



Scientific literacy, it is suggested, should be a criterion for choosing candidates for high political office. A few of the political figures who support the teaching of evolution are listed. "[E]liminating teaching about evolution and cosmology will not further the cause of evangelical Christianity, or of any faith," writes a scientist with religious convictions. The issue of intellectual property rights of postdocs and graduate students is discussed. What causes the visual artifacts phosphenes is clarified. The question is posed, "What has happened to the supply of talented U.S.-born scientists...?" And three examples of documented speciation in the wild are given.

Science and Scripture

In their Editorial about the purging of evolution and cosmology from Kansas' public school curriculum requirements (*Science's Compass*, 17 Sept., p. 1847), R. Brooks Hanson and Floyd E. Bloom rightly criticize the lack of political leadership from those who might otherwise be expected to be science's most ardent advocates. Their observation that the Kansas decision "is not an isolated action" and is only "the tip of an iceberg of ignorance" takes on added force when one surveys the current political scene. When asked about the decision of Kansas' State Board of Education, Vice President Al Gore is reported to have said, "Localities should be free to teach creationism." My first thought was that the vice president's statement was intentionally calculated not to offend a potent constituency in his bid to become president. But Hanson and Bloom's analysis suggests a more troubling possibility for the vice president's response: He simply may not understand the issues. Scientific literacy may be the most important criterion for culling acceptable candidates for high office. Politicians who would sit still for the dumbing down of educational standards will not be successful as we approach the next millennium.

John W. Moore

Department of Psychology, University of Massachusetts, Amherst, MA 01003, USA

Regarding the Editorial by Hanson and Bloom, there is one point of clarification that is important: Numerous political figures have come out in opposition to the depletion of science education standards, including those relevant to the teaching of evolution. Kansas governor Bill Graves, a moderate Republican, immediately supported the teaching of evolution. State legislators have been vocal too; one senator is advancing the idea of legislation requiring that all students admitted to the state universities know the concepts of evolution. There is already one announced candidate

for the Kansas State Board of Education who opposes the current direction of that board. Many in Kansas are embarrassed that this has happened to us, but to be fair, many political figures have in fact been supportive of good science standards.

Fred Whitehead

Department of Family Medicine, University of Kansas School of Medicine, Kansas City, KS 66160, USA

As a scientist who holds strong religious convictions and teaches in a Christian university, I would like to comment on what I see as the unfortunate approach to evolution that the Kansas State Board of Education has taken.

It is my opinion that eliminating teaching about evolution and cosmology will not further the cause of evangelical Christianity, or of any faith. In fact, as I tell my students, I don't care whether you believe it or not, if you are going to be taken seriously in the world, you'd better understand it completely. Hanson and Bloom refer to "certain biblical literalists [who] would prefer that their young listeners not confront scripture with overwhelming scientific evidence." It is too bad that there is such misunderstanding between scientists who embrace evolution completely and those of us who believe in the authority of the scriptures. We have confronted scriptures with overwhelming scientific evidence and have come away with an unshaken faith in those scriptures, while understanding how some could see evolution as part of what happened during the birth of the planet. Scripture and science do not represent a dichotomy.

Any faith worth holding can stand scrutiny, whether it is a faith in scripture or a faith in evolution. Dialogue is not something to be feared. Sometimes the scientific community seems to be as afraid of creationists—and to misunderstand them as much—as the creationists are of the scientists.

Gayle Brosnan-Watters

Psychology Department, Vanguard University of Southern California, Costa Mesa, CA 92626, USA. E-mail: gbrosnanwatters@vanguard.edu

