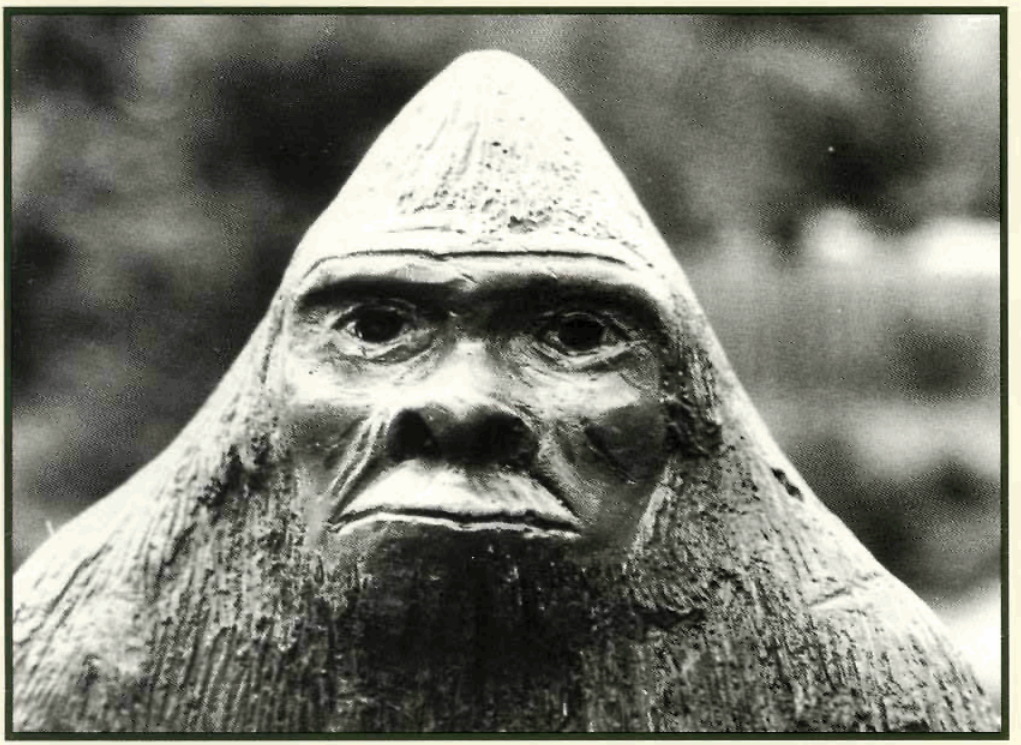
the Skeptical Inquirer

Vol 13, No. 3 / Spring 1989 $6

Analyzing the Mill Creek 'BIGFOOT FOOTPRINTS'



Levitation: Lore, Physics & Fantasy • Patent Myth • Shroud Lessons
CSICOP Chicago Conference • Skepticism as Puzzle Solving
Biology Teachers' Beliefs • More on MJ-12

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

THE SKEPTICAL INQUIRER is the official journal of the Committee for the Scientific Investigation of Claims of the Paranormal.

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Subscriptions, change of address, and advertising should be addressed to: THE SKEPTICAL INQUIRER, Box 229, Buffalo, NY 14215-0229. Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice.

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Subscription Rates: Individuals, libraries, and institutions, $22.50 a year; back issues, $6.00 each.

Postmaster: THE SKEPTICAL INQUIRER is published quarterly. Spring, Summer, Fall, and Winter. Printed in the U.S.A. Second-class postage paid at Buffalo, New York, and additional mailing offices. Send changes of address to THE SKEPTICAL INQUIRER, Box 229, Buffalo, NY 14215-0229.

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Cover design by Lisa Mergler. Cover photo of Paul Freeman's bust of Bigfoot (see pp. 264-272) courtesy of Michael R. Dennett.

New Light on the New Age

CSICOP's Chicago conference was the first to critically evaluate the New Age movement.

Lys Ann Shore

HELD IN the vast Hyatt Regency at Chicago's O'Hare Airport, the 1988 conference of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) wasn't the only event going on at the hotel from November 4 to 6. Quality-control managers, lawyers, and others were convening as well. It's safe to say, however, that the CSICOP conference was the most compelling event around—so much so that at least one participant in another conference played hooky to kibitz at CSICOP's opening session.

The meeting's focus was the much-touted "New Age," which CSICOP Chairman Paul Kurtz in his opening remarks called simply "the Old Age repackaged." He emphasized that not all aspects of the New Age were appropriate for the conference's criticism and acknowledged that even he agreed with some New Age ideas.

Introducing the New Age

To provide conference attendees with a common ground of information for the spirited and sometimes heated discussions that surround conference sessions (and frequently continue late into the night), Friday's opening session aimed to provide an overview of the often vaguely defined New Age movement. The four speakers expressed a variety of viewpoints, each viewing the New Age in light of his or her own background and concerns. Opening speaker Maureen O'Hara, for example, a humanistic psychologist and professor of women's studies at San Diego State University, identified herself as a former biochemist who changed fields after she underwent a near-death experience.

O'Hara sees the New Age as a sign of the failure of the "scientific story" to account for all the aspects of human experience. Taking a historical perspective, she asked the audience to consider the Scientific Revolution of the seventeenth century as a mystical revolution—an attempt to "read God's mind" directly rather than having reality interpreted by priests. By the 1920s, physicists had replaced priests as interpreters of reality, and the "physicists' infallibility had replaced the notion of papal infallibility," O'Hara said. The growth of the New Age, she believes, reflects modern awareness that "science can't fill its claim of interpreting reality for us."

While the scientific materialism "story" has been successful at providing for material concerns, it has failed in dealing with spiritual questions. In O'Hara's view, spiritual questions have become the new heresies and scientists the new inquisitors. The notion that the

objective world is more real than people's subjective selves has led to narcissism as a compensation for the "irrelevant self" and to a search for magic to supplement people's sense of their own insignificance.

O'Hara believes that "our world has numerous and competing stories of reality." "We have to construct for ourselves an individualized story," she said. "The mythmongers, drug dealers, fundamentalists, and therapists enter into this abyss of uncertainty." In the 1960s, many people began to "slip from the moorings of scientific materialism, believing that a humanistic renaissance, or New Age, was in the offing. By the late 1970s, however, the movement had split into "thousands of separate realities." Today, O'Hara believes, people must accept that they live in a world of multiple realities. The task now is "to learn to navigate across boundaries and to find areas of mutual agreement."

The New Age is today's major alternative to American religious life, in the view of Robert Basil, a Ph.D. candidate in English at Stanford University and editor of a new critical anthology, *Not Necessarily the New Age.* While the New Age tries to hide its connection to religion, Basil said, it uses a secular vocabulary "infused with spiritual meaning," including words like *holistic, synergy,* and *transformation.* The religious aspect of the New Age movement was first noticed by fundamentalist Christians, who recognized the movement's conflict with biblical teachings.

New Agers take a negative view of skepticism. To them, "to be skeptical is to be without hope," Basil said. As a result, some extreme proponents of New Age ideas have expressed the notion of an inevitable conflict between the two world-views.

Basil agreed with O'Hara in the belief that the New Age represents a large-scale rejection of science. New Agers see reality

as purely spiritual, he said. Turning to channeling, Basil spoke of the confusion over what's inside people and what's outside. Channeler Jane Roberts (of "Seth" fame) was one of the few to express concern over whether Seth was an external entity, part of her own subconscious, or something else. Thus, Basil said, what begins as a concept of human empowerment turns into an example of human reliance on outside "spirits."

Tracing the origins of the New Age movement, J. Gordon Melton, director of the Institute for the Study of Religion at the University of California, Santa Barbara, made a strong case for considering the New Age as a "religious/social movement." Melton placed the movement in historical context by pointing out that skepticism about religion in the United

States reached its height at the time of the Revolutionary War. Since then, religion has experienced steady growth, and this growth has accelerated in the past 50 years. Thus, "the New Age must be seen in this context of vital growth of a new religious world," Melton said. He pinpointed the beginning of the New Age movement as 1969, the year that saw the transformation of Baba Ram Dass and the founding of the *East/West Journal.*

Representing "a new gestalt in the psychic system," the New Age movement, Melton said, was influenced by several significant events, including a change in U.S. immigration laws in the mid-1960s that resulted in an influx of Oriental immigrants—and Eastern religious thought—and the development of transpersonal psychology out of humanistic psychology. Transpersonal psychology abolished the concept of sin and also supplied the New Age movement with what Melton called "consciousness language." In addition, it investigated the practices of Eastern religions separate from their theologies—thus, people could now meditate without being Zen Buddhists.

The concept of personal transformation became the keystone of the New Age movement, whose chief message is "You can transform your drab, wretched existence." Personal transformation then becomes a model for social transformation, leading to the idea that the world will be changed if enough individuals change their lives. As a result, Melton pointed out, "the self assumes enormous importance in the New Age movement."

Melton concluded by offering guidelines for anyone who wants to make an effective critique of the New Age movement:

1. Drop the use of emotive, subjective language (i.e., words like "claptrap" or "nonsensical drivel") as a substitute for analysis of the ideas and experiences of the movement.

2. Stop playing with false dichotomies of logical and rational thought, on the one hand, and emotional, mystical subjectivity on the other.

3. Base critiques on more than a superficial knowledge of the movement, focusing on issues, not people. Read the writings of those in the movement, not just newspaper articles, and remember that the movement has no single spokesperson.

4. Be careful of dates in critiquing the movement; the New Age is a dynamic movement that changes very rapidly.

"The New Age and Consumer Culture" was the theme of a forceful presentation by Jay Rosen, assistant professor of journalism at New York University. Rosen's interest in the New Age was aroused when he saw its effect on students whose "belief in the equality of all opinions" caused them to reject the critical thinking and rigorous analysis that are fundamental to higher education. "This undermines the entire concept of the university," Rosen said.

Rosen pointed out that in about 1870 in the United States the problem of *consumption* first gained attention along with the traditional problem of *production,* leading to the development of brand names, product advertising, and eventually the practice of buying on credit. "It was no longer enough just to manufacture products, business had to manufacture consumers as well," Rosen said.

With the development of marketing techniques based on fear (as in the case of deodorant and mouthwash, for example) business acquired an interest in anxiety. "The more anxieties it created, the more cures it could peddle." Thus, in Rosen's view, consumer culture "seeks to exploit and perpetuate anxiety as a way to market goods."

Like Melton, Rosen emphasized transformation as the key concept of the New Age movement: "You can change

the world by changing yourself." "Notice," said Rosen, "how closely this promise of instant transformation resembles the messages of product advertising. The New Age movement and consumer culture are nearly identical." Both, he pointed out, in reality perpetuate the anxieties they purport to relieve.

Endemic to American culture, Rosen believes, is narcissism, which results not from a strong ego but rather from a weak sense of self. "An uprooted person is free to be anyone he chooses and is prone to an exalted sense of self-importance and power." Narcissus is thus "an ideal victim for consumer culture and also the ideal New Age convert." Why? Because he's eager to find his "true" self and because he's susceptible to the fantasies of self-importance that are so prevalent in the movement.

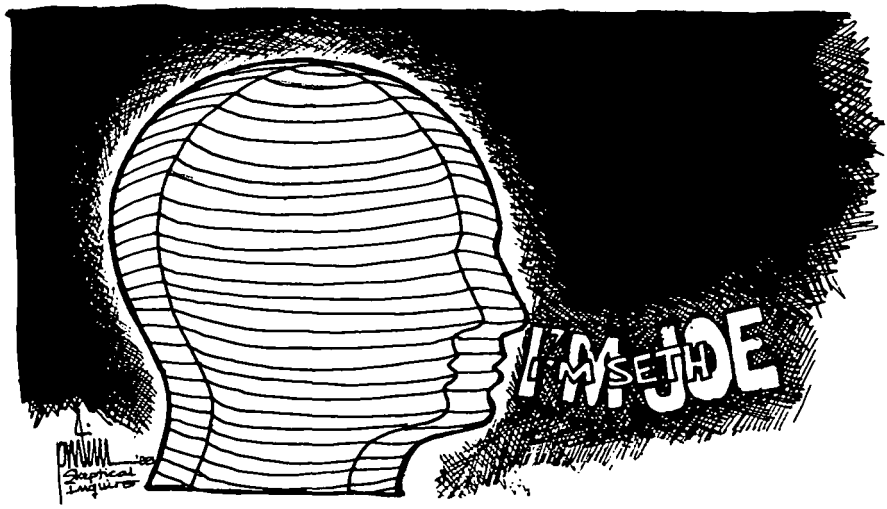
Like the pyramid schemes of the consumer culture, the New Age has a pyramid structure as well, Rosen said. "A few individuals at the top become rich and famous, while at the bottom there's a broad base of believers/consumers." Thus the New Age promise of empowerment is contradicted by the fact that only the leaders get to have it all. Shirley MacLaine, for example, can't give her followers her fame.

This helps explain why so many New Agers drift from fad to fad: None of the gurus can deliver on their promise to overturn the pyramid and place the believer on top. "So the believer moves on," said Rosen, "with his weak sense of self even weaker and his narcissism reinforced. In short, the New Age is just another name by which the emptiness of modernity has been known."

Focus on Channeling

After the morning's wide-ranging introduction to the New Age, one of the Friday afternoon sessions focused on the specific fad of "channeling," that is, today's version of traditional trance-mediumship. CSICOP Executive Council member James Alcock, a professor of psychology at York University in Toronto, discussed channeling as an *automistic* phenomenon that, at a light or deep level, does *not* come unbidden from the mind of the channeler.

Alcock related channeling to the historical growth of trance-mediumship, originating in the ideas of the Swedish philosopher Emanuel Swedenborg. Late in life, Swedenborg claimed even to have



communed with the spirit of Christ. The spiritualist fad was then spread through the activities of the notorious Fox sisters and the theories of Andrew Jackson Davis and Madame Blavatsky. By the turn of this century, Alcock pointed out, there were approximately 10,000 trance mediums in the United States. More modern influences have been Edgar Cayce and Jane Roberts, whose books about "Seth" essentially founded channeling.

Alcock pointed out that channelers' "spirits" often choose biblical or mythical names; their statements are usually trite and hackneyed. So why do people fall for this "succor for suckers"? Primarily, Alcock believes, because channeling is "anxiety reducing." "You can serve hedonism and narcissism at the same time because God is in you," he said.

Linguistics professor Sarah Thomason, of the University of Pittsburgh, has analyzed audiotapes of more than a dozen channelers. Linguistically, she says, most "spirits" put on a pretty weak act. First, they speak in English, presumably because "it would be hard to get the message across if they spoke in Atlantean." Some speak in the dialect of the channeler, and often they are inconsistent in accent. On one tape, for example, the "non-American accent slipped as the channeler became progressively more excited." In addition, the channeled entities often use anachronistic words or expressions. In short, Thomason said, "most channelers are linguistically naive."

Wrapping up the channeling session, psychology professor Graham Reed of York University made the case that channelers are basically normal people, not psychologically disturbed individuals. Their channeling activities thus don't represent psychotic episodes but rather can be "turned on and off." He sees three main reasons for people becoming channelers: ego enhancement, compensation for the disappointments of life, and material rewards. And how are the channelers able to get away with charging the fees they do? Primarily because of the old truism that the more one pays for something the more valuable one thinks it is.

New Age Products

Perhaps the hottest "product" of the New Age right now is crystals. Bewildered but no doubt pleased mineral dealers have seen retail crystal prices zoom in recent months. George Lawrence, a senior research associate at the University of Colorado, Boulder, who has worked with crystals for 40 years, began the second Friday-afternoon session by discussing their various properties. He pointed out that crystals have many remarkable physical characteristics. These, however, tend to be viewed as commonplace when people's interest turns to their more exciting supposed magical properties. And proponents of the "magical, healing properties" of crystals seek to gain "the respectability of science" for their bogus claims by writing books and articles that make extensive—although improper—use of scientific terms and concepts, such as "energy." For anyone interested in crystals, Lawrence concluded, the technical details are well worth pursuing—even if there's no magic involved.

Another type of New Age "product" is the New Ager him- or herself. Ted Schultz, a former staff editor at *Whole Earth Review,* gave the CSICOP audience an account of his own experiences in the New Age movement. In 1973, Schultz said, he moved from New York to California to pursue his interest in Eastern spirituality. Now, he's a graduate student in evolutionary biology at Cornell University. "Yet I don't think I've changed that much," he said. In the 1970s, as Schultz explored different New

Hofstadter: Common Sense and Evidence

INTRODUCED by CSICOP Executive Council member Ray Hyman as "a true Renaissance man," Douglas Hofstadter, of *Godel, Escher, and Bach* fame and recipient of CSICOP's 1988 In Praise of Reason Award, discussed the concept of "common sense and evidence" in his Friday evening keynote address. Displaying a page from a Bantam Books catalogue of New Age titles, Hofstadter, with a mixture of amusement and bemusement, pointed to books of his own that were included in the list and said, "The New Age is a strange and blurred category that includes a lot of things you might not have thought to find there." That blurring of categories is something in which Hofstadter, who is a professor of computer science and cognitive science at Indiana University, Bloomington, takes a strong scientific interest.

"I'm interested in abstract concepts," he explained, "trying to understand what a category or concept is in the human mind." He illustrated his meaning with a simple example: "What do cows drink?" he asked the audience. "Milk!" was the majority response, in apparent defiance of common sense and everyday knowledge. Hofstadter then explained the cause of the incorrect response as a sort of mental overlap between the concepts "cow" and "drink," both of which are closely connected in our minds with the concept of "milk."

Hofstadter also introduced the idea of "greater concepts," using the term *greater* as it is used in defining metropolitan areas, such as "Greater Chicago." Hofstadter defined "greater concepts" as complex concepts, composed of many closely interrelated elements. He then defined "slippage" as the inadvertent substitution of one concept for another, and "slippability" as the ease with which one term can replace another. "We have in our minds a certain set of 'unslippable' facts about the world," he said, adding that slippage is related to how closely connected concepts are. Hofstadter proposed a sort of "mental topology" that would show how concepts overlap in the brain.

