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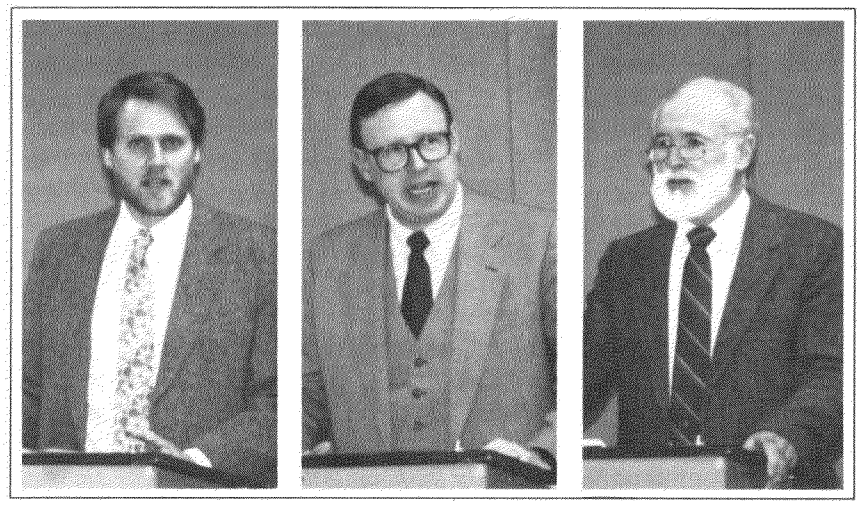

Robert Hicks, Neil Hibler, and James Starrs address an NCAS symposium on controversial science in the courts.

Controversial Science in the Courtroom

By Julie Stern and D. W. "Chip" Denman

The law enforcement and judicial systems of this country are not immune to the influence of pseudoscience, according to three speakers at a recent NCAS public symposium held at the Bethesda Regional Library on March 5. An audience of about 50 NCAS members and others heard experts on law enforcement, criminal investigation, and judicial proceedings give cautionary talks on three aspects of science and pseudoscience in the quest for justice for all.

Interim Board member and session moderator Walter Rowe averred that the seepage of pseudoscientific ideas into the courtroom should be of serious concern to all of us. He went on to introduce the speakers, all of whom have witnessed firsthand the use of pseudoscience and the misuse of scientific techniques in the judicial system.

Robert Hicks, a criminal justice analyst with the Commonwealth of Virginia's Department of Criminal Justice, described the concept of criminal stereotypes. This long-discredited theory popularized by Cesare Lombroso in the late 1800s suggested that there is a "criminal type"—a genetic throwback to our more primitive and brutish ancestors. According to this theory of "criminal anthropology" certain physical traits such as long arms, a low forehead, and large ears, as well as social behaviors like tattooing, mark an individual as a savage in our midst, and thus as a potential criminal. The belief in such concepts is more prevalent than we may think; Hicks, a former police officer and trained anthropologist, cited a videotape of a U.S. Army criminal investigator teaching interview techniques based on photos and diagrams of "criminal types." The IRS later borrowed this from the Army. Hicks further offered slides of 1987 government publications incorporating Lombroso-esque illustrations. According to Hicks, responsible citizens must scrutinize public policy to make sure the use of stereotypes does not become part of the law enforcement and judicial system's official policy. Said Hicks, "We must be vigilant to catch the demon of stereotype and call him by name."

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UFOs and Errors of Observation

By Guy Moore

As a long-time observer of the sky, I have some suggestions that might convert some UFOs to IFOs if applied under the appropriate conditions.

I have often seen Venus, when at its brightest, appear to become two bodies, which then coalesce again when viewed through the slender tips of naked trees blowing in the wind. Binoculars do not dispel this illusion, but only make it more intriguing. Of course, escaping to a horizon without a tree frieze will correct this impression, but doing so is not easy if Venus is near setting.

It often has occurred to me that perhaps the planet Saturn may explain some UFOs, especially when it is near its brightest (as it was in June 1987) and when binoculars are used, because almost any pair of binoculars will reveal its elongated, tipped-saucer shape. Incidentally, as Allan Hendry noted in *The UFO Handbook*, binoculars are somewhat unreliable allies in establishing the true nature of a UFO because they can, if slightly out of focus, produce a fine, large fuzzy light from the most brilliant light point source. It should also be noted that many people with access to binoculars have never had any instruction in how to focus them; anyone with any birding experience will have been frequently astonished at how many would-be birders cannot use binoculars effectively at first try.

