determine when one is on a collision course with Earth, and deflect it from its course by detonating a nuclear device next to it.

Morrison did not state, however, that there was a *known* asteroid "heading straight for earth." On the other hand, one must consider that other articles in the issue claim that, "Heartbroken Hippo Mourns Murdered Brother," and "Bible Foods Melt Away Extra Pounds."

Congratulations, Dave! But it is ironic that more people will read this article than will read all the rest of your very substantial and scholarly professional output combined. □

PLEASE NOTE. The address for the Colorado Liaison listed in our previous issue was erroneous. It is:

Martin Tobias,
CURE, P.O. Box 386,
Lafayette, CO 80021.

The Alaska Liaison is:
Dr. Christine Hanson,
Department of Anthropology,
University of Alaska,
Anchorage, AL 99508.

The National Council for Self-Esteem, with headquarters in Sacramento, CA, uses the acronym NCSE and calls itself "self-esteem central," while we answer the phone with our full tongue-twisting name. Don't be fooled—insist on the original NCSE for your evolutionary self-esteem needs! (A tip received from member Stan Ulrich.)

Thanks, Marilyn

Marilyn vos Savant, the high IQ lady with the questions and answers column, gave a good answer to an anti-evolution question published in her June 30, 1991 *Parade* column. John Weldon, of Chattanooga, TE, wrote, "I recently spent a small fortune to purchase a two-volume, 1100-page, 5400-foot-note critique of Darwin's major work. If evolution is a 'fact' or even a reasonable theory, why is there so much scientific opposition to it?"

The columnist answered, "Charles Darwin was not merely a proponent of evolution. He postulated a specific *cause* of it—namely, natural selection. Most of the scientific opposition is not to the theory of evolution in general but to Darwinism in particular, regarding such things as the rate of change or the manner of it."

Thanks, Marilyn, for a sensible answer! Many people in your position do not realize there is a difference between evolution and *mechanisms* of evolution.

FOOTNOTE: we suspect the book in question was Wendell Bird's two volume, *The Origin of Species Revisited*. □

and students that complies with a national accrediting association recognized by the United States Department of Education." TRACS, of course, headed by ICR President Henry M. Morris, requires a statement of belief in young-earth creationism as part of the evaluation of accredited institutions. This seems to be in contradiction to the California-recognized WASC statement on academic freedom which, although allowing religious institutions to hire on the basis of doctrinal belief, requires freedom of conscience and expression in scholarly work. ICR faculty must annually sign a statement professing belief in young-earth creationism, specifically, as a requirement for continuing employment.

Perhaps the single most distressing statement in the agreement says, "That defendants acknowledge that a private postsecondary educational institution may teach the creation model as being correct provided that the institution also teaches evolution."

The substitution of a couple of words makes their mistake clear: "... a private postsecondary educational institution may teach the flat earth model as being correct provided that the institution also teaches that the earth is round," or it "... may teach that spirits cause disease provided that the institution also teaches that germs cause disease." This statement makes no pedagogical or scientific sense.

The 1989 visitation committee's reason for rejecting ICR's degree-granting status was clear: ICR was not providing graduate training equivalent to that of accredited institutions, as required by law. The library and laboratories were inadequate, student preparation was inadequate for graduate work and thus courses were offered at an undergraduate, rather than graduate level, textbooks used were appropriate for undergraduate rather than graduate work, the faculty did not perform research, etc.

This "equal time is OK" provision will not substitute for the poor quality of scientific training presented by the ICR's graduate school, but it invites ICR to claim that California has legitimized creation "science"—a debatable claim but one we will be hearing from ICR and others.

The implications of this apparent endorsement of a "two-model" approach for bogus degree-granting institutions for which California is famous are

probably obvious, but what new degrees will California approve in the future? Perhaps a "College of Crystal Healing" will apply for degree-granting status based on the fact that it *also* teaches about "real" medicine (although certainly not seriously).

The Department of Education actually agreed to a statement that may imply that the content of a degree program might be irrelevant to the consideration of approval to grant degrees. "... [D]efendants [Cal.] acknowledge that a private postsecondary educational institution that meets the statutory standards and its implementing regulations can be approved as a degree granting institution. Except as provided by statute and implementing regulations, an institution may teach any curriculum or include any material in a course's content without being penalized." This statement seems to say that, if the institution meets all the statutes and regulations, actual content of courses and degrees cannot be considered in rejecting a request for approval.

It is doubtful that this is an appropriate standard for the business colleges and mechanics training institutes usually licensed by the state, and it is definitely inappropriate for a scientific institution.

An institution, even though it has proper administrative and financial accounting practices "required by statute," should not be able to offer a degree in auto repair if it is instead teaching a demon-possession theory of car malfunction or perhaps window washing. Similarly, in science, there are issues of training quality and of what constitutes science. There are actual (even if largely unwritten) standards and community consensus of what comprises a "good" graduate program. These standards may not always be codified in "statutes and implementing regulations," but a scientist "knows 'em when he sees 'em"—and the scientists who visited the ICR say the ICR didn't measure up.