Using these models, he asked, what does common sense look like? His answer: "Murky, complex, and troubling, with great potential for error-making due to the complexity of the underlying concepts." Hofstadter believes that "science is just a highly developed form of common sense. To justify that would be difficult, but this is my view and I think most of those in this audience share it." And while, because of the "inherently blurry nature" of concepts, it isn't possible to draw up a nice clear logical concept of common sense, Hofstadter suggested that common sense can be pictured as a "bull's-eye of rationality surrounded by a blurry extension of the concept."

—*L.A.S.*

Defining the New Age

What is the New Age?

J. Gordon Melton: . . . A religious/social movement, *religious* because it uses religious language, *social* because it's inclusive, not exclusive.

Ted Schultz: . . . An example of confusion between inner and outer truth, subjective and objective reality.

Douglas Hofstadter: . . . A strange and blurred category that includes a lot of things you might not have thought to find there.

John F. Baker: . . . In terms of publishing, it's an extremely confused area where useful books spill over into muddy religious areas.

How can you recognize a New Ager?

Jay Rosen: Look for the combination of radical subjectivity accompanied by ferocious superficiality.

What is skepticism?

George Lawrence: You could consider skepticism as a type of quality control that involves rejecting the defects in your thinking.

How should CSICOP respond to New Age claims?

J. Gordon Melton: CSICOP should have a role in the development of alternative solutions to paranormal issues and should endeavor to get beyond

Age ideas and practices, he "became aware that many of them were contradictory—they couldn't *all* be true. Once you realize that, you're halfway to the scientific method."

In Schultz's view, the New Age isn't very dangerous as movements go—"not nearly as dangerous as fundamentalist right-wing Christianity with its political agenda." The New Age deals with the "irrational" side of human experience, and in its proper context "there's nothing wrong with irrationalism," Schultz said. The problem arises, as he sees it, when the New Age movement discards the whole idea of rationality to see subjectivity and irrationality as the totality. "This kind of thinking unfortunately characterizes a large part of the New Age disdain for science."

Most New Agers adopt beliefs because they sound good, Schultz said, but "we must be careful of ideas that sound good because of our vast capacity for rationalization." A better strategy is to "openmindedly consider the opposite of what sounds good." On the positive side, many New Age ideas validate personal experience in a society that does not value it highly.

the dichotomy of truth versus lies. CSICOP can deal well with specific claims, but the New Age movement as a whole is probably beyond CSICOP's power to deal with, since it is after all a large-scale religious/social movement.

Jay Rosen: If the New Age movement can be equated to consumer culture, perhaps CSICOP should be the equivalent of the consumer movement. In confronting New Age beliefs, CSICOP should recognize that the real target is not the New Age but the "culture of narcissism." CSICOP needs to integrate its critiques of the New Age movement within larger social critiques.

Ted Schultz: Here are three methods for mending the rift in society between those concerned with inner and outer realities:

1. Recognize that both are important. Don't just ridicule easy targets like Shirley MacLaine.
2. Continue to test New Age claims about the physical world, preferably in a manner not without sympathy and understanding.
3. Offer people something better. There's a perennial human need for mythology, and while we've outgrown the myths of the past, we have not replaced them with new ones. In such a case, people will go out and build their own.

George Gerbner: The symbolic environment shaped by television is analogous to the natural environment shaped by human industry. We need a new type of environmental movement, a federation of organizations that have a stake in the symbolic environment, which is as crucial to our survival as humans as the physical environment is to our survival as a species. Such a movement should be broadly environmental and should address the civilizing process. And CSICOP should not only think about it or join it, but lead it.

Béla Scheiber, chairman of the Rocky Mountain Skeptics, introduced himself as "one of the few people who takes the New Age seriously and believes it is a threat to society." Scheiber offered evidence of the infiltration of New Age techniques into the business environment. The process can be traced in part by the appearance of key terms and concepts, like "unlimited potential," "transform," "change the global environment," and, of course, the term "New Age."

All these terms, but especially "New Age," are used as packaging tools for the motivational programs that are so popular among businesses today. Scheiber gave several examples of such programs, including one called the "Forum," created by the same Werner Erhard who founded *est*. Erhard franchises the Forum, which is never promoted through advertising but rather through word of mouth. Why doesn't the general public hear about the Forum? Mainly because the program is aimed at business people. It consists of two weekend programs, followed by a six-day "advanced course." If you believe in the program enough to want to sell it, there's a six-month course on "how to share this experience with your friends."

Should you want to become a trainer, you can enter a three-to-seven-*year* program.

What does the Forum claim to do for participants? Claims—in the form of testimonials—range from "opening opportunities in your life" to "transforming humanity." How do businesses react to such claims? Scheiber sent survey forms to 200 corporate human-resources departments asking about their participation in certain motivational programs. He received 44 responses, 26 of them positive. About half of the 26 are using the Forum, and many of them said they had found it to be effective. Scheiber called these managers and asked how they measured the program's effectiveness. One manager said that "employees seemed happier." Another admitted that, while some employees kept "going back for a fix," the program didn't seem to have any effect. A third complained that these techniques are dangerous and that companies use them for controlling employees—the programs set people against each other because some individuals "transform" and others don't.

"The problem as I see it," Scheiber said, "is that corporations have no evidence to support claims of higher productivity or greater effectiveness." He also finds it "unacceptable that employers should subject employees to this kind of pressure, which infringes on their personal belief systems. You wouldn't be allowed to send people to a fundamentalist Christian course, yet you can send them to these New Age courses, which package religion."

The session concluded with some "facts about Shirley," presented by magician and author Henry Gordon of Toronto, whose new book *Channeling into the New Age* discusses the "Shirley MacLaine phenomenon." Gordon pointed out that superstition is a key element in the theatrical world, and it's not surprising that actors and actresses are often superstitious. The best way to argue with them, Gordon believes, is "to throw their own words back to them." That's the technique he has employed in critiquing MacLaine—a section of his book is devoted to annotated quotations from her books and interviews.

Gordon believes MacLaine has three primary motives in promoting her brand of spiritualism:

1. She's "sincere," meaning that she has swallowed almost everything she's heard.
2. She's not averse to making money.
3. She enjoys fame.

What harm is there in MacLaine's activities? "I have a stack of letters about two feet high from people who have been made unhappy as a result of such 'paranormal' activities," Gordon said. Further, MacLaine's "I am God" slogan "condones the idea that one can do no wrong." Finally, she also promotes a variety of healing therapies. Gordon wound up his presentation by playing back an assortment of MacLaine's "profound" comments on science and life, including an explanation of quantum mechanics that was remarkable for its brevity if not its lucidity.

Taking Responsibility

Several sessions on Saturday and Sunday focused on aspects of social responsibility, from the role of the legal system to those of the media and of skeptics themselves. Reflecting the growth of a new area of concern, CSICOP recently set up a Legal and Consumer Affairs Subcommittee. Several members and supporters of that subcommittee were among the speakers and audience of a session on "Psychics in the Legal System."

Opening speaker James E. Starrs, a law professor at George Washington University, pointed out that, while psychics

CSICOP Awards Presented

A highpoint of the 1988 CSICOP Conference was the Saturday evening Awards Banquet held in the International Ballroom of the Hyatt Regency O'Hare.

Douglas Hofstadter, professor of cognitive science, Indiana University, received the In Praise of Reason Award "in recognition of his long-standing contribution to the use of critical inquiry, scientific evidence, and reason in evaluating claims to knowledge and solving social problems."

Milton Rosenberg, professor of psychology at the University of Chicago and host of the acclaimed "Extension 720" discussion program on WGN-Radio in Chicago, was given the Responsibility in Journalism Award for "his outstanding contribution to the fair and balanced discussion of science and the paranormal on radio and his cultivation of the public's appreciation for the methods of science."

C. Eugene Emery, Jr., science and medical reporter for the *Providence Journal* and a frequent contributor to the SKEPTICAL INQUIRER, received the Responsibility in Journalism Award "in recognition of his outstanding contribution to fair and balanced reporting of paranormal claims."

present their role in court as one of "advisers and consultants, in reality they've played other roles as well."

"When psychics take, give, or commit offenses, they appear in court just like anyone else," Starrs said. When a psychic *takes* offense, the result is a civil suit, often for defamation. Psychics who *give* offense may wind up in court fighting an action for fraud. Those who *commit* offenses may be brought up on criminal charges. Starrs also pointed out that, in spite of their alleged abilities, the record shows that psychics "don't do any better than anyone else in the courts." However, the legal system has not directly addressed the issue of psychics and their claims. Starrs said, "I found not one court case in which the courts had taken on psychics directly, whatever their role in the case."

Insight into the "psychic world of law enforcement" was provided by Robert Hicks, a criminal justice analyst with the Virginia Department of Criminal Justice Services. Hicks examined the not uncommon phenomenon of psychics allegedly assisting police departments in solving serious crimes. He believes that the same standards that are applied to expert witnesses—authorities on fingerprint analysis, DNA analysis, ballistics, and so forth—could be applied to psychics as well.

Expert witnesses are evaluated on the basis of their credentials, yet psychics characteristically claim no background experience or training. Instead, they proffer a "resumé of success," drawn not from police or court records but rather from newspaper articles. They also provide testimonials—from grateful law-enforcement officers, relatives of victims, and so forth. In addition, police departments who use psychics help establish their legitimacy for future cases, Hicks said. "Psychics appear both credible and neutral, and officers can't evaluate their skill. So instead, officers investigate their past successes."

Do psychics really help solve crimes? Hicks pointed out that many psychics "will only work with the police if the police work with them." This provides the psychic with information not available

to the general public. Two favorite techniques of "psychic crime-solvers" are *shotgunning,* in which the psychic provides a steady stream of information, keying in to police reactions and "groping along" to provide what the police see as useful information; and *post-facto prophecy,* in which the psychic "interprets" a vague prophecy after the fact to make it seem to have predicted the fact.

Hicks said that psychics cause harm by their involvement in police investigations. First, they cost taxpayers money. Second, they divert police attention from the facts of the case, since police may spend more time checking out psychic predictions than investigating the crime. Third, they may represent a threat to constitutional powers—for example, if a suspect who believes in psychic powers confesses because he or she knows the police in the case used a psychic, is the confession coerced and therefore not admissible in court?

Attorney Michael Botts of Kansas City, Missouri, the secretary of CSICOP's newly formed legal subcommittee, addressed the issue of consumer protection from psychic fraud, noting that although legal theories abound that can protect those victimized by psychics, "there's no one coming forward to take advantage of the law." The same is true for cases of health fraud, he said. Fraud victims are notoriously reluctant to press charges against victimizers, mainly because "people who have been victimized, once they realize how silly they've been, are reluctant to reveal that. They're more likely to treat it as one of life's lessons."

There are three types of fraudulent practitioners, Botts said:

1. The deceived—those who have received only one side of an issue.

2. The deluded—those who have accepted one side of the argument and closed themselves to any new information.

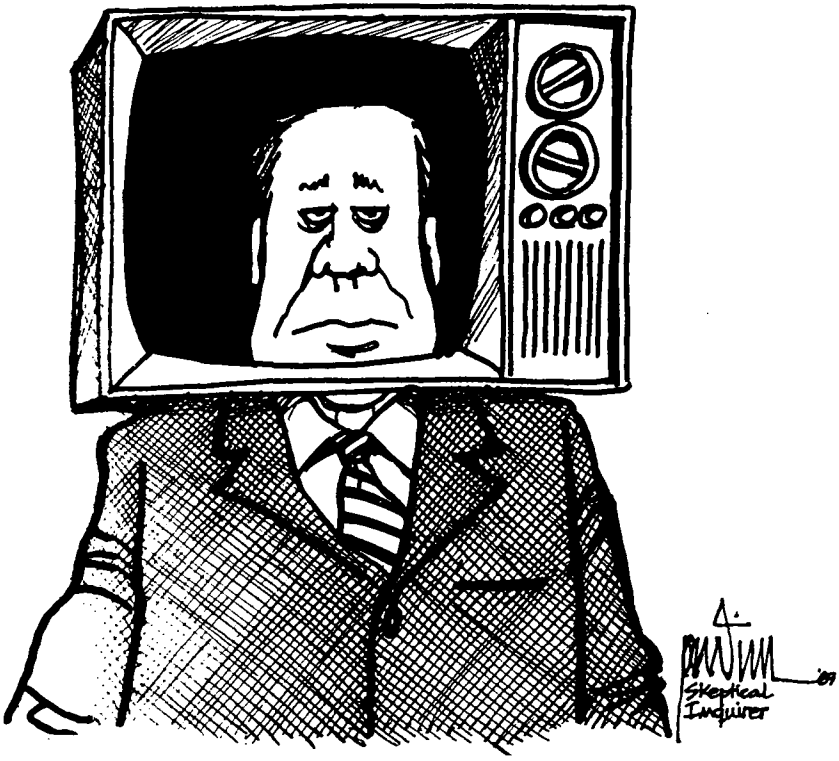
3. The dishonest—those who know quite well that they are pulling a scam.

To pursue a legal action, Botts advised, "go for targets in category 3. You'll never get anywhere in court with the deluded—they will defend their ideas until the grave. On the other hand, dishonest practitioners brought into court will *always* cut a deal. They don't want to go to jail; they'd rather be out making money."

Fraud victims can seek two types of remedies in civil court, according to Botts. These are *contract remedies* and *fraud charges.* Contract remedies have the disadvantage that no damages or costs can be awarded, so "all the victim can get is whatever he put in." Fraud, however, is "a tough case to bring" because it involves five separate elements, all of which need to be proved in order to win. In addition, victims can seek redress under state laws on consumer fraud, especially by using the concept of deception, which is less rigorous to prove than fraud. Federal laws on deceptive practices also exist, but are not being used, with the exception of the U.S. Postal Service, which "has been doing good work in spite of a limited law and limited resources."

Turning to the psychology of frauds, Botts proposed his own working theory that frauds fit the pattern of pathological liars. "For pathological liars, words have no meaning and no emotional impact. No matter how many facts you show, they slide away. But if you can put pathological liars in a place where lies just don't work, you can engender self-doubt. And the only place I know where you can corner people so they can't lie is in a courtroom."

A Saturday afternoon session tackled the controversial issue of media responsibility and the paranormal. University of Chicago psychology professor Milton Rosenberg, in his introductory remarks, lamented the role of the press "with re-



gard to mystery-mongering worldwide." Unfortunately, he said, "bad reporting about the paranormal drives out the good." It is all part of a general trend he characterized as the "emptying, thickening, and muddling of the American mind." (Rosenberg was a recipient of CSICOP's 1988 Responsibility in Journalism Award for frequently subjecting paranormal claims to reason and standards of scientific evidence during his nightly two-hour radio talk-show on WGN-Chicago.)

John F. Baker, editor-in-chief of *Publishers Weekly,* the trade journal of the book-publishing industry, was the first speaker. Baker, an Englishman who calls himself "a natural skeptic, although perhaps a tutored one," built his presentation around a case history: Last year, when well-known fiction writer Whitley Strieber published his bestseller *Communion,* the publisher went along with Strieber's claim that the book was nonfiction and subtitled it "A True Story." This event, Baker said, was what first caused him to think seriously about the role of publishers in spreading unverifiable claims. The result was an article on the subject commissioned by and published in *Publishers Weekly.* Baker himself wrote an editorial that appeared in the same issue, in which he stated his opinion that "book publishers should be several cuts above the publishers of supermarket tabloids in their respect for their readers." (The bulk of this editorial was reprinted in the Winter 1987-88 SKEPTICAL INQUIRER.)

The article and editorial generated letters from many people in publishing. Some of the letters disagreeing with the

article "harked back to Velikovsky and the concept of a monolithic scientific establishment," Baker said. Some saw Baker's editorial as advocating censorship. Nonetheless, Baker believes there is a difference between publishing scientific theories and personal experiences. "One participates in the marketplace of ideas, while the other is likely to be unproved and unprovable," he said. Books by Velikovsky and von Däniken, he believes, fall into the first category, "even though their theories may be silly and unfounded," while most haunted-house books, for example, fall into the latter category.

"Obviously, there's a lot of money to be made here by publishers," Baker said, but they should think clearly about their obligation to the public. They should also check facts "much more carefully than they do" and should label the unprovable and unverifiable as such. Finally, Baker said, publishers should "do less gloating about how a highly credulous readership will gobble up the work of a skilled writer who capitalizes on their credulity. People may be anxious to be misled, but the rest of us shouldn't be helping them."

To George Gerbner, dean of the Annenberg School of Communications at the University of Pennsylvania, books are escapable—a selectively used medium —while television is inescapable. "Television shapes children's lives from before they even learn to speak, let alone read," he said. Therefore, the way television portrays science and scientists, for example, will help determine most Americans' perception of them. "Most Americans have never met a scientist in real life," Gerbner said, "but they meet them in prime time about twice a week and probably know more about their work than about what their own mothers and fathers do."

The theme of science and technology, as you might expect, dominates programs based on the future. Most of these programs, Gerbner said, are fast-moving adventures, and scientists are generally presented in a positive light. For every bad scientist on television, there are seven good ones—but contrast that with twenty good doctors for every bad one, and forty good lawmen for one bad guy. For every scientist who is portrayed as a failure on television, two succeed—but the figure is five for doctors and eight for lawmen. Scientists are generally shown as smarter, stronger, and more rational than other people, but they're also shown as loners, without families, who are obsessed with their work.

Gerbner pointed out that on television "the supernatural comes in scientific trappings." Supernatural themes are found in one-third of children's weekend daytime programs, one-quarter of early evening programs, and one-fifth of later evening programs.

To what extent do viewers "absorb" the portrayals they see of science and scientists? That depends on the "mainstreaming" factor, Gerbner said. "If you're already in the cultural mainstream, there won't be much of an effect. If you're not in the mainstream, TV will draw you in."

A view from "inside the media zoo" was provided by the session's final speaker, Joseph Laughlin, general manager of superstation WGN-TV, Chicago. Laughlin began his television career in the area of news in 1954. He pointed out that back then journalists predominated in television news. It was only during the 1960s that stations realized "news could be extremely profitable"—as much as 40 percent of a station's revenues. As a result, stations began to "shine up the newscast, tinker with the format, and then tinker with the content." "Personal journalism" was another discovery of the 1960s; the Watergate scandal served as "a sort of ceremonial recognition that the

TV newspeople could be in some sense more important than the news itself."