For anyone skeptical of the capabilities of atmospheric anomalies, a trip to the little town of Marfa in west Texas will be enlightening. While the phenomenon called the "Marfa Lights" cannot properly be called UFOs—except generically, because they are unidentified, apparently flying ob-

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National Capital Area Skeptics

Statement of Purpose

NCAS attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view, and to disseminate factual information about the results of such inquiries to the scientific community and the public.

NCAS does not reject claims on *a priori* grounds, antecedent to inquiry, but rather examines them objectively and carefully.

Signed articles represent the opinions of their authors and do not necessarily reflect the views of NCAS. Unsigned articles are the responsibility of the NCAS *Newsletter* Committee. Only articles clearly marked as such represent positions of the NCAS Board of Directors.

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Newsletter
Julie Stern, *Editor*
289-3338 (office), 237-8591(home)
Nelson Davis, Mike Hoffman, and
Lee Rickard, *Editorial Board*
William J. Jones, *Production Editor*
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Committees
Astrology: Lee J. Rickard,
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Education in Skepticism:
Walter F. Rowe,
(703) 494-2916 (h), 994-1469 (o)
Fringe Medicine: Zev Remba,
522-3468 (h)
UFOs: Phil Klass, 554-5901 (h)

Address NCAS Correspondence to:
Stanley K. Bigman
4515 Willard Ave. Apt. 2204 S.
Chevy Chase, MD 20815

***Newsletter* address:**
2214 Tulip Drive
Falls Church, VA 22046

Membership address:
Grace Denman
8006 Valley St.,
Silver Spring, MD 20910

Letter to the Editor:

Dear Editor:

In the last issue of this **Newsletter**, Neil Inglis presented a common confrontation: given an event, one person provides an extraordinary explanation while another reduces the topic to coincidence. The latter explanation almost always seems less attractive, given the human tendency to look for meaning. Thus, the credulist feels vindicated.

In responding to such a confrontation, one should realize that an explanation differs greatly from proof by evidence or by argument. An explanation assumes the existence of its subject, so one should question first whether the event did in fact occur. If there is no good evidence for such an occurrence, one need read no further. Often, an explanation of an assumed event is then posited as proof for the occurrence of that event, providing a good example of circular reasoning.

Given an occurrence, one is in a position to determine its cause. Here the coincidentalist has the advantage, having the simplest and most credible evidence, which is easily corroborated by experiment. Anyone claiming an extraordinary cause will have to provide equally extraordinary evidence that is as consistent as the evidence for coincidence. Thus, the burden of proof lies with the claimant of extraordinary cause.

Given the extreme difficulty of providing extraordinary evidence, the claimant often turns the argument on the opponent: If the opponent cannot provide evidence for the falsity of a claim, then the claimant feels justified in asserting that the event is paranormal. For example, no one has thoroughly dragged Loch Ness, proving that no monster exists; therefore claims of the monster's existence are said to be justified. Such reasoning is fallacious, but often unexposed as such.

All of the above defenses can be summarized by one rule: Insist that the claimant take the full responsibility for providing evidence for paranormal assertions.

Kevin Kraus

1988 CSICOP Conference

Are you interested in joining other NCAS members in Chicago for the 1988 CSICOP Conference?

This conference, titled "The New Age: A Scientific Evaluation," will be held in Chicago on Friday and Saturday, November 3 and 4. Subjects to be covered include UFO abductions and coverups, hypnosis, the media and the paranormal, graphology, cryptozoology, trance channeling, and more. Further details will appear in upcoming issues of *Skeptical Inquirer* and this **Newsletter**.

If enough NCAS members would like to attend this conference, we may be able to arrange for group discounts on airfare and/or reserve a block of hotel rooms. Are you interested in joining us in Chicago? If so, please contact Chip Denman at 585-4093. ❑

Name-the-**Newsletter** Contest

We've already received several entries to this contest, first announced in the last issue of this **Newsletter**. But we'd like to give you one last chance to suggest a new name for this publication. We're looking for a title that has some ZIP—one that's easily recognizable, descriptive, and, we hope, fun.

Send your ideas, including any suggestions for a logo to accompany the title, to Julie Stern, editor, at 2214 Tulip Drive, Falls Church, VA 22046. Entries will be judged by the editor and a panel of Interim Board members.

The winner of the contest will receive a one-year extension of his or her NCAS membership, and of course, recognition in the newly named publication.