So is quality of content forever banned from being considered in the ICR case? Perhaps not. Legal writing, of course, is very precise, and every word is placed with a meaning. The agreement stipulated that content would not be considered "except as provided by statute and implementing regulations." Under the old regula-

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the ICR say
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tions governing approval of unaccredited institutions, course content was a part of the evaluation. New regulations are now being written, and if, as was the case earlier, the degree program content and course offerings have to be equivalent to that of *accredited* institutions offering the same degree, then the ICR will have to offer real training in actual science if it going to award science degrees. If regulations governing approval consider content, the statement agreed to by the ICR and the Department of Education becomes meaningless.

What happens now? The ICR is still licensed to grant degrees until it is next reviewed by the CPPVE. The Council, which came into being in January of 1991, has spent the last year determining the regulations under which it will operate, and has still not completed them. It is not sure when the regulations will be completed and the

Council will begin reviewing institutions. Judging from the hot potato the ICR presents, the CPPVE will probably drag its heels on this case as long as possible. By statute, it must review the ICR before the end of 1995, but it may not get around to it until the very end.

Prospects for the ICR being disapproved during this future review are ambiguous. Currently, the Council is dominated by the providers of postsecondary degrees—officers of business colleges and other institutions that the Council will be reviewing. When foxes join the sheepdogs to guard the sheep, one has to wonder how they are going to do it. Similarly, how rigorous will be the regulations drawn up by such a group? And when the ICR is ultimately reviewed, will the quality of the visiting committee chosen be as high as that of 1989, which included two National Academy of Science members? Stay tuned to NCSE. □

Peloza *continued from p. 17*

established by the State and by the District. Because the District curriculum requires the topic of evolution to be taught, the District has a right to require Peloza to teach evolution. According to the earlier decision, *Webster v New Lennox School District*, a school district is well within its rights to insist that a teacher not teach “scientific” creationism [see *Reports* 10(6):1]. The amount of academic freedom held by high school teachers is limited by a school district’s right to set curricula. There is considerable case law to support a district’s right to require the curriculum be taught, and that teachers not vary from it.

In the January 17 decision, Judge Williams stated that he was not being asked to “decide whether the teaching of evolution in the defendant’s schools is or is not of itself a violation of the Establishment Clause of the First Amendment of the Constitution.” Rather, “the issue I must decide is whether Peloza has a constitutional right to conduct himself as a loose cannon in his classroom or on the campus and teach scientific theories of his own choosing despite the fact that they are not authorized by and are prohibited by the State Board of Education curriculum. I conclude that he has not” (p. 6–7).

Many creationists have argued that not being allowed to teach creationism is a breach of their free expression of religious rights. They seem to ignore

the fact that the First Amendment to the Constitution also requires the separation of church and state, which has been interpreted to mean that teachers are proscribed against advocating religious ideas in the classroom. The judge gave short shrift to the “free expression” argument, citing that *McLean v Arkansas Board of Education* had declared that “teaching creationism is in fact teaching a religion. This undermines plaintiff’s notion that he has a constitutional right to teach it because it *is* religion. It also debunks his idea that he can teach creationism as a part of academic freedom” (p. 7).

The decision came down firmly on the side of the District’s right to set curricula, and demand that teachers teach it. In capital letters, Williams proclaimed, “TEACHERS DO NOT HAVE A CONSTITUTIONAL RIGHT TO TEACH OR NOT TEACH CERTAIN SUBJECTS BASED ON THEIR PERSONAL VIEWS” (p. 8). After citing several pages of case law requiring adherence to a district’s curriculum, the judge concluded, “If every teacher chose to teach the areas he or she personally believed in and omitted those topics which are different from beliefs they hold, a curriculum compiled by the state and the local district would be useless” (p. 9–10).

Regarding Peloza’s demand that, as a matter of religious expression, he be allowed to present his

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“a loose
cannon in
his
classroom”
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religious views to students outside of class, the Judge was firm. "The plaintiff's right to free speech must be balanced 'against his student's right to be free of religious influence or indoctrination in the classroom' " (p.14). "If a student approaches him with a question about religion, plaintiff is correctly, instructed to refer the student to his or her parents or clergy. This instruction is not a violation of the plaintiff's first amendment right to free speech, but rather a directive to insure that religious dogma is not taught in the public school" (p.15).

The case was dismissed for lack of grounds upon which relief could be granted. The District expects Peloza to appeal.

Interestingly, the creationist "establishment" does not seem to have embraced Peloza. Little or nothing has appeared about him in either the Institute for Creation Research nor the Bible Science Association literature. In our next issue, we will discuss what effect the Peloza decision will have upon the creation "science" movement. A copy of the Peloza Decision is available from NCSE for \$4.00. □

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11:4

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