Before indulging in media-bashing, people should make an effort to understand the "human equation" in the newsroom, Laughlin said. TV news departments are places of intense competition, time pressure, and lust for ratings. "News events of any kind are placed into the hands of people who are reasonably well educated, adulated, and grossly overpaid," he said. This applies not just to anchors, but to news directors as well. "All these people care much more for the opinion of their peers than for public opinion," Laughlin said.

Enhancing the Skeptics' Message

At Sunday morning's closing session three speakers gave "samples" of their presentations as if they were talking to an ordinary audience. The purpose of the exercise was to inspire the audience to consider ways in which skeptics can improve their messages to make them acceptable to a wider public.

The first sample was given by psychologist and CSICOP Executive Council member Ray Hyman of the University of Oregon, Eugene. Hyman typically begins public talks by giving historical examples of scientists who were influenced by psychics. He then explores—and explodes—the "false dichotomy" that says that either it's a miracle or the person is deluded. There are other possibilities between these two extremes that are far more likely. He also discusses the "not me" syndrome, where one says, "I'd never be so silly as to fall for *that*."

Hyman then proceeds through the following steps: *diagnosis,* to make sure the audience understands what the problem is; *case history; themes,* such as the nontransferable nature of expertise, psychological factors, and social/cultural factors; *conclusions,* for example, that smart people err; and *remedies,* that is, what people should know and what they can do.

Taking the approach of "creative rationality," Paul MacCready, president of AeroVironment, Inc., said he stresses open-minded thinking in his public presentations. "It's not an easy thing to sell," he said. "You can't make a frontal assault, so you have to be devious." MacCready's public talks use the "Trojan horse" technique: By billing his presentations as discussions of "creativity," "problem-solving," and "critical thinking"—buzzwords that people are eager to hear about—MacCready is able to take advantage of the opportunity to "present the skeptical message." Since MacCready is a designer of innovative aircraft and vehicles, he uses these as his subject matter. His ultimate aim, he says, is to "get children and students to enjoy reality and to enjoy thinking."

Magician Jerry Andrus, who lives and works in Oregon, builds his public talks around illusion. "We all live in a *real* world," he said, "but we live among our *manufactured* images of it." As a result, "we can be fooled because our minds 'know the way the world works.' "

As a magician, Andrus said, "I know I'm not going to reach people by making them feel like fools or dummies. Instead, I fool people on the basis of their being knowledgeable and perceptive." Andrus achieves this in large part by using his own breathtakingly realistic and painstakingly crafted optical illusions. However, he's also capable of making his point through the simplest of means—like fooling his audience into thinking he wears glasses simply by wearing frames with no lenses in them. "People draw wrong conclusions for the right reasons," he said. "If we didn't, we couldn't function in real life. There is a necessity for jumping to conclusions, and one's reality

is one's best guess as to what's really out there."

As for being fooled, Andrus admits he has constructed some small optical illusions—objects that can be touched or held—that are so convincing that his brain tells him they really are what they seem in spite of his having made them and his knowing they're *not* what they seem.

Real reality plus sensory input plus individual interpretation of reality result in our individual, manufactured reality. And "not only do we manufacture our realities, but so do other people," Andrus pointed out. "We need to remember and allow for that in dealing with others." The good news, he said, is that "there is a real reality out there, usually we're seeing it, and so we're almost always right about it."

Jeff Mayhew, owner of Eclipse Graphics, listed five key points that skeptical speakers should remember in dealing with the public.

1. Catch people's attention, and remember that most of the time you're not dealing with a captive audience.
2. Don't tackle too much in a single talk.
3. Build your case diplomatically, and adapt your methods to your audience.
4. Take advantage of communication tools, from visual aids to humor to audience participation.
5. Leave your audience with something to do, some activity they can carry out as a follow-up on your presentation.

"The key challenge facing skeptics today is effective communication," Mayhew said. "We need to make an aggressive effort to get the message across to the public."

Conclusion

Like other CSICOP conferences, this latest was a challenging and thought-provoking experience for all who attended. Perhaps its greatest strength was the importance of its theme. There is no better way to capture the interest and stimulate the participation of conference attendees than to provide a sense of mutual exploration of an issue—particularly one as important, timely, and poorly understood as the New Age movement.

At the conclusion of virtually every talk and session, long lines formed at the audience microphones as people questioned, commented, and challenged the presentations they had just heard. The questions revealed strong interest in the philosophical concepts that underlie skepticism, and a variety of opinions about the best direction and role for CSICOP and local skeptical organizations. In fact, these opinions were so many and of such interest that next year's conference could well include (as the Pasadena conference did in 1987) a special question-and-answer session with the CSICOP Executive Council—and perhaps with officers of the many local groups as well.

Also evident from the question-and-answer periods was the pragmatic concern of many people about how to best deal with the problems of pseudoscientific claims in their own daily lives. For example, George Lawrence's talk on crystals elicited a poignant question from a radiation therapist in the audience, who wondered what to tell a cancer patient who comes into his office and tells him that a crystal has taken away his pain. While the CSICOP conference couldn't provide an easy answer for such a question, those who attended came away with a fuller, deeper understanding of the complex and changing nature of the New Age movement and its adherents.

Lys Ann Shore is a writer and editor in Socorro, New Mexico, who writes frequently for the SKEPTICAL INQUIRER.

Graphology and Personality: 'Let the Buyer Beware'

Robert Basil

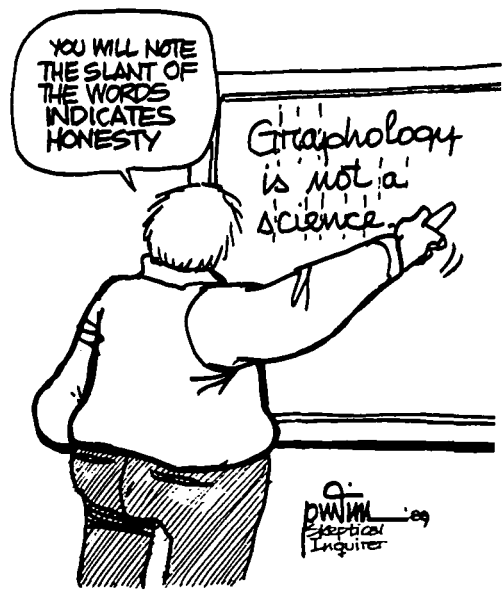
NEARLY four hundred years ago Shakespeare told us, "There is no art/To tell the mind's construction in the face." The bard's appraisal was shrewd, but it has not dissuaded others from seeking heretofore unseen physical keys to personality. The graphology panel at CSICOP's Chicago conference was a case in point. There the question was: "Is there art, or a science, to find the mind's construction in . . . *penmanship?*"

The answer was clear yet tentative: "No . . . at least not yet."

The panel made for an odd morning, with the skeptics providing better arguments for graphology—the science of determining personality traits via handwriting analysis—than did the graphologists themselves. While graphologists Rose Matousek, president of the American Association of Handwriting Analysts, and Felix Klein, vice president of the Council of Graphological Societies, relied on anecdotes, intuition, and bold, totally untested theories to validate their discipline, it was the rigorous statistical analysis of Professors Richard J. Klimowski and Edward Karnes that demonstrated graphology's limited, problematic accuracy. Said panel moderator Barry Beyerstein afterward, "The pro-graphology people presented as good a case as they could, but I was a little disappointed. We didn't want them to tell us about their satisfied customers or how their particular brand of graphology works, but about new evidence not in the literature. They ignored that."

Beyerstein, a psychologist and neurophysiologist, opened the discussion by outlining some key questions that must be asked of graphology: Are trained graphologists, given particular handwriting samples, capable of giving more or less identical diagnoses? Do their tests really measure what they say they do? Are they *predictive*—that is, when the personality trait being measured bears no obvious relationship to the thing being tested—say, the way one makes an *s*? By what criteria are these samples analyzed—which aspects of the immensely complicated design of handwriting are especially meaningful? And how are these samples standardized?

Rose Matousek, the first panelist, did not address these questions. Quite eager to concede that "more work needs to be done," Matousek compared the status of contemporary graphology to that of psychology in its early days, before it had achieved professional, accredited standing. And that standing will come, Matousek asserted confidently. "Since handwriting analysis does not require mystic or paranormal explanations," she



said, "I thought it would be easy to convince the CSICOP audience of the field's worth." She attempted to do so by declaring: "Handwriting is *brain-writing.* It's an expressive, spontaneous movement, a unique personal performance similar to the fingerprint." No human activity, she said, is less "conditioned by conscious process."

There was no question that Matousek had assembled an impressive taxonomy of handwriting styles. Less convincing, however, were her interpretations of these styles. According to graphology's "zonal theory," for example, penmanship's "upper," "middle," and "lower zones" are related to a person's "intellectual," "practical," and "instinctual" selves, respectively. And handwriting that sticks to the left-hand side of the page belongs to those who are attached to "the self, the past, and mother," while writing that zooms to the right comes from the pens of those more concerned with "others, the future, and father."

The problems with this model are both clear and typical of the field as a whole: Does the zonal theory assert that a person cannot be attached to the self, the past, and *father?* Matousek noted that these aren't hard and fast categories, put together as they were in an intuitive, empirical fashion.

Felix Klein's approach matched Matousek's, his presentation largely consisting of showing slides of handwriting to the audience. Mohandas Gandhi's writing, small and neat, showed that Gandhi loved peace. Napoleon's, wild and jagged, proved that the French general's temperament was not a whole lot like Gandhi's. And so on. While Klein claimed that competent graphologists could compose penetrating psychological profiles on the basis of handwriting samples, he admitted: "I don't believe that a scientific method has yet been devised to validate graphology."

Ed Karnes, a psychologist at Metropolitan State College in Denver, described a study he conducted on nine college administrators. The participants were given two kinds of personality profiles, one made through graphological analysis and the other through more standard "psychometric" tests. The administrators were then asked to choose their own from the assembled profiles and assign each of the rest to the other eight. Karnes's findings were illuminating: Graphology's success, he said, "is based on the P. T. Barnum effect, the tendency of people to ascribe great validity to general statements as long as they think the statements are made specifically about them." Example: While a high number of administrators identified with graphological profiles *not* written especially for them, few did so when presented with psychometric analyses (which tended to be much more detailed) not written for them.

Ohio State University psychology professor Richard Klimowski shared Karnes's conclusions, recommending that graphological analysis not be included in the hiring or promotion process. Indeed, the use of this utterly unvalidated technique in employment decisions became this panel's alarming subtheme. Klein claimed, for example, that 91 percent of Israel's corporations employ graphology in making personnel decisions—as does the Israeli government. Klimowski added that American corporations, such as Sears, U.S. Steel, and Bendix, have been known to use graphological consultants. These consultants, he said, "are usually brought in at the end" of the personnel-selection process "as validators"—that is, to assure bosses they've chosen the right guy or gal for the job. How sage is their advice? "Let the buyer beware," Klimowski said.

Each panelist agreed with Klimowski's assessment that graphology "is a fascinating area, amenable to scientific re-

search." Douglas Hofstadter, who received CSICOP's In Praise of Reason Award the preceding evening, noted in the question-and-answer period that "it seems very plausible that all sorts of aspects in handwriting are revealing." Cracking the code will be a difficult project, he said. "We don't even have any system to analyze faces yet."

In an interview following the panel, Beyerstein agreed. "Handwriting may indeed reveal some very helpful things. But all methods used so far have failed and failed dismally" to discern them. At bottom is the vexing question of "personality" itself. "Trying to define somebody's personality," said Beyerstein, "is a fool's errand. Many psychologists seriously doubt whether there is an 'inner core' of fixed and immutable characteristics in the human mind." Which leaves us with the obvious question: As the notion of "personality" as an inherent human trait becomes more difficult to sustain, will there be anything there for graphology to measure once the field gets its act together?

Robert Basil is a Ph.D. candidate in English and critical theory at Stanford and the editor of Not Necessarily the New Age *(Prometheus, 1988).*

A report on the CSICOP conference session on cryptozoology will appear in our next issue.—ED.

NEW AGE SCIENCE BREAKTHROUGH—THE NUMBER OF HAIRS ON THE TOP OF THE FINGERS IS AS ACCURATE DIAGNOSING DISEASE AS IRIDOLOGY.

News and Comment

Gallup Poll of Beliefs: Astrology Up, ESP Down

Hard data on belief in supernatural phenomena are difficult to come by, at least at the national level. The Gallup Organization, Inc., has provided some of the best data with its Gallup Youth Survey, which asked about supernatural beliefs in both 1978 and 1984 (*SI*, Winter 1984-85). In 1988 the Gallup pollsters put the same questions to teenagers again, and the result is a decade-long glimpse of trends in supernatural beliefs.

The latest poll is based on telephone interviews with a representative national cross-section of 506 teenagers, age 13 through 17, conducted between June 23 and July 10, 1988. Gallup reported the results in late October.

This is how the question was asked: "Which of the following do you believe in? Ghosts, the Loch Ness monster, Sasquatch (Bigfoot), witchcraft, ESP, clairvoyance, angels, astrology."

At least 95 percent said they believed in at least one of the phenomena mentioned in the survey.

Angels, as might be expected for what is essentially a religious concept, once again topped the list, at 74 percent. But astrology, at 58 percent, is now second on the list, moving up from third in 1984. In fact the three polls show a clear upward trend of belief in astrology since the 40 percent of 1978. (See Table 1.)

Conversely, belief in ESP has gone down in each poll. It now stands at 50 percent, compared with 59 percent in 1984 and 67 percent in 1978.

TABLE 1. Trends in Beliefs

	1988 %	1984 %	1978 %
Angels	74	69	64
Astrology	58	55	40
ESP	50	59	67
Witchcraft	29	22	25
Bigfoot	22	24	40
Ghosts	22	20	20
Clairvoyance	21	28	25
Loch Ness Monster	16	18	31

Source: The Gallup Organization, Inc., Princeton, N.J.

Fourth on the list is now witchcraft, at 29 percent. It was sixth in 1984, at 22 percent. As the Gallup summary says, "Such beliefs can be of concern to parents and youth workers, who associate them with satanic cults and other 'dark forces.' " Gallup said no correlation was found among teens between witchcraft belief and religious practices.

Little more than a fifth of the teenagers said they believed in Bigfoot (22 percent), ghosts (22 percent), and clairvoyance (21 percent). Since the term *clairvoyance* seems to be going out of fashion, it would be interesting to have a question asking about "psychic powers."

TABLE 2. Teens' Supernatural Beliefs—1988

	National %	Male %	Female %	Ages 13-15 %	Ages 16-17 %
Angels	74	73	74	74	73
Astrology	58	53	64	60	56
ESP	50	54	46	47	54
Witchcraft	29	30	28	26	34
Bigfoot	22	33	11	22	24
Ghosts	22	28	16	19	25
Clairvoyance	21	24	19	15	30
Loch Ness Monster	16	22	10	16	16

Source: The Gallup Organization, Inc., Princeton, N.J.

The Loch Ness monster has a steadily declining following, now at only 16 percent.

Females tend to believe in astrology more than do males (64 percent to 53 percent), but males are greater believers in ESP (54 percent to 46 percent) and in virtually everything else. Females showed more skepticism than males toward six of the eight phenomena. (See Table 2.)

As for the strong overall belief shown in astrology, Gallup—noting that "the scientific community has branded astrology a worthless study"—says the poll showed above-average students less likely to believe in it (54 percent) than those who do average or below average work in school (63 percent).

—*K.F.*

Broch's ZET Database Zaps the Paranormal

Esprit critique, es-tu la?
O Spirit [of skepticism], are you there?
To find out, call
Minitel 36.15, and type "ZET."

IN FRANCE, it's now possible to obtain a variety of skeptical information about the paranormal over the government-sponsored "Minitel" system—thanks to the efforts of University of Nice physicist Henri Broch. Over the past several years, Broch has built up a database of some 3,500 electronic "pages" of information on the paranormal and occult. Access to the database and related services is open to anyone in France who possesses a computer terminal and a modem, and it is supplied free of charge by the French government.

The stated purpose of the service is "to provide comprehensive and rigorous information to anyone who is interested in any unexplained phenomenon, so that the individual can form an informed opinion on the subject." To gain access to the database, you first dial Minitel 36.15. This telephone number gives access to about 4,000 services, including Broch's skeptical database. By typing "ZET," you gain entry to the computer node at the University of Nice, where the database is stored.

Once you've entered "ZET," you have several choices: a message center, where

If you dial up Henri Broch's "ZET" service, this is what you'll see on your computer screen: "If your table turns . . .: ZET, scientific information on the paranormal and occult."

you can ask questions or exchange opinions about paranormal topics; an electronic bulletin board, where you can find out about recently published articles and upcoming meetings of skeptics' groups; an electronic mailbox, to send and receive personal messages; and a reference database, called "Dossiers," which includes full references on about a dozen paranormal subjects.

For example, under the heading "Astrology" you'll find not only a comprehensive bibliography, but also a program that allows you to calculate your "true" zodiacal sign (including proper precession) and gives a detailed but simple explanation of the reasons your "true" zodiacal sign may not be what you always thought it was. Other subjects covered in the database are archaeological mysteries, such as the Nazca lines and the pyramids; parapsychology, from ESP to Kirlian photography; the supernatural, including the shroud of Turin, the curse of King Tut, the Cottingley fairies, and so forth; magic medicine, including acupuncture, biorhythms, psychic surgery, and homeopathy; flying saucers; and a discussion of skepticism.

Broch notes that the service is heavily used by journalists and also receives about 1,500 calls each year from young people. One of the most popular areas of inquiry is archaeological mysteries; to explain this, Broch points out that Eric von Däniken's books have enjoyed considerable success in French translation. Occultism and astrology are also popular among the French public, Broch reports; on the other hand, in France as in other European countries, creationism is not an issue.