The Pinocchio Syndrome

By Stephen R. Dujack

Both in fact and in fancy, we have long believed that there can be objective measures of innocence or guilt, veracity or deceit. The Middle Ages saw trial by error, and ancient China saw the practice of testing for the miscreant's dry mouth by regurgitating rice. Today we have the polygraph, which measures blood pressure, respiration, and perspiration.

The suggestion that a physiological response could be used to test for truthfulness was first advanced in 1895 by the Italian criminologist and phrenologist Cesare Lombroso. The modern polygraph was developed in the 1930s by William Moulton Marston who, rebuffed by the U.S. Court of Appeals, which found no scientific evidence supporting the test, quit the profession he founded and went on to develop the comic book character Wonder Woman. The federal court system still refuses to enter into evidence test results from Marston's wonder machine, but nearly half the state courts permit polygraph tests under some circumstances, and the test's use is on the rise among private employers and in the federal government.

Examples of pseudoscience have cropped up repeatedly on the American landscape, but seldom have they become the basis for public policy. The polygraph is an exception. More than a half century after its invention, the scientific validity of the polygraph has yet to be established. Yet, desperate to do something to halt the steady flow of classified information to the press and beyond our borders, the Reagan administration has repeatedly embraced the polygraph as a technological watchdog over the government's vital secrets. And private employers, facing billions of dollars in employee theft and other misconduct, order perhaps as many as one million tests a year.

In the business world, this means that countless Americans will be refused employment or fired for failing a test that misidentifies truthful persons as liars perhaps as often as half the time. In the public sector, where several federal agencies are increasingly relying on the polygraph to guard against espionage despite the likelihood that foreign agents are trained to fool the machine, it means trying to ensure our national security with an electronic Maginot Line. At the same time, if the government continues to expand the use of the polygraph as an employee-screening device, thousands of innocent federal employees will be cast as spies.

Congress is considering a bill forbidding polygraph testing by private employers, but the sentiment in the White House and on Capitol Hill seems to favor its use in the defense and intelligence communities, and perhaps also among the thousands of other federal employees with security clearances. The administration quickly shelved a directive that sought to expand polygraph testing late in 1986 when Secretary of State Shultz threatened to resign, but President Reagan rapidly dusted it off in his January 1987 news conference, and a special security task force is supposedly working on recommendations for presidential instructions implementing the directive.

There are, of course, important objections to the use of the polygraph based solely on civil liberties. The frightening apparition of government thought police has brought down the wrath of conservatives from William Safire to Jeanne Kirkpatrick and even the late Roy Cohn. "Routine, government-wide use of polygraphs violates some very basic tenets of liberal democracy," wrote Kirkpatrick in the *Washington Post* in December 1986. "It requires that government employees prove they are innocent of wrongdoing. It requires they admit officials into private, even nonconscious realms of feeling over which only totalitarian governments claim jurisdiction. It requires, in other words, that government employees give up basic rights of American citizens as a condition of employment."

Matters of civil liberties are of course debatable, but the most telling argument against the polygraph comes from the lack of scientific evidence of its accuracy.

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President's Message

By Stanley K. Bigman

Most of this column comes from my mail and other reading. First, some complimentary remarks about our programs, then some news from the wide, wild world of pseudoscience.

The first issue of *The Sinepost*, the newsletter of the Skeptical Inquirers of New England, contained a paragraph about NCAS, which stated that we were "off to a rousing start" and concluded that "they have set a high standard for us to aim at."

Our most recent meeting, a symposium on controversial science in the courts, brought a phone call from CSICOP, which is planning a session on the legal system for its next annual conference. CSICOP wanted to know who our speakers had been and how the meeting had gone. It's gratifying to know that we identified this important subject early on. We may want to pursue it further and watch for specific relevant court cases in our area.

On UFOs

Did you notice this news item:

"In Elmwood, Wisconsin, Tom Weber, founder of the UFO Site Corporation, is seeking funding for the construction of a two-square-mile landing pad for flying saucers. 'They are simply waiting,' he says, 'for us to take the next step and give some kind of invitation.'" (From *The Progressive*, April 1988, p. 10.)

And if the little green men (or are they gray these days?) don't deign to use it, perhaps in the course of time the space can be used for a small memorial to credulity.

"An Energy Generation System Having Higher Energy Output than Input."