Postdoc Servitude in the Academic-Industrial Alliance

Postdocs and graduate students generally do not accrue any of the wealth their work can generate through the intellectual property of patents and copyrights. This topic, although not covered in the special issue "Postdocs working for respect" (3 Sept., p. 1513), is one to be aware of, considering the great riches being created from the alliance between industry and academia. Intellectual property policies of educational institution seldom accommodate students of any kind (1, 2). Most policies are regulated by a written agreement that is based on the employer-employee relationship. But unlike faculty, postdocs and graduate students are not usually classified as employees in the allocation of intellectual property rights. Most graduate and postgraduate program materials do not discuss intellectual property policies (2); rather, postdocs and students discover them while conducting research, especially if they

have participated

in a potentially

patentable in-

vention. So de-

spite their sub-

stantial contri-

bution, postdocs

and graduate stu-

dents usually do

not fare well in the af-

fluence of the industry-

academia alliance (3). There are many le-

gal and ethical arguments that can be

raised in support of participation of this

group in the wealth that their work helps

to create (1). Even if they are required, as

are most faculty, to assign their inventions

to their university, such agreements can be

legally challenged (2), and a host of other

legal precedents and ethical guidelines can

be used to bolster their case (1, 2).

Postdocs and graduate students may often seem like pawns in many of the academic games they must play. Although one can lament the growing dominance of industry's goal of creating wealth to academia's goal of creating knowledge, postdocs and graduate students should also get their just rewards and not merely be exploited as cheap labor. There are, of course, complex legal criteria for establishing sufficient participation to acquire rights in intellectual property (2). Because of the complexities involved in all aspects of this issue, educational institutions should provide legal and ethical counseling to their postdocs, students, and faculty for the equitable management of intellectual property rights (1), and postdoc and gradu-

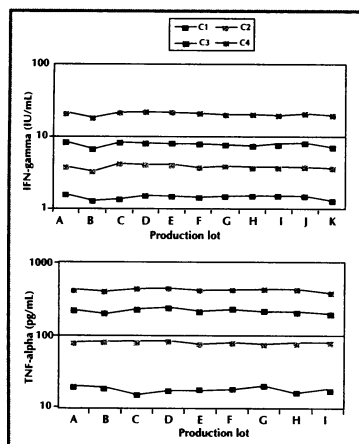


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ate student organizations should add intellectual property issues to their agendas.

Leonard John Deftos

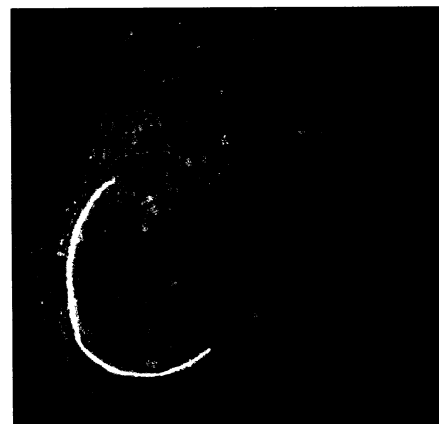
Department of Medicine, University of California, San Diego, La Jolla, CA 92093, USA, and the San Diego VA Medical Center, 3350 La Jolla Village Drive, La Jolla, CA 92161, USA. E-mail: ljdeftos@ucsd.edu

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2. S. H. Patel, *Indiana Law J.* 71, 481 (1996).
3. S. R. Kulkarni, *Hastings Law J.* 47, 221 (1998).

Don't Try This at Home

In the Random Samples item "No LSD required" (17 Sept., p. 1845), it is stated that pressing gently against your eyeballs results in phosphenes that "are the result of direct stimulation of the visual cortex." These visual artifacts are actually the result of physical stimulation of the retina, which contains light-detecting photoreceptors, and not of the visual cortex. Visual cortex, which is involved in analyzing visual information col-



Painting by Andrew Harry in a series called "23 Stages of Flash-Spot Disintegration."

lected by the retina, is located several inches away toward the back of the brain. Direct physical stimulation of visual cortex would require a solid blow to the back of the head, which is not an experiment that can be recommended to those trying this at home.

Sanjay Magavi

Division of Neuroscience, Children's Hospital, 320 Longwood Avenue, Boston, MA 02115, USA

Foreign-Born Scientists

In their Policy Forum "Are the foreign born a source of strength for U.S. science?" (*Science's* Compass, 20 Aug., p. 1213), Sharon G. Levin and Paula E. Stephan present a case to show that "individuals making exceptional contributions to [science and engineering] in the United States are disproportionately drawn from the foreign born." The number of foreign-born scientists in this country has been increasing in recent decades, and according

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