In addition to compiling and maintaining ZET, Broch also has written a major survey, *Le Paranormal: Ses documents, ses hommes, ses methodes* (The Paranormal: Cases, Personalities, and Techniques), published in 1985 by Editions Seuil. He reports that his work on the paranormal receives little sympathy or support from colleagues, but he believes it is important because "most programs on the paranormal are 'soft,' to satisfy the public, and skeptical books are not stocked in most bookstores." ZET helps counteract this by making skeptical information available to anyone with curiosity and access to a computer. Broch

engages in an active program of public education, participating in debates and discussions. He also carries his efforts over into his professional life: When he attends a scientific meeting, he displays a poster on the paranormal to increase physicists' awareness of the issue.

Also available through ZET are the details of a Randi-like challenge jointly offered by Broch, Majax (a magician) and Jacques Theodor of the Free University of Brussels. The challenge offers a half-million francs to anyone who can definitively demonstrate any paranormal powers. So far, Broch says, the challenge has drawn 30 responses, 2 of which were serious. Unfortunately—or fortunately—no one has yet succeeded in winning.

—Lys Ann Shore
and Steven N. Shore

Skepticism and Television Do Not Mix

HAVE YOU ever wondered why television news, documentaries, and talk shows often disregard skepticism in favor of belief? In a new book of essays, *Boxed In: The Culture of TV* (Northwestern University Press, 1988), Mark Crispin Miller points directly at the cause, and in doing so hits enough nails on the head to seal the coffin on commercial television objectivity. Television's underlying goal, he says, is to foster credibility in what is being featured. This is a direct outgrowth of television's control by advertising. It is, says Miller, "the fulfillment of an old managerial ideal: to exact universal assent, not through outright force, but by creating an environment that would make dissent impossible." He goes on to say that "advertising must thus pervade the atmosphere; for it wants, paradoxically, to startle its beholders without really being noticed by them. Its aim is to jolt us, not 'into thinking' . . . but specifically *away* from thought. . . ."

What is new is the degree to which television programs accommodate this general strategy. Whereas the goals of advertising used to be contrasted with much of what we viewed, says Miller, "the marketing imperative does not now originate within the midst of some purposeful (advertising) elite, but resides in the very consciousness and day-to-day behavior of the media's general work force. . . . The TV newsman, for example, usually needs no guiding phone call from his higher-ups in order to decide the bias of his story, but will guide himself, as if on automatic, toward whatever formula might 'play,' i.e., fit TV's format, goose up the ratings, maintain (or boost) his salary."

The bottom-line mentality Miller alludes to has undoubtedly contributed to the growing statistics of belief in the paranormal. Why aren't there more knowledgeable skeptics or scientists on television to challenge bogus science? Skepticism, if Miller's thesis is correct, does not fit the goals of advertisers. It is precisely an atmosphere of critical thinking that advertisers wish to eliminate. Talk shows, for example, are now being referred to as "tabloid television" with subject matter indistinguishable from the *National Enquirer* and *The Star*. Television is playing to the lowest common denominator of mass consumer. Miller goes so far as to say that the western, once a staple of prime-time, is no longer acceptable to sponsors because it represents the values of a "pre-consumeristic" society. Serious literary drama isn't acceptable to the networks either, since it may make the commercials seem inane by comparison. Advertisers don't want their ads to be noticed, per se, so much as they want them to be quasi-consciously *assimilated.*

Can the art of critical thinking fit into this predesigned ambiance? Miller sug-

gests otherwise. Television needs watchers who *believe what they watch.* And what they watch, Miller points out, ought to correspond as closely as possible with *what they already believe.* (That's the easiest selling technique.) Furthermore, the ideas communicated must be like the ads: quickly and easily understood. The goal is not to make people think, but to keep them watching. Therefore, if one often gets a feeling of superficiality even from talk shows that treat serious subjects, and which may allow for skepticism, it is because television must at all costs keep things moving within the context of what the audience wants to hear. Television is not in the *business* of educating the public about issues. It is in the business of keeping the largest number of people watching for the longest amount of time. "Thoughtfulness" (and art, music, literature, and science), as *Boxed In* so adroitly demonstrates, is alien to the general television environment.

—Philip Haldeman

Philip Haldeman is chairman of Northwest Skeptics and lives in Redmond, Washington.

Tabloid TV

The following comments are from a column by Tom Shales that appeared in the Washington Post.*—ED.*

TALK ROT infests the airwaves. Once, TV talk-shows concerned themselves, at least occasionally, with legitimate social and political issues. They've all gone tabloid, trivial, and titillating now. . . . Ralph Nader, the consumer crusader, . . . blames Oprah Winfrey and her staff for driving down the level of discussion. "They get their ideas from the *National Enquirer,*" he says. "Then Geraldo [Rivera] dragged TV talk off the street and into the gutter."

By and large [Phil] Donahue takes the high road in this low-down competition. But even Donahue admits, when asked, that he and his producers now schedule fewer serious subjects and more hotsy-totsy topics. "It gives me no pleasure to say 'yes,' " Donahue says. He blames increased competition.

In this new TV world, the worst thing to be known as is intelligent, Donahue says. "If that happens we're doomed. Please do not call me 'intelligent.' Call me 'outrageous.' I'd rather be called 'sleazy' than identified as 'intelligent.' "

Isn't that a sad comment? Donahue answered: "Yes it is, but it's also a recognition of the reality of survival on daytime television today." He thinks the sleazy tabloid talk shows are only responding to public demand. "This is a nation with a seriously diminished interest in serious news. And the media are reflecting this."

Atlanta's Infamous 'House of Blood': Case Closed

IN THE SUMMER of 1987, print and broadcast media across the country picked up on a sensational story from Atlanta, Georgia. Apparently an elderly couple discovered one morning that their house was leaking human blood!

According to the report, walls, ceilings, and even floors were oozing. The homicide unit of the Atlanta Police Department was called in to handle the investigation.

In the absence of any follow-up story a week or two later, I called the Atlanta police only to learn that the incident was still under investigation. A year later there had still been no follow-up report by the news media.

Finally, in August 1988, a series of telephone calls to Atlanta crime investi-

gators Lieutenant Walker, Major Neikirk, and Detective Moore disclosed that, as readers might already have guessed, the initial incident had been blown entirely out of proportion.

There were no ceilings, walls, or floors oozing blood. Two small sprays of human blood had been found on one wall, apparently squirted from a syringe. The blood type did not match that of either of the elderly occupants. Where did the blood come from? It is suspected that another member of the family, who was undergoing kidney dialysis, had access to old blood at a local treatment center, although the center denied this possibility.

According to one investigator, "Some adults will act like children just to get attention." Since no foul play was suspected, C. R. Price, the investigating officer, has officially closed the case.

—*Bob Grove*

Bob Grove, a former science teacher, heads an electronic communication equipment company in Brasstown, North Carolina.

Confusion About Klass

IT IS NOT surprising that Philip J. Klass, and Philip Klass, both writers, are sometimes confused with each other. Philip J., as most *SI* readers know, is a member of CSICOP's Executive Council and a leading skeptical UFO investigator. His most recent book debunks claims of UFO-abductions. The "other" Philip Klass, an English professor at Pennsylvania State University, is a well-known writer of science fiction—sometimes under the pen-name of William Tenn.

Past confusion will be compounded by a new sci-fi musical play, scheduled for presentation in several dozen U.S. cities, "1,000 Airplanes on the Roof," whose theme is UFO-abductions. Its creator is the distinguished composer Philip Glass. •

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MARTIN GARDNER

Notes of a Fringe-Watcher

Gaiaism

SHERLOCK HOLMES was Conan Doyle's greatest detective. Professor George Edward Challenger was his top science-fiction hero. Less well known than the professor's discovery of living dinosaurs (in *The Lost World*) is his discovery (in a short story, "When the World Screamed") that the earth is a living organism. When Challenger drilled a hole eight miles deep, it punctured the earth's soft epidermis. All the world's volcanoes erupted while the injured earth howled with pain.

Although most of science-fiction's living worlds have been stars, many have been planets. The earliest seems to be in R. A. Kennedy's "The Triuniverse" (1922), where Mars divides by fission and its cells eat parts of other planets. Planets are eggs laid by Mother Sun in Jack Williamson's "Born of the Sun" (1934). Only Earth has hatched.

Among philosophers, pantheists tend to see the entire universe as a sentient Mind. If they are also panpsychics, they believe that everything is to some degree alive, including heavenly bodies. One of the most extreme panpsychics was the German philosopher-scientist Gustav Fechner. Here are some excerpts from William James's colorful tribute to Fechner in *A Pluralistic Universe:*

Gustav Theodore Fechner

> All the things on which we externally depend for life—air, water, plant and animal food . . . are [the earth's] constituent parts. She is self-sufficing in a million respects in which we are not so. We depend on her for almost everything, she on us for but a small portion of her history. . . .
>
> The total earth's complexity far exceeds that of any organism, for she includes all our organisms. . . . As the total bearing of any animal is sedate and tranquil compared with the agitation of

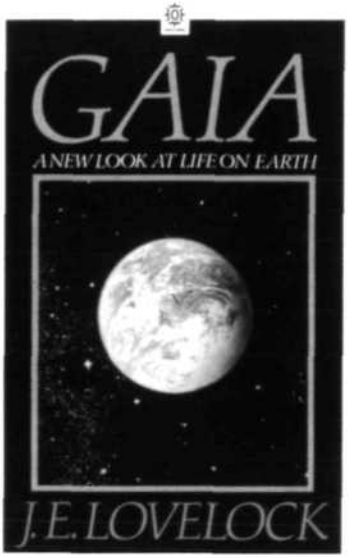
its blood corpuscles, so is the earth a sedate and tranquil being compared with the animals whom she supports. . . . A planet is a higher class of being than either man or animal; not only quantitatively greater, like a vaster and more awkward whale or elephant, but a being whose enormous size requires an altogether different plan of life. . . .

What are our legs but crutches, by means of which, with restless efforts, we go hunting after the things we have not inside of ourselves. But the earth is no such cripple; why should she who already possesses within herself the things we so painfully pursue, have limbs analogous to ours? Shall she mimic a small part of herself? What need has she of arms, with nothing to reach for? . . . of eyes or nose when she finds her way through space without either, and has the millions of eyes of all her animals to guide their movements on her surface, and all their noses to smell the flowers that grow? . . .

Think of her beauty—a shining ball, sky-blue and sun-lit over one half, the other bathed in starry night, reflecting the heavens from all her waters, myriads of lights and shadows in the folds of her mountains and windings of her valleys, she would be a spectacle of rainbow glory, could one only see her from afar. . . .

It was just such a spectacle seen from afar, photographed by astronauts who called it a "blue pearl in space," that inspired James E. Lovelock when he developed his Gaia hypothesis. In his two books about Gaia, Lovelock recognizes a dozen scientists who anticipated him. Why has he never mentioned Fechner, who more than any other thinker wrote eloquently in praise of a living earth?

Born in 1919, Lovelock is a British biochemist (he has a doctorate in medicine) who now lives in Cornwall, his Gaia research financed by income from his many inventions of scientific instruments. His first book, *Gaia* (1979), was followed almost ten years later by *The Ages of Gaia* (1988). Both center on the startling claim that Earth is a living organism—"the largest of living systems" known, an entity "endowed with faculties and powers far beyond those of its constituent parts."



The book that started it all.

Although Lovelock denies that Earth is a "sentient" organism—I assume he means one conscious of its existence—nevertheless his living earth is more than metaphor. "You may find it hard to swallow," he writes, "the notion that anything as large and apparently inanimate as the Earth is alive." Pages are devoted to the difficulty of defining "life," and to defending, along lines identical with Fechner's, the right to say the earth is truly living. Gaia (more commonly spelled Gaea or Ge) was the Greek goddess of Earth, a name suggested by Lovelock's fellow villager, novelist William Golding.

Are there other Gaias? Probably not in the solar system. Mars and Venus are surely dead—Lovelock does not buy Fechner's panpsychism—but perhaps living planets orbit other suns. If we colonize Mars, transforming it into a self-regulating planet, Mars will spring into life. Lovelock has even coauthored a

science-fiction novel about this, *The Greening of Mars* (1984).

Lovelock's second major theme is that, instead of life and the earth evolving separately, with life adapting to environment as Darwin taught, as soon as life got beyond the early bacterial stage it lovelocked with Earth to form a system that henceforth evolved as a single entity. Life and its environment are in perpetual dynamic interaction. Earth regulates life, life regulates Earth. To dramatize this feedback, Lovelock constructed the Daisyworld, a simplified model of a planet whose main life-forms are daisies, some black, some white. They do more than just adapt to temperature. They control it. If sunlight is weak, black daisies increase, absorb more heat, and warm the earth. If sunlight is strong, white daisies increase, reflect light, and cool the earth.

Lovelock and his sympathetic colleagues are constantly finding instances of this kind of feedback, each new discovery taken as a confirmation of the Gaia hypothesis. Recently they published evidence that some species of plankton, floating in the ocean, produce a chemical that may influence world temperature by the way it affects the formation of clouds. (Research testing this interesting proposal—it found no evidence of any cloud-formation or global-temperature effect of a similar, man-made chemical, sulfur dioxide—was recently published in *Nature* [336:441, December 1, 1988] by Stephen E. Schwartz.)

There is new and legitimate scientific interest in considering the earth as a system of dynamic, mutually influencing interactions and feedbacks among living organisms and the oceans, atmosphere, and geosphere. Related to this is a worthy attempt to bring the knowledge of all the relevant sciences to bear on such issues and not be overly confined by rigid disciplinary boundaries. Lovelock's ideas may even have had an influence in this trend. Yet the *scientific* dispute about his ideas revolves around the controversial suggestion of *control.*

Stephen H. Schneider, a highly respected climatologist at the National Center for Atmospheric Research, credits Lovelock with a stimulating, even profound, concept but parts company with him on that point: "The realization that climate and life mutually influence each other is profound and provides an important counterpoint to the parochial view of the world as physical environment dominating life. . . . Nevertheless, the fact that climate and life 'grew up together' and mutually influenced each other . . . is not the same thing as to say that life somehow self-optimizes its own environment. . . . Few would have agreed that the influence of life is so effective and directed that it actually controls the environment for its own purposes. Indeed, that is the essence of the controversy surrounding Gaia: whether environmental self-control exists and whether it is in a sense a 'conscious' act of life processes. The former makes fascinating scientific debate, while the latter has strong religious implications." (See Schneider's detailed essay on Gaia in the *Encyclopaedia Britannica 1988 Yearbook of Science and Technology* and his shorter editorial in the journal *Climatic Change,* 8:1-4, 1986, which he edits.)

Lovelock's critics raise several other objections. Is it not a misuse of language to call the earth alive? As a poetic metaphor, okay, but to go beyond that generates confusion. If Earth is alive, why not a large ship? It too displays dynamic interaction between lifeless matter and hundreds of crew members. Another criticism is that scientists have known for centuries that life interacts with its environment. The outstanding instance is the way plants absorb carbon dioxide and produce the oxygen required by animals. This symbiosis of life and environment is so obvious, critics contend, that the Gaia

hypothesis is like rediscovering the wheel.

Moreover, say the critics, Lovelock exaggerates the degree to which life influences environment. Take away seas, air, and soil, and life would perish. Take away life, and the earth would spin along very well, thank you, as if nothing had happened. In his first book, Lovelock suggests that plate tectonics may be "biologically driven." In his new book he writes: "It may be that the core of our planet is unchanged as the result of life, but it would be unwise to assume this." How life could influence the earth's core is as hard to imagine as its effect on continental drift.

Lovelock is of course opposed to atmospheric pollution and the destruction of forests, but he has annoyed many of his admirers by downplaying the dangers of nuclear radiation. He thinks the Laplanders were foolish to destroy their reindeer after the Chernobyl accident, because the loss of food did them more damage than eating mildly radioactive meat would do. Gaia is not "some fragile and delicate damsel in danger from brutal mankind." Past changes of environment produced by glaciation, earthquakes, volcanic blowouts, and huge meteoric impacts "make total nuclear war seem, by comparison, as trivial as a summer breeze." Humanity may indeed commit suicide, but if so, Gaia won't care.

Although most scientists find Lovelock's vision charming—even scientifically provocative—they still think it distorts common speech and overblows the obvious. But the vision continues to catch on. More and more technical papers and popular articles are defending it; more and more conferences are debating it. A living planet called Gaia flourishes in Isaac Asimov's *Foundation and Earth*. Documentary films about Gaia have been produced. Gaia Books, a London house, has published *Gaia: An Atlas of Planetary Management* (1984), a large picture book edited and written by Norman Myers. Doubleday's edition here has sold more than 175,000 copies.

Lovelock in his home laboratory.

The appropriation of Gaia by New Agers into holism and ecology strikes most of Lovelock's associates as absurd. "The religious overtones of Gaia," said his leading collaborator, Boston University biologist Lynn Margulis, "make me sick." Lovelock himself was surprised by such overtones. He calls himself an agnostic who believes neither in a personal god nor an afterlife. He is down on teleology. The universe has no purpose; nor is Gaia in the least concerned with preserving humanity. Her self-regulation is automatic, as unconscious as the self-regulation of a tree or a termite colony.

To Gaia, we are "just another species, neither the owner nor the stewards of the planet." If we succeed in destroying ourselves, Gaia will turn without pity to other species to preserve life. Lovelock's first book closes with a surprising paean

to whales. They have minds, he tells us, "far beyond our comprehension"—minds vast enough to include "the complete specification of a bicycle" but lacking the tools and knowledge needed to "turn such thought into hardware." Someday, he believes, we may harness whale mind-power the way we once harnessed horse muscle-power.

Lovelock is more tolerant of Gaia's religious side than are most of his associates. He has twice preached at the Cathedral of St. John the Divine, in Manhattan, where the dean is a Gaia buff and there is a church-sponsored Gaia workshop. "God and Gaia . . . are not separate," Lovelock declares in his new book, "but a single way of thought." He urges Catholics to look upon Mary as another name for Gaia, the true "Mother of us all." Although Lovelock denies that Gaia is a "surrogate God," he writes about her with the same awe and affection that Catholics write about Mary. Here again he is not far from Fechner, who likened the earth to a "guardian angel"—a living entity higher than human but lower than the ultimate God.