So you thought that "perpetual motion" was dead? Apparently not—this is another area in which hope springs eternal. On February 17, the U.S. District Court for the District of Columbia handed down a decision on a case originating in a patent application filed in 1980. The inventor, Joseph Westley Newman, claimed that the scientific community's "hypothesis...concerning the Second Law of Thermodynamics" was invalid. He offered for patenting a

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device that he maintained had a greater output of energy than input. The National Bureau of Standards (NBS), in seeking to test the device, had great difficulty obtaining relevant information from Newman. The NBS eventually issued a report concluding, in effect, that the device consumed more energy than it delivered. Newman appealed through the courts. In an incisive decision rejecting Newman's case, Judge Thomas Penfield Jackson observed: "To the extent it may initially have been dubious of Newman's claims, the Court finds it to have been an altogether appropriate scientific skepticism in light of their rather startling character." He therefore dismissed Newman's appeal. How long will it be until the next such device is submitted for patenting?

Creationism Marches On

Another sturdy perennial of pseudoscience continues to flourish. Witness the following:

"Although the Supreme Court last June ruled unconstitutional a state law requiring equal time for fundamental creationism in public schools, the creationists have not given up. Teen Mission U.S.A. is trying to get a slick 'creation science' book, *The Creation-Evolution Controversy*, by Randy L. Wysong, into public school libraries and to have it classified and displayed as a scientific publication. Films for Christ is getting individual creationists to try to get two creationist propaganda videotapes shown in public schools." (From *The Voice of Reason*, Winter 1988, page 8.)

NCAS's Committee on Science and Creationism has already been examining the selection and use of science textbooks in area school systems; it will be on the watch for such materials.

More Education Notes

A curious business enterprise called the Learning Annex is currently offering a number of classes providing training in various paranormal techniques. Catering to lonely hearts with courses like "How to Strip for Your Man" (for women only); to people in dead-end jobs who'd like to learn "How to Become an Image Consultant and Make Good Money;" and to others dissatisfied with their lives, the Learning Annex promotes a variety of pseudosciences. Current offerings include "An Introduction to Channeling," "Know Your Aura/Energy System," and "Past Life Regression," all taught by a woman described as a psychic who has traveled the country teaching such seminars. Another course, "The Power and Beauty of Crystals," is taught by a woman said to have "been mining her own crystals from spiritual-centered mines around the world for many years."

As the Romans Used to Ask: Cui Bono?...

Or, who benefits from these absurd claims? I'd like to pursue this question another time. Sometimes it is argued that, if people want to believe in nonsense, no harm is done. Who is hurt by a belief in UFOs or in astrology? I urge you to consider this double question: Who benefits, who is injured, by the claims of the promoters of the paranormal and pseudosciences? Is it all just harmless fun? ❑

NCAS Events: What Do YOU Want?

This issue of the **Newsletter** includes a report on the NCAS-sponsored symposium organized by Stanley Bigman and Walter Rowe on uses and abuses of fringe science in the courts. It is now four months since "Seance" and nine months since the public meeting on UFO abductions. The Interim Board hopes that in the coming months NCAS will be able to host other events for NCAS members and the public—without such long intervals between them. Several possible topics and speakers are now under consideration by the Board.

In planning such events, we want to respond to your interests and concerns. We hope that, in time, NCAS will become a "consumer protection" resource for the public, the news media, and our members, covering the broad field of pseudoscience and flim-flammery. Your opinions and ideas are valuable in shaping this organization's future events. If you attended the "Justice?" symposium, please take a moment to let us know how you felt about it. Was the topic appropriate and interesting? Did the speakers present their cases in a scientific, informative, and entertaining way? Did the announcement reach you in time? What was good and what could have been better? What other topics and activities concern you as a skeptic?

Write to "Meetings", care of the **Newsletter,** 2214 Tulip Drive, Falls Church, VA 22046. With your ideas, NCAS can sponsor programs that present skepticism as both scientifically sound and entertaining.—*Chip Denman* ❑

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jects— they are quite fascinating and mysterious.

So well known have they become that the Texas Highway department has built a viewing area several miles east of Marfa on Highway 67. From that vantage point, the lights appear to split horizontally, to reunite, and to dance around each other; they grow brighter, then disappear; and their motion is startlingly rapid.