Like so many maverick scientists, Lovelock shares with cranks a bitterness toward the "establishment" for neglecting him. In his new book he faults its "tribal rules" and its "narrow-mindedness." Like medieval theologians, the mainstream scientists are "creatures of dogma" and the "scourge of heresies." Proud of his freedom to be "eccentric," Lovelock calls on other scientists to join him. They have "nothing to lose but their grants."

There is little evidence that the mystical aspects of Gaiaism are about to be warmly embraced by the establishment, but as a semi-religious New Age cult Gaiaism is rapidly blossoming. There is even a Gaia hymn. I quote one stanza from "Britain's Whole Earth Guru," an article by Lawrence Joseph in the *New York Times Magazine* (November 23, 1986):

> Gaia is the one who gives us birth.
> She's the air, she's the sea, she's
> Mother Earth.
> She's the creatures that crawl and swim
> and fly.
> She's the growing grass, she's you and I.

•

Skepticism Leads to Revolutionary Ideas

Some people equate skepticism with dogmatism. Unwillingness, in other words, to abandon old precepts or entertain creative new ideas that challenge conventional thinking. But skepticism, as every responsible scientist and scholar understands, is an essential part of the process by which novel concepts are formed, tested and ultimately validated. Consider such truly revolutionary ideas as Copernican astronomy; Darwinian evolution; the germ theory of disease; relativity; quantum mechanics; plate tectonics; the genetic code. All grew out of skeptical dissatisfaction with existing concepts. All were astonishingly counter-intuitive. All were challenged by skeptics—including their own authors, most of whom led all the others in proposing rigorous tests of their validity. And all survived the ordeal, subject to further development, refinement and continued probing.

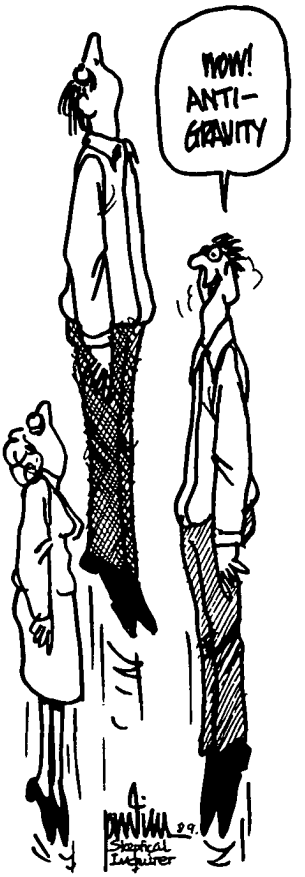
—Robert S. DeBear, "An Agenda for Reason, Realism, and Responsibility," *New York Skeptic* (newsletter of the New York Area Skeptics, Inc.), Spring 1988

ROBERT SHEAFFER

Psychic Vibrations

NINETEEN eighty-eight was a year rich in apocalyptic predictions that—like *all* such predictions—fortunately failed to materialize. First it was the ghost of Orson Welles, who, in the fiftieth year after his notorious "Invasion of Mars" radio scare, came back from the dead via prerecorded videocassette to scare the pants off thousands of people with his narration of a movie containing the purported prediction of Nostradamus that a massive earthquake would destroy Los Angeles sometime in May.

Then the self-proclaimed biblical prognosticator Edgar Whisenant stirred up many thousands of people nationwide with his prediction that "the Rapture"—according to some fundamentalists, the experience of the faithful flying up into the air to meet Jesus—was due to begin on September 11. A global nuclear war would then follow, beginning October 4, with the Last Judgment bringing down the final curtain in November 1995. These dates were determined by the judicious application of numerology to Scripture. For example, 280 is the gestation period, in days, of the human child. "Seven" means "completion." Since Jesus first revealed himself to his apostles in A.D. 28, it is obvious that "the complete gestation period of the church has been accomplished and the church is now



ready to be born into eternity" in Heaven, because 28 + (7 × 280) = 1988. Not surprisingly, even many evangelical Christians disputed Whisenant's prognostications. Nonetheless, many thousands of

people interrupted their normal activities beginning on September 11, 1988, expecting to be swept up into the air at any moment.

* * * * *

For those of you who may have been wondering exactly how CSICOP recruits its Fellows, and what they do when they're not "CSICOPing," that question is answered in the Winter 1988 issue of the supermarket pulp magazine *Psychic Astrology Predictions.* In that publication, which boasts contributions from illustrious astrologer Irene Hughes, editor Peter J. Weber explains that CSICOP, which he spells "CSYCOP," is a "loose-knit group that called themselves concerned scientists." "Their only apparent role in the universe appears to be the debunking of astrology and other occult claims," Weber writes. "Insiders in the psychic and astrology communities have another name for them: 'unemployed scientists'—some of them are so bad they can't hold steady work in the scientific community so they join CSYCOP and then get jobs as lecturers or speakers on behalf of whoever will pay them—often they work for free just so that they can jump in front of the television cameras at psychic fairs or bug television reporters, etc."

Being curious about which of CSICOP's Fellows might be "unemployed scientists" unable to hold down a job, I scanned the CSICOP roster. It seems that Carl Sagan has been at Cornell for some time, so he isn't unemployed, Ray Hyman, Murray Gell-Mann, Stephen Jay Gould, Paul Kurtz, Antony Flew, and many other Fellows have been at their university posts for decades, so as holders of "steady work" they are clearly not the ones of which Weber writes. Perhaps in future issues of his magazine, should there be any, Weber will be so kind as to tell us which "CSYCOPers" he meant.

Weber concludes this piece by noting that there are three kinds of people who don't believe in astrology: "The first group is the uninformed. . . . The second group are those who have something to gain by not believing in astrology," such as "CSYCOP," and religious groups. In the third group, we find "the people who don't believe in astrology because they have something to hide and they do *not* want astrologers revealing what and who they are! Like murderers! Like Hitler-types! Like child molesters! Like psychopathic nuts!"

* * * * *

What do you do when an office building has suffered an unexplained series of fires and power outages? Why, call in a psychic to look into the matter, of course! That is exactly what KGTV, Channel 10 in San Diego, did when the Great American Bank Building suffered three power outages or fires in a single week. Worse yet, it had just been announced that the bank's third-quarter net earnings were down 63 percent from a year ago. Not

surprisingly, "psychic" Carmela Corallo discerned a "disalignment of energy in the building," as reported in the local New Age paper *Light Connection*. She determined that the problems were *not* caused by ghosts, but rather were "a reflection of an energy imbalance of the people in and connected with the building." Before leaving, she did a "clearing" of the building "by adding white light," presumably of the metaphysical variety that cannot be photographed. If the building's problems cease, and especially if the bank's fourth-quarter net earnings pick up, it will be called yet another triumph for "psychic science"!

* * * * *

Sylvia Brown, the prominent California "psychic" whose failed predictions have supplied a significant portion of the Bay Area Skeptics' annual exposé of fizzled predictions, has once again provided fresh reasons for doubting her prescience. The *San Jose Mercury News* (October 28, 1988) reports that Brown, a frequent guest on Northern California television talk-shows, has been accused in court by two lenders of fraudulently obtaining $200,000 in bank loans. She and her husband recently filed for personal bankruptcy, despite her being able to command a fee of $300 for half-hour "psychic" readings, because of their debt of $1.3 million to 11 different lenders. She in turn blames her real-estate broker, claiming that he, unknown to her, was using fraudulent information to obtain loans, although the *Mercury News* notes that "court documents and interviews" suggest that the two had "a close relationship" going back at least to 1980. Brown's excuse for failing to discern the problem precognitively is: "I'm not psychic about myself—that's the tragedy." •

Special Report

High School Biology Teachers and Pseudoscientific Belief: Passing It On?

Raymond A. Eve and Dana Dunn

MORE THAN 30 percent of the high school biology and life-science teachers surveyed in a recent national sample indicated that they would teach creationism rather than evolution in their science classes if forced to choose between the two. The story of the Great Flood and Noah's ark was believed to be an actual event by 43 percent. About 25 percent agreed with the statement "God created humankind pretty much in its present form within the past 10,000 years." And psychic power and the ability to communicate with the dead were endorsed by 29 percent.

The preliminary survey of 190 high school biology and life-science teachers was conducted in the spring of 1988. The study was prompted by the earlier research of Harrold and Eve, which uncovered a high degree of pseudoscientific belief among college students.[1] Since these students constitute a segment of the population with an above-average level of education, we were led to question whether formal education has an impact on such beliefs. We were particularly interested in the possibility that the educational system might actually serve to perpetuate pseudoscientific belief.

Most researchers have assumed that the existence of pseudoscientific beliefs can be explained by some type of breakdown in the socialization process or by pathological factors within the believers. However, we decided to investigate a possibility generally considered too ludicrous to be taken seriously—that high school science teachers themselves might be a source of the pseudoscientific beliefs.

Raymond A. Eve and Dana Dunn are in the Department of Sociology, Anthropology and Social Work, University of Texas, Arlington, TX 76019.

Teachers' Support for Biblical Literalist Items

The Bible is an authoritative and reliable source of information with respect to such scientific issues as the age of the earth and the origin of life.

	Respondents %
Definitely true	20
Probably true	7
Probably false	15
Definitely false	48
Don't know	10

Adam and Eve were the first human beings and were created by God.

	Respondents %
Definitely true	34
Probably true	11
Probably false	9
Definitely false	25
Don't know	21

The Bible's account of creation should be taught in public schools as an explanation of origins.

	Respondents %
Definitely true	22
Probably true	14
Probably false	13
Definitely false	48
Don't know	3

Dinosaurs and humans lived at the same time.

	Respondents %
Definitely true	6
Probably true	13
Probably false	15
Definitely false	53
Don't know	13

Satan is an actual personality working in the world today.

	Respondents %
Definitely true	29
Probably true	15
Probably false	14
Definitely false	27
Don't know	15

We mailed questionnaires to a sample of 387 high school life-science and biology teachers whose names were drawn from the National Science Teachers Association's *National Register of Teachers.* The questionnaires were designed to explore the teachers' opinions on a wide variety of pseudoscientific notions. Questions were also included to assess the extent to which the teachers' willingness to present pseudoscientific material in the classroom would be affected by pressures from students, parents, or school administrators.

On the whole, we found that approximately one-third of the teachers in our sample supported those pseudoscientific beliefs that are associated with a literal interpretation of the Bible. Such beliefs include special creationism, a relatively young earth, and the coexistence of humans and dinosaurs. The table on page 261 provides examples of the teachers' responses.

Several items from the questionnaire were combined into a scale to assess the respondent's commitment to biblical literalism. This scale was then correlated with a variety of demographic characteristics of the teachers. A belief in biblical literalism was found not to be correlated with the teacher's age, sex, or level of education. Nor was it correlated with the region of residence or the region where the teacher was currently teaching. The only variables examined that exerted a significant influence on teachers' belief in biblical literalism were self-reported religiosity, formal religious education (Bible Studies courses), and political conservatism.

The pseudoscientific items related to biblical literalism were not the only ones supported in our sample of teachers. The percentage of the teachers holding "nonreligious" pseudoscientific beliefs typically ranged between 10 to 35 percent. For example, 34 percent of the teachers agreed that psychic powers could be used to read other people's thoughts; 22 percent believed in ghosts; 18 percent agreed that there is a supernatural force operating in the Bermuda Triangle; and 16 percent agreed that the lost continent of Atlantis was once the home of a great civilization. On the other hand, a few pseudoscientific beliefs were not widely accepted. For example, only 1 percent of the teachers believed that astrology is an accurate predictor of people's personalities.

Shortly after our findings were released, critics of the study charged that alarm over the results was unjustified because teachers' private beliefs have nothing to do with what they present in the classroom. While we did not ask directly what material the teachers presented in their science classes, we did ask: "If you had to teach *only* evolution or *only* creationism in your science classes, which would you choose?" Responses to this question proved to be strongly correlated with scores on our biblical-literalism scale, with those opting to teach creationism over evolution being far more likely to be high in biblical-literalist belief. This finding suggests, at the very least, that in a constrained situation a teacher's choice of an "origins perspective" for classroom presentation is strongly influenced by his or her personal beliefs.

We also found that teachers were more likely to say that they would choose creationism over evolution if they had ever received pressure to teach

creationism from school administrators or school-board members. Sixteen percent of the teachers in our sample indicated that they had been encouraged by school officials to teach creationism in the classroom.

It is not coincidental that biblical literalism is the most common "type" of pseudoscientific belief held by the teachers in our sample. Since the 1970s, "scientific creationists" have worked diligently to reach teachers with the message that a literal interpretation of the Bible can be scientifically validated. Our finding that 43 percent of the teachers agreed that creationist views should be given equal time in the classroom may be an indication that the scientific creationists' campaigns have achieved some degree of success.

While we do consider our study to be preliminary, our findings strongly suggest that a more thorough investigation of the teacher's role in perpetuating pseudoscientific notions is warranted. Our study was unfunded and, as a result, necessarily based on a smaller national sample of teachers than we would have liked. Unfortunately, our attempts to seek funding for further research with a larger sample have been so far unsuccessful. We suspect that many funding sources are sensitive to the controversial issues surrounding the work. Nonetheless, we are encouraged by the response of the general public, and particularly by the responses of those science teachers who are all too aware of the problem and eager to see something done about it.

The transmission of pseudoscientific beliefs from one generation to the next in our nation's classrooms not only helps to explain the prevalence of such beliefs in the general population but also represents a direct threat to the quality of education in this country. It is not surprising that the United States ranks well below most other industrialized nations in terms of students' science achievement scores. Our research suggests that pseudoscience may be displacing science in many science classes, thereby contributing to scientific illiteracy in the population. For this reason, further exploration of the role of pseudoscience in our formal education system may be critical to the nation's educational future.

Note

1. Francis Harrold and Raymond Eve, *Cult Archaeology and Creationism* (Iowa City, Ia.: University of Iowa Press, 1987). •

Evidence for Bigfoot? An Investigation of the Mill Creek 'Sasquatch Prints'

Some have called these footprints with dermal ridges authentic, but evidence to the contrary is abundant and mounting.

Michael R. Dennett

THE LEGEND of Sasquatch, the giant humanoid monster alleged to inhabit the Pacific Northwest, has taken an important new turn. A seemingly growing number of scientists and, for the first time, a respected magazine are accepting as valid evidence that indicates the creature exists. *Newsweek* (September 21, 1987) ran a dramatic article in its "Science" section about startling new proof of Bigfoot. The evidence, reported *Newsweek,* consisted of four sets of footprints that showed dermal ridges, the foot's equivalent of fingerprints. Forty fingerprint experts agreed they were authentic, the article said. The magazine quoted a skeptical anthropologist from the University of California, Berkeley, as conceding that "it would be impossible to fake prints with dermal ridges."

Plaster casts of the giant footprints, some 15 inches in length, have been collected by Grover Krantz, an anthropologist at Washington State University (WSU). Krantz, a longtime advocate of the existence of Bigfoot, claims that the casts show "detailed microscopic anatomy absolutely perfectly." The casts, first reported by Krantz in 1982, are indeed impressive. Anthropologist Robert Meier, of Indiana University, who had originally declined even to look at the impressions, revised his opinion after viewing them at a dermatoglyphics convention. In a recent paper Professor Meier wrote: "I think [Krantz] should be commended for his thorough and dedicated investigation into the Sasquatch matter, and generally he has offered cautious interpretations of the

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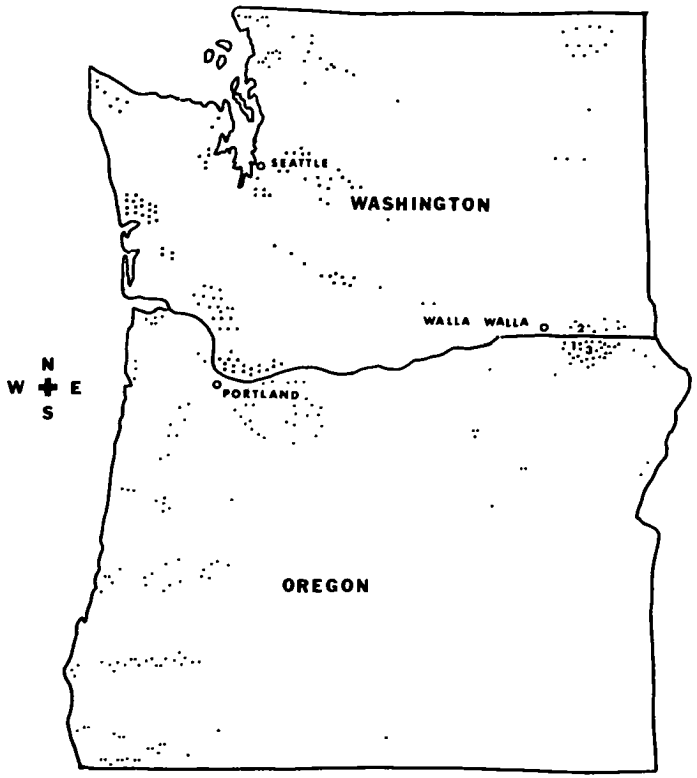

Map of Bigfoot Sightings

Dots represent individual Bigfoot sightings, tracks, or hair samples. Note that many sightings are in areas of high population, particularly near Portland, Oregon, and Seattle, Washington.

Just to the east of Walla Walla is the Mill Creek area (1 shows the location of the first tracks found with dermal ridges; 2 and 3 are the sites of subsequent findings of the footprints with dermal ridges).

Data for map based on information collected by Kevin Lindley and Vito Quaranta.

evidence." Benny Kling, a dermatology specialist, confirms Krantz's interpretation of the casts. After examining two sets of casts, Kling concluded: "Parts of the foot which should be worn smooth of dermal ridges are so worn on both individuals, indicating that both individuals have walked barefoot for a long time; such highly specialized knowledge of primate dermal wear patterns would probably not be known to a potential hoaxer." Kling also noted a pattern of dermal-ridge failure, a not uncommon human/primate feature, stating that they "occur in the correct places, an almost impossible fact for even a sophisticated hoaxer to predict."

Many skeptical individuals, including ABC "Good Morning America" reporter Steve Fox and the Los Angeles KABC-TV researcher David Frank, were impressed by the apparent authenticity of the casts. Even this writer was surprised at the detail shown in the plaster reproductions of the impressions.

It is clear that support is mounting for Krantz and his interpretation of the footprints. Geoffrey Gamble, chairman of the Anthropology Department at WSU, and Krantz's boss, says he tends "to believe in Bigfoot's existence" but is "not convinced." Anthropologist Roderick Sprague, of the University of Idaho, has been even more outspoken in his support of Krantz, saying critics are "as anti-intellectual as the Spanish Inquisition." And according to Krantz, surveys have shown that as many as 15 percent of his peers "believe the animal is likely to exist."

Central to the story are the first two sets of Sasquatch tracks found to show dermal ridges and valleys.[1] The tracks were discovered in June 1982 in an area known as Mill Creek Watershed, in Oregon's Blue Mountains. These tracks, claims Krantz, are proof positive that the creature of legend is an animal in fact. While the WSU professor is gaining support among fellow scientists and a few journalists, many others remain unimpressed.

When I talked with veteran Sasquatch researcher René Dahinden, he told me, "The [Mill Creek] tracks are 100 percent fakes, absolutely fakes!" Dahinden, who has spent 30 years searching for Bigfoot, said he had questioned many experienced hunters in the area where the tracks were found and none of these hunters had ever seen anything to suggest that a group of giant primates lives there.

"Look," Dahinden explained, "remember the Hitler diaries of a few years ago? Several experts said that the handwriting was just right, that all the dates and events were historically correct, and therefore they had to be authentic. But it turns out that the ink used was not invented until 1954, so the diaries are a fake. So who cares about the handwriting or the dates. The same thing applies to the Freeman [Mill Creek] tracks. They are fakes, so who gives a damn about Krantz and his dermal ridges!"

Nor is Dahinden alone among Sasquatch enthusiasts in looking skeptically at the tracks. It was clear from the beginning of my research on the case that Krantz and *Newsweek* magazine gave only part of the story.

Doubt about the authenticity of the tracks is based, in part, on an investigation conducted by the U.S. Forest Service.[2] Surprised by the discovery of alleged Sasquatch tracks in land administered by the Forest Service, Roger E. Baker, regional administrator, sent wildlife biologist Rodney L. Johnson to investigate. Johnson visited the Mill Creek site the day following the discovery of the tracks. Johnson's report and conclusions indicate that the tracks were hoaxed. In one area, according to Johnson, "it appeared that the fine forest litter (needles, etc.) had been brushed aside prior to making the track. It was obvious that the litter had been displaced sideways from the track area in an unnatural manner."[3] In addition, Johnson reported, "In several cases, it appeared that the foot may have been rocked from side to side to make the track." More damaging were Johnson's technical observations. He found that the stride of the tracks "did not change with slope," that there "was no sign of heel or toe *slippage* on the steep gradient," and that the "toes on some tracks appeared wider" from print to print.

FIGURE 1. Dermal ridges and valleys from a cast of Mill Creek tracks, 1982.

The Forest Service biologist is also at odds with the assessment of Kling, the dermatological specialist Krantz favors. Johnson found that the "small toes lacked a definite pad at the tips as would be expected." In direct contradiction to Kling, Johnson reported that "markings were very clear on the portions of the foot that should be worn smooth and calloused." And Johnson was able to view the actual tracks in the field, not just plaster casts.

One other significant item was mentioned in Johnson's report: "The tracks at both sites were not to the bottom of the mud. In fact, we were sinking in deeper with boots on at the same locations."

In addition to Johnson's expertise as a wildlife biologist, the Forest Service requested, and received, the assistance of Joel Hardin, a U.S. Border Patrol officer, to help investigate the footprints. Hardin is reputed to be one of the best trackers in the Border Patrol. He has often been called on to find fugitives or lost hikers. By following "human sign" as slight as rolled rocks, bent grass, and scrape and scuff marks, Hardin has often succeeded when searchers with tracking dogs have failed. In fact, Hardin has never lost a trail when following an escaped prisoner or fugitive. He was flown to the Mill Creek Watershed to accompany Johnson.

The area around Mill Creek is closed to the general public because it is the source of drinking water for several area towns. As a result of the lack of human traffic, Hardin said he found conditions for the "observation and readability of human sign [to be] excellent." After a complete search of the area, Hardin could not find *any* continuity to the tracks beyond the range

FIGURE 2. Plaster cast of Mill Creek track, foreground. No. 2 pencil shows size of track. Duplicate of Mill Creek type in background. The difference in color is due to duplicate being cast from ground, thus picking up dirt. Allegedly authentic track was made from duplicate mold and thus did not pick up any dirt to discolor cast.

of the distinct impressions. He states that "the tracks appeared and disappeared on the trail with no sign leading to or away from the area."[4] That a giant creature could suddenly stop leaving a trail, after making huge dents in the earth, seemed impossible to the border patrolman. Hardin's conclusion: hoax.

An important part of the evidence for the authenticity of the footprints is an alleged eyewitness account of Sasquatch activity just before the discovery of the tracks. Paul Freeman, at that time a new Forest Service patrolman, claims he observed a creature in the watershed that could only be the legendary Sasquatch. The next week Freeman discovered the now-famous tracks with the dermal ridges.

Freeman claims to have encountered other evidence of the creature since then. He says he has found Sasquatch handprints, Sasquatch dung, at least two samples of Sasquatch hair, and several additional sets of footprints, also with dermal ridges. In 1986, after Freeman learned that it was believed that Sasquatches break and twist the tops of small fir trees, he began finding evidence of this too. He has tape-recorded the screech of a Bigfoot, photographed the creature, and encountered it face to face a second time, in October 1988.[5] During this second sighting he unsuccessfully tried to film Bigfoot.

Bob Titmus, who has recently been made an honorary member of the International Society of Cryptozoology for his nearly half a century of field research on Bigfoot, told me he did not find Freeman to be a credible

witness. Titmus explained that on one occasion, while in the field, he told Freeman he thought there might be a Sasquatch in the area. Freeman hopped into his truck and within 20 minutes returned to say he had located some Sasquatch prints. The tracks showed dermal ridges, Titmus told me; but when he looked for signs beyond the few prints Freeman had located, he found no evidence of activity even though the terrain favored tracking. Titmus concluded that the tracks were probably a hoax.

Other Bigfoot enthusiasts are also skeptical of Freeman's testimony. They cite Freeman's "exceptional success at finding Sasquatch footprints" as unlikely. In addition, some are uncomfortable with the fact that Freeman has a history of attempting to fake Bigfoot tracks. *Incredible as it may seem, the key witness for the Mill Creek tracks has admitted to faking footprints of Sasquatch.*[6] When I talked with Freeman in the fall of 1987, he also told me that he intended to open, and operate, a Bigfoot museum. At that time he had various Sasquatch memorabilia for sale, including small busts of the creature.

When I asked Krantz about Freeman's faking prints, he told me that he had no indication that Freeman was involved in any new attempts to hoax Bigfoot. Yet I believe that Krantz has substantial evidence of exactly that. Freeman has found at least two sets of Sasquatch "hair."[7] A longtime Sasquatch journalist and supporter of Krantz admitted to me that a thorough

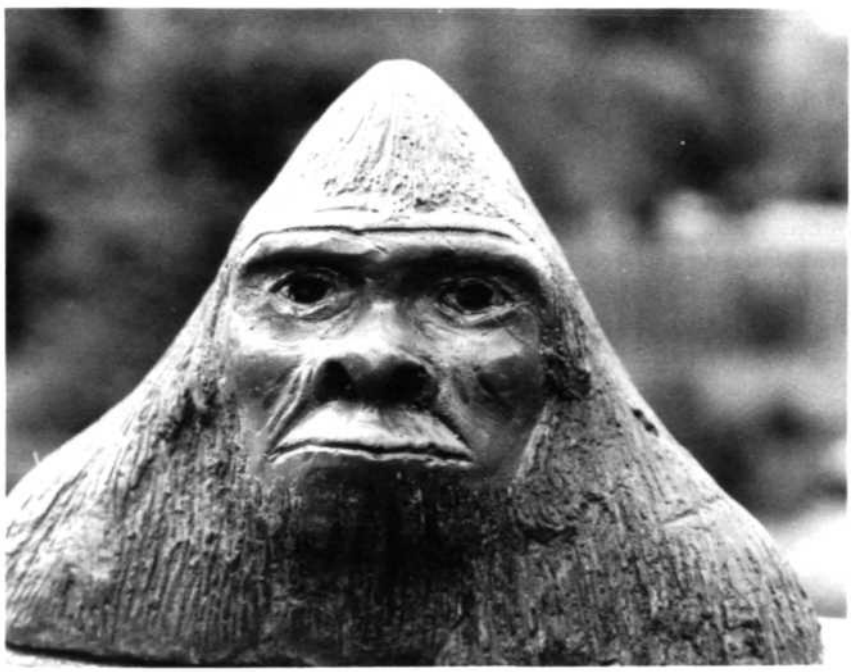

FIGURE 3. Bust of Bigfoot made by Paul Freeman. (Craftmanship and detail show Freeman to be a talented individual. He also paints with oils, and several people have said his paintings are quite good.)

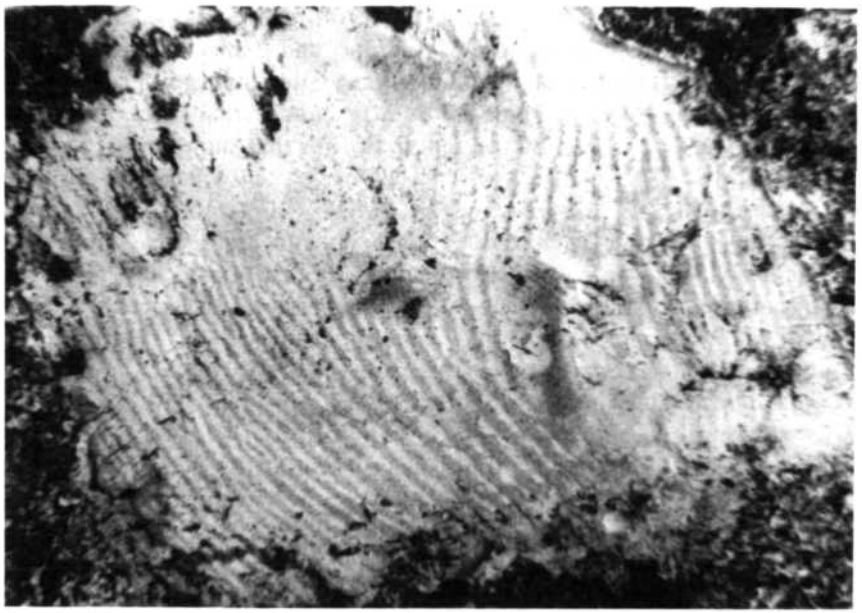

FIGURE 4. Close-up of dermal-ridge pattern in recreated version of Mill Creek track. The apparent larger size of the recreated version may be due to the fact that the print was made from a size-16 foot while the original Mill Creek tracks may have been made by a smaller set of feet. Alternatively, the giant Sasquatch monster may have tiny ridge patterns compared with those of a man with large feet.

laboratory analysis of a set of hair samples (that I believe Krantz obtained from Freeman) proved conclusively that the "hair" was in fact a manmade substance. When I pressed Krantz about this, he dismissed the issue because "other experts" had identified the "hair" as very strange, or from an unknown animal. Another Bigfoot advocate explained to me that Krantz "will peddle hair samples until someone tells him what he wants to hear."

Crucial to Krantz's case is the apparent commitment of "40 fingerprint experts" to the authenticity of the footprints.[8] Yet, when I asked him for the names of "several of the best fingerprint experts in the country and some from abroad," he declined to provide *any* information. Instead, he *insisted* that there was nothing I could do to shed additional light on his already thorough study of the tracks and vigorously tried to get me to drop that line of investigation.[9]

With difficulty I have tracked down some of the fingerprint specialists who have examined the Mill Creek tracks. George Bonebrake, a former supervisor of the FBI's latent-fingerprint section, said: "There appeared to be dermal ridges at various places on the cast of the footprint, but not enough to give an overall appearance or to base an opinion."[10] Robert Olsen, a latent-print examiner, said he "could not detect whether they [the Mill Creek tracks] were faked."[11] More important, did Krantz ever ask the correct questions of these fingerprint experts?

I asked Dr. Kazumichi Katayama, of Kyoto University, Japan, and Dr. A. G. de Wilde, of the Laboratory of Anatomy and Embryology, the Netherlands, both experts in dermatoglyphics, if they could distinguish a Sasquatch print from that of a large human.[12] Both responded that it was "most unlikely." When asked, "Do you feel that footprints that show dermal ridges in a few spots on the foot would be very difficult to fake?" they both answered no. To my surprise de Wilde informed me that he had studied the footprints intensively and that his comments were probably the first received by Krantz. Wrote de Wilde, "I do not see any principal difference between these parts of ridge patterns and the complete patterns of men with large feet."[13] Significantly, de Wilde concluded, "*If circumstantial evidence of the findings is reliable enough* [emphasis added] then dermatoglyphics are not against Krantz's conclusions about the existence of Sasquatch man."

Krantz, who has already proposed that Sasquatch be given the scientific name *Gigantopithecus blacki,* insists that no plausible scenario exists for the hoax explanation of the Mill Creek tracks. Yet an economical and reasonable sequence of events can be constructed.[14] In investigating the case, I learned from two separate reliable sources that Freeman had once worked for an orthopedic-shoe company. After learning this I talked with a number of custom- and orthopedic-shoe manufacturers and asked if a cast of a foot could be made to duplicate a foot with dermal ridges. I learned that some manufacturers and even some independent cobblers will make a *mold of the foot* from wax or similar casting material. When I asked how such a mold might be expanded to the dimensions of a Bigfoot, most of the custom-shoe people said they would just use someone with a giant foot. All of them said that size-16 feet (12⅝") were fairly common and that size 19 (13⅝") were occasionally encountered. Several mentioned feet larger than size 19, and one said he had a customer who had a size 26 (15⅞") foot.

Richard Filonczuk, a cobbler in the Portland, Oregon, area, said that a plaster "foot" showing dermal ridges and valleys might be made from a mold of the human foot. I asked him if he would make me a set, and he agreed to do so for $25. Filonczuk used one of his customers with large feet (12¼") to make me a set of casts that I could use to make Mill Creek–style impressions (see Figure 4).

Without any knowledge of the circumstances of the Mill Creek tracks, de Wilde had guessed at what I think is the most likely explanation for the authenticity of the dermal markings: that they were produced from impressions from a real person's foot. Explained de Wilde: "The patterns of the ridges do not exclude that of a human being with large feet. The size of the feet is [also] not a convincing argument, because several people in Holland . . . have feet nearly of equal length to the [Mill Creek] Sasquatch prints."

In the course of investigating the Mill Creek tracks I have met many Bigfoot enthusiasts. Several have gone out of their way to assist me, and many others have been helpful. Most realized they were providing information that would certainly reduce the value of the Mill Creek tracks. Some also

anticipated the conclusion many would reach: that if the most impressive footprints were a hoax, then other clearly recognizable Sasquatch prints could also have been faked.[15] René Dahinden summed it up best when he lamented to me, "Oh, what Krantz has done to Bigfoot research! He has destroyed the credibility of track prints forever!"

Notes

1. There have been a couple of claims that tracks found before 1982 showed dermal ridges, but no evidence of such casts has been forthcoming.

2. The Forest Service investigation was conducted for Forest Service use only and has not been made available to the press or the public. Even after I obtained a copy of the report, Forest Service people would not comment on its findings. Krantz and other Bigfoot advocates are aware of the details of the Forest Service report.

3. This and other quotes are from Johnson's official report titled: "Documentation of Investigation into Sighting of 'Bigfoot' Tracks in the Mill Creek Watershed, June 8, 1982."

4. Quotations are from an "Official Memorandum" by Joel Hardin dated July 28, 1982. Other details are based on his "Memorandum" and private correspondence.

5. It is not clear how many times Freeman claims to have seen Bigfoot. He took one photo of an alleged Sasquatch sometime between 1982 and 1987 and a second photo, actually snapped by his son, in 1988.

6. On ABC's "Good Morning America" program, October 1987, Freeman admits that in the past (prior to 1982) he had tried to make fake Bigfoot prints. Krantz has characterized Freeman as "one of his best sources of Sasquatch information."

7. One set of "hair" samples found by Freeman was identified by the New York City Police lab as "being exactly like human hair." No other Sasquatch hair samples, to my knowledge, have been so identified.

8. I believe the figure of "40 experts" to be an exaggeration but that at least 6 experts have studied the casts.

9. In fairness I should state that I did not press Krantz for the names. In published articles, Krantz identifies three of the fingerprint experts.

10. *Science Digest*, September 1984, page 94.

11. Ibid.

12. I queried these fingerprint experts because I believed them to be among the international experts that Krantz claims. De Wilde proved to be one who had examined the casts in detail.

13. Personal correspondence.

14. This is by no means the only possible explanation of how the tracks were hoaxed. It is also possible that the ridges were an unintentional artifact of the hoax and not intended to be discovered.

15. Some Sasquatch footprints, perhaps many, may be nothing more than unusual depressions in the ground magnified into Bigfoot prints by people's imaginations. In such cases the hoaxer may be the human mind with a little help from nature. •

Alleged Pore Structure In Sasquatch (Bigfoot) Footprints

A laboratory experiment suggests that the 'pores' in the casts of Bigfoot footprints are artifacts of the casting process.

Deborah J. Freeland and Walter F. Rowe

RECENTLY attention has been drawn to new evidence supporting the existence of the legendary Sasquatch (Bigfoot). The primary discoveries are footprints allegedly left by Sasquatch in southeastern Washington and plaster casts of these footprints that showed dermal ridges on which sweat pores were allegedly visible (Begley 1987).

The best-documented report of Sasquatch dermal ridges and porosity is that of G. S. Krantz (1983). In June 1982 a Forest Service patrolman said he encountered a hairy animal of human shape, believed to be Sasquatch. A plaster cast was made of one of the footprints left by this creature. The following day footprints of two such creatures were found, one matching the print previously cast. Three casts were made of the second creature's footprints. It is the latter three casts that were the subject of Krantz's analysis.