According to the McDonald Observatory's *Star Date* (June 1987), the lights are an interesting atmospheric effect. The Observatory, which is located about 40 miles from Marfa, explains this effect in the following way: Marfa is at 4700 feet above sea level, while the plains to the southeast where the lights appear are about a mile high. When the earth cools rapidly, a layer of cool air forms along the ground and when rays of light hit this boundary between warmer and cooler air, they are bent back toward the earth. The lights must be at a great distance (miles) from the observer; the bending of the light must occur between the lights and the observer; and the observer and the source of lights must be below the point at which the bending of the light occurs.

Given these factors, headlights on cars traveling on roads south of the plains southwest of Marfa become visible and appear to be coming from the sky. These lights move and change because both the cars and the boundary of the layer of cooler air are in motion. Stars and planets near the horizon are distorted in the same way. ❑

Pinocchio, from p. 3

Given the wide acceptance by its promoters within the administration, it is astonishing to realize that, according to a 1983 report by the bipartisan Congressional Office of Technology Assessment, there are "no field studies on the validity of polygraph testing for preemployment screening or periodic screening"—exactly the kind of testing the government now conducts, and hopes to expand. While some studies provide data on its use in another application—focused investigations of actual incidents—all "had substantial problems of research design." The OTA found these studies claimed accuracies of lie detection anywhere from 50.6 to 98.6 percent, and truth detection from 12.5 to 94.1 percent.

Other experts agree with the OTA. "There is no physiological response unique to lying," says Dr. John F. Beary II, now an associate dean at Georgetown University Medical School. Beary was one of the few dissenting voices within the Reagan administration when he wrote a report critical of the polygraph while serving as acting assistant secretary of defense.

"No machine can detect a lie," agrees University of Minnesota psychiatrist Dr. David Lykken, who says that the polygraph is only slightly better at detecting lies than a coin flip. Lykken has compiled a catalog of innocents mistakenly implicated because of inaccurate polygraph results. These include a Los Angeles cashier who was fired after a polygraph exam revealed he had given his mother a discount at the register; he was later able to show that his mother had died five years earlier. And an Ohio man, imprisoned for the murder of a friend in 1978 after failing a polygraph test, was released when police caught the real killers.

Examples come from other sources as well. In an amusing segment on *Sixty Minutes* last spring, three polygraph firms implicated three different employees of a CBS-owned company for stealing a camera, despite the fact that no camera had been taken. These mistakes occur for the simple reason that the label "lie detector" is a fallacy. The polygraph detects stress, which often occurs just because a person is being subjected to a test that could result in loss of a job or imprisonment. So shaky is the scientific grounding of polygraphy that the FBI forbids polygraph dragnets, and the American Psychological Association now prohibits its members from administering tests.

Polygraph proponents not only claim accuracy ratings at the high end of the scale but are quick to claim that inaccurate results are the result of inadequate training or improper technique, not problems with the polygraph itself. But graduates of the government's polygraph training school at Fort McClellan take only a 14-week course, followed by 10 weeks of practice—less training than most beauticians receive. Testers in private industry can be certified with even less training or, in many states, with none at all. Government polygraph advocates, such as the recent chairman of the Defense Security Review Commission, which recommended expanding screening within the Defense Department, try to avoid these criticisms by pointing to anecdotal evidence that would seem to support its "utility." Thousands of job applicants at the National Security Agency, for instance, have confessed to crimes ranging from misdemeanors to murders when screened by agency polygraphers. All of them had cleared the agency's traditional background checks. What is not revealed, however, is that they were not caught by the machine itself, but confessed because they believed that it worked. Thus, the NSA experience appears to be more a comment on the rigor of its background checks than on the "utility" of the polygraph. Spies, however, are not likely to be fooled so easily. Intelligence and polygraph experts believe the KGB and perhaps other foreign intelligence services train their moles in deceiving the machine. Certainly the CIA does so. As a screening device, the polygraph works as an electronic scarecrow only for those who miss the straw stuffing.

That polygraphy is not a science can readily be seen by the range in accuracy ratings reported by various studies. Verifiability is fundamental to the acceptance of a discipline as a science, yet it is exceedingly hard to verify the detection of a concept as amorphous as a lie. Imagine the consequences of such a variance in a medical test, say one for AIDS. If the results of such a test cannot be repeated, it is not used. Not so for the polygraph. When scientists assess the accuracy of a medical test, they look primarily at the number of carriers detected ("true positives") and the number of uninfected persons mistakenly so characterized by the test ("false positives"). One can arrive at these figures simply by comparing test results with the actual appearance of the disease in those tested. To some extent this method can be used for studies of the polygraph in investigations of actual crimes, because an objective determination of guilt can often be made; for example, from a confession or a jury verdict. But it is practically impossible to develop these measurements in screening a pool of job applicants or employees, where the number of "liars" can never be known. It would be difficult, if not impossible, therefore, for polygraph screening to be deemed a science, no matter what advances are made in training, methodology, or equipment.