The Sasquatch footprints were left in damp loess. Loess is a typically buff-colored unstratified soil composed of unconsolidated porous silt. The sizes of loess particles vary somewhat according to the geographical area in which the loess was deposited; however, loess particles generally range in size from 31.3 to 62.5 micrometers (um) (Pettijohn 1975). In the three casts analyzed by Krantz, the dermal ridges were clear and were generally spaced 0.5 millimeters (mm) apart, displaying bifurcations, terminations, and short segments, all of which are common features of human dermatoglyphics. Many small indentations were observed on the dermal ridges of the casts.

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FIGURE 1. Photomicrograph of cast of human footprint. Arrows indicate "pores."

These were interpreted by Krantz as sweat pores. These "pores" were spaced approximately 0.5 mm apart and were centered on the dermal ridges; they varied in diameter from less than 0.1 mm up to 0.2 mm. The "pores" were generally lined up in a regular pattern on adjacent ridges. Overall, Krantz's observations are consistent with the generally accepted characteristics of dermal ridges and pore structure in higher primates (Moenssens 1971; Olsen 1978; Cummins and Midlo 1961). Pores can be found anywhere across the surfaces of the dermal ridges but are most often found on the midline; they may be rectangular, triangular, circular, or oval. There may be 9 to 18 pores per centimenter with diameters up to 220 um (0.2 mm). According to Krantz, several unnamed experts examined the casts and declared them to be those of genuine impressions left by some sort of higher primate, citing the correctness of the dermal-ridge patterns and pore structure and the difficulty in faking these details so accurately.

Upon first encountering news reports of the finding of dermal ridges and sweat pores on casts of Sasquatch footprints, we were skeptical that a medium as coarse as the typical soil could faithfully duplicate primate dermatoglyphics. We were also skeptical that the details of primate dermatoglyphics could be replicated in plaster casts, because of the tendency of plaster when mixed to the proper consistency for casting impressions to entrain masses of bubbles. We therefore decided to duplicate Krantz's Sasquatch footprints experimentally to see if dermal ridges and sweat pores could indeed be replicated in a plaster cast.

Several pounds of loess were obtained from the Geology Department of Eastern Washington University in Cheney, Washington. A representative subsample was obtained by repeated coning and quartering of the loess. The subsample was placed in a container and dampened with water. An impression of the right foot of one of the authors was made in the dampened loess; a cast of this impression was made in dental stone (sold by Ransom and Randolph Company, Maumee, Ohio). This dental stone is a highly refined plaster of paris; it is the material supplied by the U.S. Army to its investigators for the casting of tiretracks and shoeprints at the scenes of crimes.

The original footprint was examined under a stereomicroscope at magnifications from 10X to 70X. Although in many areas impressions of the dermal ridges were visible, no impressions of sweat pores could be identified. In the original footprint, the pores would appear as small elevations at the bottoms of the depressions corresponding to the dermal ridges. Because human sweat pores have limited depths, the impressions they produce may be too indistinct to be recognized.

Figure 1 is a photomicrograph of a region of the dental-stone cast of the footprint. Dermal ridges were reproduced in some areas of the cast, and numerous "pores" were found on the dermal ridges. (Some are indicated by arrows in Figure 1.) The "pores" tended to line up regularly on adjacent ridges; the diameters of the larger "pores" (approximately 120 um) were well within the range reported for human sweat pores. We attempted to compare the patterns of "pores" on the cast with the patterns on an inked footprint; unfortunately, the pore structure was not adequately shown in the inked print for us to make a valid comparison. Inadequate replication of pores is a common problem with inked fingerprint impressions; Moenssens (1971) points out that the majority of fingerprint identification cards do not show pore

TABLE 1.

Shapes and Locations of "Pores" on Cast of Human Footprint

	On Ridges			In Valleys		
	Sphere	Hemisphere	Other	Sphere	Hemisphere	Other
Analyst 1						
Area I	23	26	1	2	0	1
Area II	8	7	0	2	1	0
Area III	26	4	0	0	5	0
Total	57	37	1	4	6	1
Analyst 2						
Area I	19	0	0	3	0	0
Area II	5	14	0	0	4	0
Area III	12	11	0	0	1	0
Total	36	25	0	3	5	0

detail, either because of the use of too much ink or because the pores are too small to show up.

A microscopic examination of the shapes of the "pores" was also carried out. A real sweat pore would have a conical profile, whereas trapped air bubbles would produce spherical or hemispherical cavities. Each of us independently examined three randomly selected areas on the cast where dermal ridges were reproduced, using a stereomicroscope. In each of the areas the "pores" were classified into one of the following groups: "spheres," "hemispheres," and "other." The locations of the "pores" (on the dermal ridges or in the intervening valleys) were also noted. As may be seen from the data in Table 1, virtually all of the "pores" examined had shapes consistent with air bubbles. Cavities produced by air bubbles would be more commonly observed on the dermal ridges because cavities in the valleys between the ridges would tend to be perceived as part of the valleys. Furthermore, real pore impressions would be obscured by the welter of cavities produced by air bubbles in the dental stone.

In light of the foregoing, we feel that the "pores" observed on the dermal ridges of the casts of Sasquatch footprints are probably artifacts of the casting process and are not replications of primate sweat pores.

Acknowledgments

We would like to acknowledge the cooperation of Professor Grover Krantz, Department of Anthropology, Washington State University, who kindly submitted to a lengthy telephone interview with one of the authors. We would also like to thank Richard Greenwell, editor of *Cryptozoology*, who provided us with a copy of Professor Krantz's paper, and Professor Mutchler of the Geology Department of Eastern Washington University, who provided the loess sample.

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The Lore of Levitation

Claims that some people have literally been able to rise above it all have brightened, if not enlightened, our cultural history.

Gordon Stein

CAN PEOPLE defy gravity and rise into the air unassisted? Can they fly through the air horizontally? Can they climb a rope up into the air and disappear from view? All of these abilities have been testified to at various times and with varying degrees of credibility, although they seem to defy the laws of physics.

These alleged phenomena fall under the general term of *levitation.* All types of people, from saints to spiritualists to Indian fakirs, have claimed to have been levitated. Some of their claims and experiences will be examined in this article.

First we consider the instances of levitation that do not purport to be anything but entertainment and illusion, e.g., the stage magician's act of levitating a young woman. There are any number of variations on this type of performance, and perhaps as many ways of accomplishing the illusion as well. In the most common form of the trick, a young woman is brought on stage and put into a "trance." She is then allowed to lie down on a sort of bed made up of a board and two supports, like sawhorses. There is a drape of fabric hanging down over the edge of the board. One by one the supports are removed. Eventually, there is nothing apparently supporting the board. Sometimes it rises and falls upon the command of the magician. Sometimes there is no board, but the illusion is accomplished by the use of two chairs across which the woman lies. Sometimes she is entirely covered by a cloth and then vanishes from the levitated platform upon the command of the magician, only to reappear from the wings or from the audience. The variations seem endless.

Dr. Stein is a physiologist and editor who writes frequently about the paranormal.

In explaining the trick, one must be cautious. Both the large number of variations in the way the mechanism used can be designed and the fact that to reveal exactly how the trick works will destroy its entertainment value (to say nothing of my magician's oath) lead me to be hesitant about explaining it. In general, the principle involves a single strong support behind the platform upon which the woman lies. It is either fixed or mechanically liftable, usually with a noiseless hydraulic system. Sometimes wires from above are used. In all cases the mechanism is cleverly hidden and the passes by hoops of metal or other devices around the tables always just miss hitting the support. If the illusion is well staged, it can be quite convincing, even to the skeptic. Nevertheless, *this* form of levitation is admitted as trickery, and will therefore not be considered here any further. We want to concentrate upon those forms of levitation that promoters allege to be real.

Perhaps the most famous case of supposed levitation is the Indian Rope Trick. In 1919, rumors that this was a real, but rarely performed, event made a member of the British Magic Circle offer the then princely sum of 500 pounds to anyone who could or would perform the trick under carefully controlled conditions. Ads were placed in the *Times of India,* but there were no takers. The man who made the offer reluctantly concluded that the trick must be only a myth.

What was this purported trick? Well, as reported, usually second- or third-hand, a Hindu fakir, working outdoors in a level area, would have a crowd gather around, then throw a long coiled rope up into the air. The rope would stay suspended vertically, with the top of the rope almost disappearing from view. The fakir then told his young assistant to climb up the rope. The assistant did so, and soon was out of sight. The fakir then called him several times to come down. There was no response. Growing very angry, the fakir seized a knife in his teeth and then climbed up the rope after his assistant. Shortly thereafter various parts of the assistant were seen and heard striking the ground. Finally, the fakir descended the rope, his clothes bloody. The various limbs of the assistant were gathered up into a pile (or sometimes placed into a basket), given a kick by the fakir, and were miraculously reassembled into the live young assistant. The assistant arose or climbed from the basket and walked off unhurt. At least this was how the trick was reported, but never first-hand.

Yet the British magician who had no takers for his 500-pound offer may have been quite mistaken to conclude that the trick was a myth. Hindu fakirs are often illiterate, even in their native language, and in any case probably do not read the *Times of India.* Perhaps his offer was unknown to the people who mattered. One school of thought says that the Indian Rope Trick *does* exist; and although it is rarely performed because of the difficulties and special skills involved, the actual trick is very much the way I just described it. All that differs is that it is usually performed at dusk, and there are some small hills in the background. The rope is usually thrown up several times before it remains upright. A wooden ball with several holes drilled through it

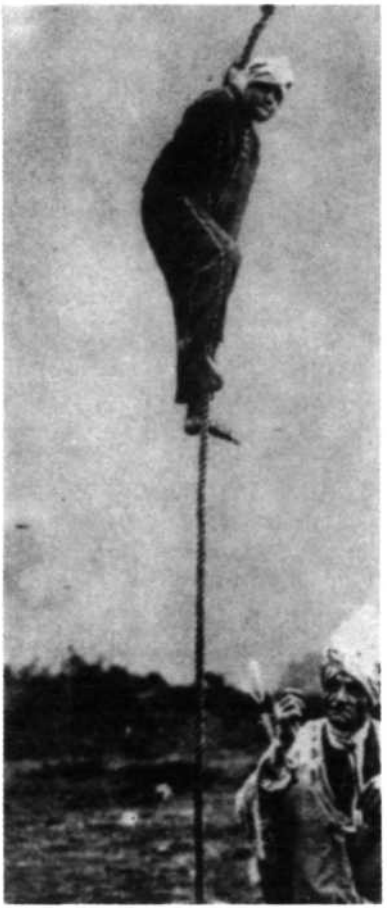
is attached like a weight to the thrown end of the rope.

So what could the secret of the Indian Rope Trick be? Well, it lies in carefully choosing the site and the time of the performance, plus considerable advance preparation and skill in distracting the audience. A site must be picked that has two hills, one on either side of the flat area seating the audience. A long black wire is stretched from one hill to the other, and pulled tightly, at least 30 feet above the ground. The trick is always performed at dusk, when the wire is invisible. Additional concealment of the wire is achieved by placing a number of electric lanterns—or bonfires, in the old days—around the audience to further obscure the view straight up. The first few times that the wooden ball attached to the end of the rope is tossed into the air, nothing happens. The audience quickly loses some interest and begins to pay less attention. Finally, the fakir attaches a metal hook through one of the holes in the wooden ball, and throws the rope up to loop over the concealed wire. He makes sure it is secure, sometimes with the aid of an assistant at each end of the wire, and then sends the boy assistant up the rope.

The long robes of the fakir conceal a body harness that contains the limbs of a shaved monkey and a realistic looking dummy head. When these parts have been thrown down after the fakir ascends the rope, the boy assistant fastens himself to the harness under the robes of the fakir and is unseen as they descend. Once back on the ground, the fakir's other assistants gather up the monkey parts, the boy slips out from under the fakir's robes and takes his place in the basket, and the illusion is complete. Sometimes the rope is unfastened from the guy wire, sometimes the guy wire is released from its moorings, and sometimes the whole apparatus is left in place temporarily. The great skill required to climb the rope, make the switches, and divert the crowd's attention at the appropriate moments have made this trick so difficult to do well that it is rarely performed.

However, some hold that the trick as described above originated as a hoax perpetrated by a journalist in 1888. They believe that there never actually was an Indian Rope Trick. How can one prove that something did *not* exist? What is really needed is a new performance of the trick with videotape equipment present. In any case the Indian Rope Trick is a deceit and need concern us no further.

Modern claims of levitation have been made by the members of the



Alleged photograph of the Indian Rope Trick. The authenticity of this and similar photos is dubious.

Transcendental Meditation movement. They offer expensive courses they claim will enable a person to levitate a foot or so off the ground while in a full lotus position. They show photos of a small group of people, each a few inches off the ground. However, careful study of the photographs shows that the ground is heavily padded and that the people appear to have simply hopped up into the air for a second or two. When questioned, the participants admit that this is so, but add that they feel that with additional practice they could remain in the air for extended periods, although no one has yet achieved this ability. It is hard to know whether they sincerely believe this or whether they have been taken in by an aggressive sales campaign. It is safe to say that no one has yet demonstrated true levitation from the lotus position.

Moving to the realm of levitation in a spiritualist setting (i.e., during séances), we come to perhaps the most well known claim of a supposed unexplainable levitation. Perhaps the most famous physical medium who ever lived was Daniel Dunglas Home (1833-1886). Although Home was occasionally caught in a fraud, such as when he was found taking his foot out of his shoe during a séance, he seems to have been remarkably skillful. Of course the fact that he never charged for his séances, although he did accept gifts and hospitality, made people less anxious to expose him. Home frequently did levitations. In a semi-dark room, he would appear to rise toward the ceiling. People said that they knew he had risen because they felt his feet at the height of their faces. If that is all they had to go on (in other words, if they saw only his feet), then we have a neat explanation of the supposed levitation: Home simply removed his shoes from his feet and placed them on his hands. Then he need only move his shoe-clad hands about in the air in the vicinity of the sitters' faces. They also often reported that his voice came from high up. This can be accomplished simply by standing on a chair before speaking. However, if the sitters could clearly see the rest of Home's body as he supposedly levitated, we have an entirely different situation, for which an explanation is more difficult. Home did not always conduct his

séances in the pitch dark that other mediums required, so observation of the whole body should have been a possibility. Suspiciously, Home did ask that lights be lowered when he was going to levitate.

Another form of levitation during Home's séances deserves brief mention—table levitation. Examination of the actual reports of such levitations shows that the risings of the table were uniformly reported to occur when people joined hands on the top of the table as they were seated around it. The table then began to rise, forcing the sitters to rise in order to maintain the unbroken circle of joined hands. If this was the case, there is a simple explanation for how it was done. Some mediums used a device consisting of a flat metal hook with straps that are fastened to the arm under the suit coat. When the hands were resting on a table, the hook could be engaged under the tabletop. When two people on opposite sides of the same table have engaged their hooks, the table, even a very heavy table, can be made to rise if the two confederates simply make some comment about the table rising and then get up themselves. This will cause the table to rise with them, and the others sitting around it will also rise, if it is made clear to them how important it is to keep the circle of hands unbroken. This is one way of doing this levitation, and it *may* have been employed by Home.

Home himself admitted that only one of his levitations occurred in daylight (in America, at the home of Ward Cheney in Connecticut in August 1852). Yet, unless Home has confused two accounts, F. L. Burr, who reported this levitation, says that it occurred in "a darkened room." Why Home would say it was in daylight (perhaps it *was* daylight outside) is not clear. However, one levitation did occur, he says, with four gaslights burning brightly. This, of course, implies that on the other occasions the levitations occurred in the dark.

We know the details of at least one other of Home's levitations (in 1859) from the pen of a disinterested observer, one J. G. Crawford. He informs us that the room was almost dark. Home then exclaimed: "I feel as if I were going to rise. I am getting up." As Crawford was only a few feet from Home, Crawford put out his hand toward him and felt the soles of both of Home's boots some three feet above the level of the floor. Crawford said he deduced that Home had risen *from his voice.* In other words, Crawford did not actually see Home's body in the levitated state. The previous comments about how this effect might have been accomplished seem extremely pertinent now. We also have the testimony of a Mr. Jones of Peckham (not further identified), who was present at a levitation of Home's in 1860. Jones claimed that Home said "I am rising," but that he could not see Home in the darkness. When Home was asked to come close to the window (it was dark outside) and he did so, they saw "his feet and a part of his legs resting or floating on the air like a feather, about six feet from the ground and three feet above the height of the table. He was then floated into the dark. . . . I saw his head and face at the same height as before [it is not clear at what height], and as if floating on air instead of water. He then floated back [into the dark] and

came down." Again, if Home were very clever at figuring out exactly what part of his body could be seen in the limited light, he could have presented only that part that would be visible in a horizontal position—by standing on a chair, for example, and bending forward or backward at the waist with his shoes on his hands.

Mrs. Lynn Linton's account of the same séance is interesting in that she did not actually see Home float, but says that his voice gave her the indication that he was levitating as he moved about the room. She does claim to have seen the shadow of his body "on the mirror as he floated along near the ceiling." The shadow she saw was not necessarily that of Home's body. Since the apparent height of Home's voice, plus the level at which his shoes were felt, seem to be largely responsible for the feeling among the audience that he had levitated, we may be able to explain Home's spiritualistic levitations as deception.

Perhaps the most famous of Home's levitations was the one that occurred in the presence of Lord Adare, Lord Lindsay, and Captain Charles Wynne in December 1868. This was the event reported by Adare in his *Experiences in Spiritualism With D. D. Home* (c. 1870). Adare reported that Home went into a trance, walked about the room, and went into the next room and opened the window. Lord Lindsay thought he knew what was going to happen and called out that the action was "too fearful." "He is going out of the window in the other room and coming in at this window," Lindsay cried. He later claimed he knew this through telepathic communication. Home then appeared at the outside of the window, opened it and entered the room. He then asked Adare to close the window in the other room. When Adare went there to do so, he found it open only about 18 inches. Adare expressed amazement that Home could have exited through such a small opening. Home then showed him how he could do it by horizontally shooting through the window head first and returning through the window of the next room the same way.