The consequences of false positives absolutely rule out any "utility" of the polygraph in screening, particularly among current federal employees. Imagine that the polygraph has only a one-percent false-positive rate—better than even its proponents claim. A screening of 10,000 employees, only one of whom is a spy, would produce a pool of approximately 100 persons cast as spies. The polygraph cannot determine which of these is the guilty party; indeed, depending on the rate of true positives, the spy may not even be in the sample. The result of such a test, based on a recent study cited in the June issue of *Discover* magazine, would more likely be a pool of more than 6000 potential spies, with a significant chance that the real spy escaped detection.

Clearly these results are unacceptable. While employers, ignoring civil liberties in their quest for greater security, may justify to themselves not hiring those who fail polygraph tests in pre-employment screening, what will they do about their current workers? Will they fire them all? Society certainly needs to take action to protect against employee theft and the loss of national secrets. The polygraph, however, is not the solution. ❑

The Skeptic's Bookshelf

The Blind Watchmaker, Richard Dawkins, Norton, New York, 1987. $7.95.

Reviewed by Michael Hoffman

For some, the idea of evolution by natural selection, once pointed out, seems logical and inevitable, but for others the notion seems self-evidently impossible. How, they ask, can the wonderfully complex and seemingly purposefully designed adaptations of living things arise by chance? This "argument from design" was put forward by the English theologian William Paley at the beginning of the 19th century, before the modern theory of evolution existed. Anyone finding a stone, Paley argued, would not be troubled to explain its origin. But should he find a watch, he would naturally seek a maker for it, for it is inconceivable that such an intricately designed thing could come into existence without deliberate effort. But a watch is crude compared to living things, he continued, so we should also seek a designer for them. Of course, for Paley this designer was the Christian God.

Dawkins yields nothing to Paley in his respect for the complexity of living things. But Dawkins believes that this complexity is shaped by evolution, and very forthrightly explains why. The designer of nature is the blind watchmaker of evolution.

Dawkins carefully explains the fallacy of equating evolution with "chance." Evolution has two parts: on one hand blind, undirected variation, on the other nonrandom survival. But evolution does not just select from one round of variation: each generation is sorted by natural selection, and only the survivors breed and start the next round of variation. This process of "cumulative selection," Dawkins argues, is far more powerful than is at first apparent. To get a given six-word phrase from random typing on a keyboard is so unlikely as to be virtually impossible. But if a random string of characters is allowed to produce "daughter" strings, each slight "mutants" of the original, and only the "daughter" closest to the target phrase is retained in each generation, the target phrase appears (in Dawkins' computer experiments) in 40 to 60 generations. A more sophisticated computer model is provided by "biomorphs," computer-screen pictures determined by a "gene" of nine numbers according to a recursive rule. Dawkins started with a tree-like biomorph and expected to get lots of kinds of trees by "breeding" and selecting "mutants." He was astonished to find that his artificial selection could turn a treelike biomorph into something looking like an insect in only a dozen generations. (The publisher offers readers a biomorph-breeding program—unfortunately, only for the Macintosh—for $9.95, and a 15-page appendix explains how to run the program.)

Dawkins tackles the frequently-asked question of how evolution can create an organ like the human eye. Anti-evolutionists often assert that no process of small variation could produce it, since its many parts must work together perfectly for it to be of any use. Wrong, says Dawkins: astigmatic or myopic vision is certainly better than none at all. And it is not really difficult to construct a plausible sequence of precursors to the human eye just from functional eyes found in nature: simple eyespots, larger pigment-backed eyespots set in a shallow cup, lensless pinhole cameras, and eyes with lenses of various degrees of adjustability. Further, despite its marvelous functionality, the human eye has an obvious design flaw: all its photosensitive cells are "backwards," with the "connecting wires" to the optic nerve on the inside of the retina, between the photocells and the lens. As a result, there is a blind spot where the nerves join up and pass through the retina. This is just the sort of thing one expects from an undirected process of evolution, but not from a conscious designer.

Dawkins notes how scientific controversies about the Eldredge-Gould theory of punctuated equilibria, taxonomy, and the supposed "neutrality" of most mutations at the molecular level have been distorted and misrepresented as debates about whether evolution really occurs. He thinks Eldredge and Gould are partly to blame for over-dramatizing their theory, but also blames a sensation-hungry press and those "who desperately want not to have to believe in Darwinism."

This book is a very able defense of Darwinism. It is not primarily a debating manual for those who want to combat creationism, but it explains clearly the core ideas of evolution—ideas that are still widely misunderstood, and not just by creationists. The style is such that, upon finishing it, I felt less that I'd read a book than that I'd just had a long and fascinating conversation with a biologist. It should be read both by those who have trouble understanding evolution and by those who want to be able to explain it to others.

How to Think Like a Scientist, Stephen P. Kramer, Thomas Y. Crowell Junior Books, New York. $11.50 (hardcover).

Reviewed by Sean O'Neill

Carl Sagan has written that we do not teach our children how to think, and therefore leave them gullible in a confused world, unable to solve problems in a systematic fashion. This situation is arguably the most important issue facing skeptics today: to teach children to reason independently may prove more beneficial, in the long run, than attempts to convert adults whose thinking is already fuzzy.

In *How to Think Like a Scientist*, Stephen Kramer asks children a riveting question: "What do you think?" Not what have you been told, or what can you recite, but what do you think? Everyday problems are presented and then analyzed by both correct and incorrect methods. A loose discussion of logical fallacies is put in terms that any child from eight to eleven should find appealing. Ad hominem (attacking the person), ad verecundiam (quoting authorities), and ad populum (going along with the crowd) arguments are all presented in terms of thinking hard about what other people say, and readers are also cautioned about the dangers of believing things just because they want them to be true.

Kramer says this book is about questions, and so it is. Not questions about celestial mechanics, certainly, but about procedures by which everyday questions can be answered. Does little brother cry more on days when he misses his nap? Children can more easily relate to the importance of discov-

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ering answers to this and other common questions than to traditional "scientific" ones. The belief that science can be a means of obtaining accurate answers to ordinary problems is not widespread: Beyond medical advances and the invention of the nonstick frying pan, most people (adults as well as children) see science as alien and complex, and would profit from the finely crafted applications offered by this book.

The concept of experimental design is attractively portrayed, complete with descriptions of the handling of variables and control groups. It is difficult, however, to acquaint children with the term "hypothesis" without using the word itself; yet by using too many such words Kramer would risk losing his young readers' attention. And to say that science "can only deal with things that cannot be observed" does not really cover theoretical mathematics; yet how else could such a principle be stated in a form that children can understand? This book makes a valiant attempt to convey scientific ideas in a simple yet complete manner.

I recall hearing that at one time signs were posted in British classrooms that read "The teacher may be wrong; think for yourself." If this story isn't true, it should be! The future will belong to those whose imaginations are fired but whose thinking is tempered by reason. *How to Think Like a Scientist* is an encouraging advance in that direction.

NCAS members have an implicit obligation to encourage critical thinking in children as well as adults. We must search for ways to "spread the word," and our families and young friends should come first. Buy this book! (The Cheshire Cat Bookstore in Washington carries it, and will special order it if it is out of stock.) ❑

Controversial Science, from p. 1

The second speaker, Neil Hibler, a psychologist with the U.S. Air Force Office of Special Investigations, spoke about the use of hypnosis in the federal investigative and judicial system. He described the federal model for forensic hypnosis, which is used by all federal agencies and many (but certainly not all) police forces. According to Hibler, hypnosis can play a useful role in some criminal investigations, but noted that the federal courts do not admit as evidence any statements made under hypnosis. Hibler stated that hypnotically enhanced recall should never be considered as more reliable than ordinary memory. A hypnotized subject not only is subject to bias introduced by the hypnotist, but may indeed find it easier to lie due to reduced anxiety during the hypnotic trance. Hibler stressed that the federal model uses hypnosis only as a means of developing investigative leads, and that federal agencies never rely on information obtained through hypnosis without corroborating evidence to support it. In describing the strict protocol under which hypnotic interviews are conducted, he emphasized that hypnosis is very rarely used in investigations; generally it is used only as a last resort, when the potential for enhanced memory under hypnosis exists, and when there is a likelihood of independent confirmation. While Hibler's presentation left some members of the audience feeling more secure about the way hypnosis is used by the federal judicial system, he admitted that local and state law enforcement agencies and courts may be much more lax about the circumstances under which hypnosis is used.

The final speaker, James E. Starrs, professor of law and forensic sciences at George Washington University, began by stating that "the courts are awash with scientific ersatz," giving many examples of courts accepting the testimony of pseudoscientific "expert witnesses." He spoke more specifically about the acceptance of the "expert" testimony of graphologists or grapho-analysts by the courts.

Describing the difference between document examiners, who have been trained to verify the authenticity of written papers, and grapho-analysts, a title claimable by anyone who may have taken a mail-order course in handwriting analysis, Starrs explained that the judicial system often fails to distinguish between the two. Referring to ransom notes from the historic Lindbergh kidnapping, Starrs cited examples of legitimate document examination used to verify correspondence of Bruno Hauptmann's handwriting across several samples, as well as questionable grapho-analytic attempts to characterize the kidnapper's personality. Starrs stressed that such attempts at personality reading from handwriting are completely lacking in scientific validity.❑

Yes, I agree with your purposes in exploring paranormal and fringe-science claims from a responsible, scientific point of view, and to disseminate factual information about the results of such inquiries to the scientific community and the public. I understand that my charter membership will be good for one year and will include a subscription to this ***Newsletter.***

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NAPTHA SPEAKS

"Naptha" is the spiritual channel guide to the cosmic unconscious of Jamy Ian Swiss. Naptha, who is 39,000 years old, attributes his longevity to having taken a long rest in a box of mothballs found in Swiss's closet. Naptha explained that in return for an earthly voice and a periodic change of mothballs, Naptha would hereafter guarantee that Swiss's philosophies and favorite sweater would never be moth-eaten.

Swiss is a founding member of NCAS and a member of the Interim Board of Directors. He led the production of the NCAS seance, and therein proved himself to be, well, a rare medium, indeed. Asked to provide evidence as to the quality of his character and the integrity and honesty of his claims, he replies, "In the words of Steven Spielberg, I regard myself as a 'post-literate intelligence,'" which should clear up any doubts. He suggests that he is uniquely qualified to help people contact the spirit world, as he has, in the past, been a professional bartender.

Readers are encouraged to write in with questions for Naptha on any issues of concern to them, whether they seek commentary on current news affairs, scientific and skeptical issues, or personal advice.

For his lengthier channeling sessions, Swiss prepares himself spiritually by watching reruns of "My Mother, The Car." He then chants an ancient incantation to call upon his spirit guide:

SWISS: Eenie Meenie, Chili Beenie, the spirits are about to speak.

NAPTHA: Keep it down, you could wake the dead!

SWISS: Are they friendly spirits?

NAPTHA: Friendly? Just listen!

S: How do we know if channeling is real? After all, "automatic speech" wasn't even considered convincing proof of spiritualism in the 19th century, without the addition of physical evidence.

N: You gonna argue with Shirley MacLaine?

S: Well, now that you mention it, what do you think of Miss MacLaine's books?

N: I think they're the most convincing evidence we have for extraterrestrial life.

S: Don't you mean extraterrestrial intelligence?

N: No, just life—you know, like lichen, maybe.

S: I see. But how do we know channeling is any different from faith healing, psychokinesis, psychic surgery, or crystal healing?

N: Channeling is every bit as genuine and scientifically legitimate as any of those practices!

S: Last Halloween, the producers of an elaborate television seance attempted to contact the spirit of Harry Houdini. Why do you think Houdini failed to show?

N: He was tuned into a different channel. I think he was watching "Alf."

S: What can you tell us about crystal healing? I saw a woman on a plane flight recently fondling a crystal; she said it assured our safety.

N: You survived, didn't you?

S: Well yes, but...

N: I'll say this: if your plane ever goes down in the water, hanging onto a rock could be, well, a grave error. Stick with the seat cushion.

S: What is your sign?

N: Skeptic on Board.

S: You mean you don't believe astrology is genuine?

N: Not a ghost of a chance.

S: Your puns sound 39,000 years old. Anyway, why not?

N: I'm a Sagittarius. We're very difficult to convince.

S: I'm considering consulting someone about my personal problems; what do you suggest, a palm reader or a mind reader?

N: Actually you should go to a phrenologist—anybody who would ask a 39,000-year-old man for personal advice needs to have his head examined.❑

NAPTHA'S BIRTHDAY HOROSCOPE

(For persons born March 21 through April 19, under the sign of Libra):

A SURPRISE IS IN STORE FOR YOU.
ALSO, BEWARE SATURATED FATS.❑

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