We are also told that the windows were 80 feet above the ground and that there was 7 feet between the two windows, with only a 4-inch-wide ledge between them. There was a wrought iron balcony outside each window as well. The 7-foot measurement was between the two balcony edges. Could this most famous of all levitations have occurred as stated?

An investigation of this event uncovers several internal contradictions within the document describing the event, as well as between that document and several other, shorter accounts. The date and the location of the levitation have been misstated. When these are unscrambled, other contradictions appear. For example, Adare wrote that the light from outside the window was bright, but there was actually a new moon on the night of the levitation. Furthermore, although the building in which this levitation occurred is no longer standing, there are photographs of it. These reveal that the two windows involved were only about 35 feet from the ground, rather than the 80 feet reported by Adare. More important, the two balconies were only

about 4 feet apart. So, there are several possibilities. Home (who had plenty of time alone in the building in which to practice this feat) could have jumped from one balcony to the other, or he could have simply opened the window in one room, sneaked under cover of darkness from that room to the window of the other room, stood on the *inside* ledge of the second window, and opened the window from the inside. Experiments have shown that in the dark it is very hard to tell if someone is inside of a window or outside of it. So, we are left with the distinct possibility that Home could have faked this apparent levitation.

We also know that Home had an unusually dominating relationship with the three witnesses, which could have influenced them to accept his suggestions that he was levitating out one window and in the other. Two additional facts about the incident should set off alarm bells. Home always told people that he had no control over his levitations. Yet he told Adare and Lindsay that he was going to go out one window and in the other. If Home could not control his levitations, it would seem to be a dangerous thing to try floating out windows. Second, why did Home tell everyone not to leave their seats and to remain in the one room while he went into the other? What would they have seen if they *had* looked in the other room? Would they have detected a fraud?

D. D. Home was not the only medium who claimed to be able to levitate, or who was reportedly seen to do so. Among others were W. Stanton Moses, Mrs. Guppy, Eusapia Paladino, and Willy Schneider. Although they were sometimes levitated while sitting in a chair, their levitations were otherwise similar to Home's. The chair levitation is difficult to explain. Without the account of a trained observer, who also could have examined the chair afterward, it is not possible to give a definitive explanation of how it was done.

The most perplexing of all the claimed levitations are those of Saint Joseph of Cupertino and Saint Teresa of Avila. Of course they are not the only saints who supposedly levitated. There are more than 200 saints who are reported to have levitated at least once in front of witnesses. The most recent was Marie-Francoise de Cinq Plaies, who died in 1791. Note that levitating saints have evidently gone out of fashion, as there hasn't been one (other than some of the sightings of the Virgin Mary) for nearly 200 years. Why this is so may become apparent when we examine some of the actual reported levitations of these saints.

Perhaps the most famous levitating saint was Joseph of Cupertino (1603-1663). There are supposedly 40 recorded instances of Joseph's levitating, including the time he flew up to the altar of the church from the pews, landed among the burning candles, and was badly burned. Joseph's most impressive reported levitation was the time he supposedly flew 70 yards from a doorway to the top of a 36-foot-high cross that his group of friars was constructing. He then lifted the cross into the air and flew with it to the site to which it was to be moved. When we examine the evidence for these levitations, however, we see (as Alban Butler in his *Lives of the Saints* [1756-1759] points out) that

Claims of Levitation 'Miracles' in India

B. Premanand

The SKEPTICAL INQUIRER asked the Indian magician B. Premanand for his perspectives about the Indian Rope Trick and levitation claims in general. Premanand is chairman of an Indian national skeptics group and has exposed 1,146 claims of "miracles" in India. He toured and lectured in the United States in late 1988 and early 1989.—ED.

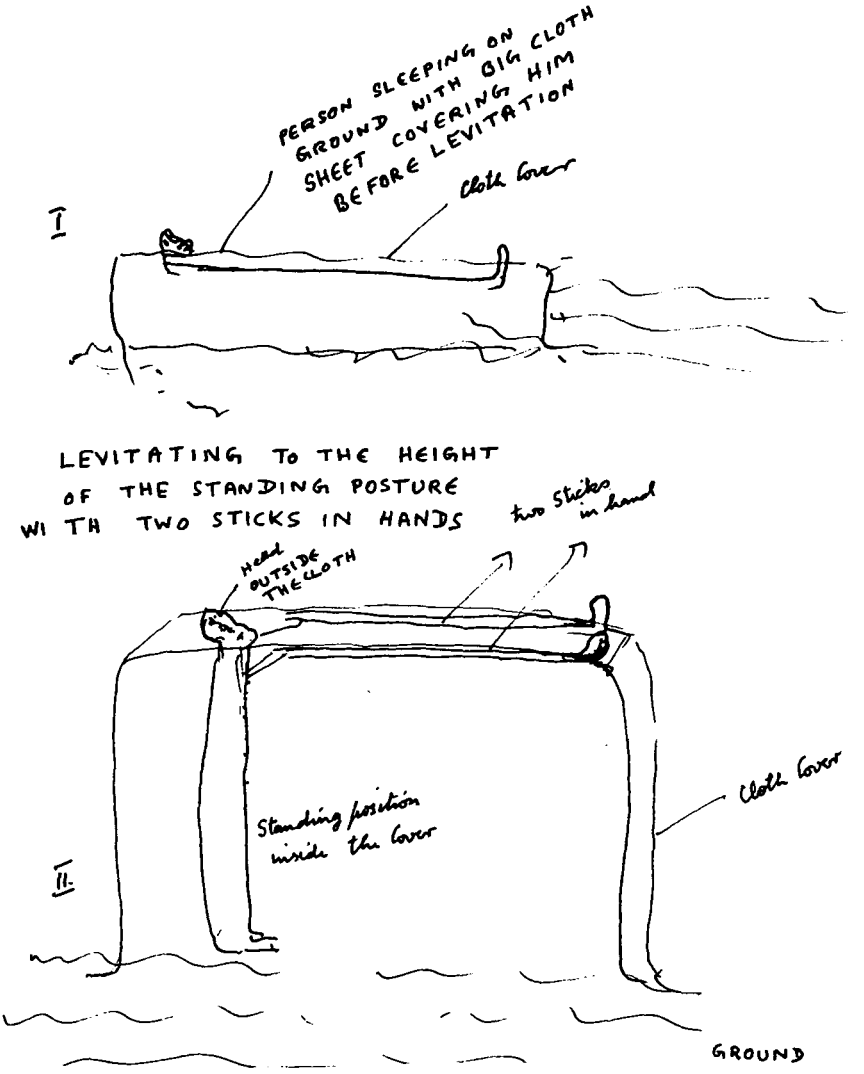
THERE ARE many stories behind all Indian magicians of the nineteenth and early twentieth centuries claiming that they did the Indian Rope Trick. Professor Vazhakkunnam, who taught me magic in the late 1930s, gave his version of how the trick may have been done, although he told me he never tried it. Vazhakkunnam said that perhaps it had been done before electricity came. His speculation was that it was done at night in the open where there were a lot of trees, so the metal wire could be tied horizontally to the trees and the rope suspended vertically on the metal wire. This helps the boy get lost in the foilage of the tree and come down unnoticed and hide in the basket.

The best levitation trick, even now, is done in the open, with people around. A person lies on the ground, and a large bedsheet hides him, except for his head, which pokes through a cut in the sheet. After the chanting of the mantras, the person slowly levitates up to about five or six feet, with the bedsheet around his body. This is done with two sticks that are hidden on the two sides of his body. (See sketch.) After the bedsheet is put over the body, the sticks are taken in the hands and slowly raised up, while the person also slowly rises, first sitting and then standing, with only his head protruding outside the sheet. Two curves at the ends of the sticks give the appearance of the person's feet. This is the simplest and most astonishing levitation and is done with just two sticks. It has been done for hundreds of years, and is still done today on the street or in an open field.

In 1977 when the Maharishi Mahesh Yogi came to India with his disciples and showed the trick of hopping in the sitting yoga position, we challenged him—as the teacher who teaches levitation—to fly from Old Delhi to New Delhi, about two miles. He agreed to do this the next day if we came up with 10,000 rupees (about $1,000 U.S.) He thought we did not have the money. The next day, when we came with the money, he told us that Transcendental Meditation is not for demonstration purposes! He refused to do the levitation flight. Thus he was exposed. Mahesh Yogi has more than half a dozen helicopters in India for flying around the country. Why does he need them? He has never once shown himself flying.

This past year he has been charged in a court of law in India for having

Premanand's sketch of a popular levitation trick in India.



Raising the rods makes the legs appear to be floating.

money that was unaccounted for and being in possession of smuggled articles. He claims that if one percent of humanity would practice TM, the world would turn out to be peaceful, moral, truthful, and so on. But the practice of TM did not change Maharishi Mahesh Yogi! So how could it change the world? •

these feats were not recounted by any eyewitness and were recorded only after his death. By then events could have been exaggerated and legends could have been entrenched. The problem with all testimony involving saints is simply that there are other motives involved than mere historical truth-telling. If Butler, a strong believer in the special qualities of the saints, could have his doubts about the accuracy of levitations reported by Joseph of Cupertino, perhaps some skepticism on the part of present-day inquirers is not altogether unjustified.

Saint Teresa of Avila, another well-known levitating saint, was a specialist in vertical levitations, as opposed to the horizontal ones of Joseph of Cupertino. Teresa (1515-1582) was a strange person by anyone's standards. She was extremely ill much of her life, and she perfected the art of mystical rapture. It was while in one of these raptures that Teresa would occasionally levitate. As she describes the sensation in her autobiography, it came upon her without warning. She felt as if she were being carried up on the wings of an eagle. Any attempt to resist the levitation was usually in vain, and was also quite exhausting. She usually found it best to just let it happen. Her hair would often stand on end during these raptures. A few times the nuns supposedly had to get Teresa down from a tree into which she had levitated. Again, although Teresa claimed in her autobiography that she had the power of levitation, eyewitnesses came forth only many years later, during the investigations prior to her canonization.

The connection between levitation and witchcraft should be mentioned. In the 1600s, levitation was looked on as a form of possession by the devil. The levitations of 12-year-old Henry Jones in 1657 were considered a sign that he was bewitched. Patrick Sandilands, a Scottish boy, also was considered bewitched when he reportedly levitated in 1720. Mary London was actually tried for witchcraft, partly because her levitations often placed her upon the roof of her house, or so she claimed. Some poltergeist cases also involve reported levitation, usually of small children.

The explanations for levitation have traditionally involved one or more of the following: divine grace (God recognizing special devotion in someone), the effects of demons or the devil, possession of some miraculous knowledge or "a word of power," electricity, magnetism or "odic" forces, a cantilever effect due to "pseudopods" that grew from the body and levered it up into the air, breathing exercises, and will power. They all seem inadequate. Part of the problem comes from the fact that a levitation requires overcoming the force of gravity. Unfortunately, we do not know if this is even theoretically possible.

There is a much more serious problem here. Electricity and magnetism have dual, opposed aspects (north versus south poles, positive versus negative charges), so it is theoretically possible for an object to repel another by the use of magnetism or electricity. We all remember that like charges repel each other. However, mass can only be positive. (An object in space may have no weight but it still has mass.) Therefore, it is *even theoretically* impossible, according to most physicists, for an antigravity device ever to be made on earth.

Reports of alleged devil-related levitations were collected by Joseph Glanvill in the seventeenth century.

In addition, many of the "levitators" themselves have said they did not understand what was happening to them and were unable to control the process in any meaningful way. This has not helped in the attempts to document the claims. There is very little information to go on. How reliable were the witnesses to the saintly levitations? How likely was it that D. D. Home used trickery? Can we trust the reports of other spiritualists who supposedly levitated? Could we be dealing with more than one phenomenon here and therefore need several different explanations? Without answers to these questions, it is a difficult, if not impossible, job. Olivier Leroy, author of one of the very few book-length studies of levitation, published in France in 1928, was extremely hesitant to draw any conclusions after writing 400 pages about the phenomenon. We can give up and accept the opinion of physicists who say antigravity is an impossible idea on earth, or we can hope that someone can produce clear-cut levitations repeatedly under proper conditions so that they can be carefully documented. Meanwhile, we can suspend critical judgment and let ourselves be entertained by magicians demonstrating the illusion of levitation—which will probably be as close to the real thing as anything else we will ever see.

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Levitation: Some Phantasy And Some Physics

Applying a little science reveals how interesting this phenomenon could be—if only it could be.

Warner Clements

UP ON THE stage a beautiful young woman fetchingly attired in an evening gown lies stretched out full length on her back. Under the supervision of the stage magician she reclines there, apparently in thin air, a few feet above stage level with no visible means of support.

The demonstration is impressive, but somehow not convincing. Probably few in the audience are able to summon up even the illusion that the girl is actually being *levitated,* as the term is generally understood. The observer's mind, consciously or unconsciously, takes note of several details: The woman's hair and gown hang down; these, at least, are not being levitated. Her hands are clasped across her abdomen, leaving unanswered the question of whether her arms would float or dangle if released. The magician's big hoop passes over most of her body, first from one end and then from the other, but it never completes its circuit in a given direction. And what is most noticeable is that she lies fixedly in one position, with none of the freedom one associates with floating.

These observations would be those of a sophisticated, modern audience. By contrast, people from an earlier time or a more primitive culture might be less critical and more willing to believe. Some might even view the demonstration with awe and excitement. But we have little cause to feel superior. Our own thirst for the miraculous is every bit as great as theirs; it's only that our culture compels us to be a little more discerning. Alleged miracles persist in the Western world, but to be widely believed they need to have more under-

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pinning, a more arguable connection with observed reality. For us, miracles must be more *scientific.*

Accordingly, some classes of miracles have largely disappeared from the scene. Nevertheless many of our educated, intelligent contemporaries are willing to pay a considerable amount of money to people like the Maharishi Mahesh Yogi to learn how to rise into the air. They are not so credulous, however, that they don't require explanation for what they accept as possible. Unfortunately, they find assurance in such concepts as spirit controls, astral energies, siddhis, mantras, prana, and so on, and can justifiably claim to know more about these concepts than do we who would discredit them. Moreover, if we assert their nonreality we are stuck with trying to prove negatives. In this situation it might be more persuasive to avoid direct challenge to all such crutches for belief, and focus the argument instead on principles that even believers in levitation accept. These would seem to include the more established laws of physics and biology.

Proceeding along these lines, we should offend no one if we conclude right at the start that whenever a subject, or a table, is seen to rise in the air, there must be either something lifting it or something relieving it of the influence of gravity. There are no other reasonable possibilities. Considering the first one first, we must ask what is doing the lifting. If levitation's proponents answer that it is invisible beings or an invisible structure, we can graciously entertain the claim. We can, that is, subject to certain restrictions imposed by Newton's Third Law. This law would require that whatever upward force is involved in lifting the subject or object it be reflected by an equal downward force exerted by the lifting entity on its own respective support. The most likely ultimate support would be the floor or a chair immediately under the levitated person or thing. (The ceiling or a nearby wall would be a possibility, but only in the unlikely event that it offered strong points of attachment.) Accordingly, witnesses to levitation would be well advised to watch the cushion of the chair or the nap of the carpet beneath the elevated body for signs of flattening or depression by the unseen agency. I have not personally heard of such flattening ever having been noted.

A second restriction is the need for a boosting agent to have palpable firmness. Ghosts may walk through walls and ectoplasm may penetrate clothing, and thus not be palpable. But anything exerting a lift on a subject must push against him, not through him. So if witnesses deny, as they have been known to, that there is anything to be felt manually in the air around a subject or object being levitated, they are unavoidably ruling out the invisible-booster explanation for the phenomenon. The account by Sir William Crookes of one experience with D. D. Home is typical: "On another occasion I was invited to come to him, when he rose eighteen inches off the ground, and I passed my hands under his feet, round him and over his head when he was in the air."

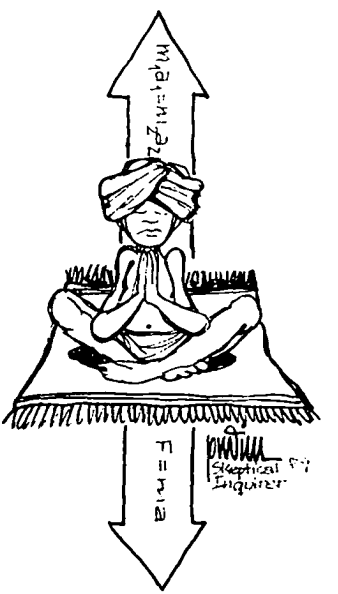
We turn, then, to the other explanation for the levitation effect, namely, manipulation of the gravitational force. This is the line of explanation that

seems to be favored by the advocates themselves. We can concede in advance that if there is any field where hidden laws are apt to operate, gravity is a good candidate. Action at a distance without a medium is not easily explained. And now there's talk of a mysterious "fifth force," and perhaps even a sixth, which may oppose, or else augment, even if quite weakly, gravitational attraction. Just being able to mention these new forces must delight the levitationists.

Weight is proportional to both the mass of an object and the gravitational constant. As for the mass factor, one wouldn't want to be anywhere around a levitator who could change his own mass or that of a table. To eliminate just .002 lb. of mass would release energy equivalent to that released when the atom bomb devastated Hiroshima! (To support this assertion we have at hand another immutable law of physics, this one courtesy of Albert Einstein.) Actually, in the absence of nuclear activity any given mass is so constant that it would remain the same even if moved to an inconceivably remote spot in the universe.

So that leaves only the gravitational constant to consider. The latter being mysterious and only slightly understood, let us assume at least for the sake of argument that it can be altered by human will operating in some not yet explained fashion, perhaps aided by invisible resources. From there we can proceed to examine the implications and consequences of such an alteration.

The law we run up against at this point is the Law of Conservation of Energy, which says you can't get something for nothing. Even if you could make a "gravity screen" and put it under one radial side of a Ferris wheel, any energy you could reap by harnessing the resultant spin would have had to have been put into the system somewhere, somehow. A lot of people have lost a lot of money in vain antigravity research because they couldn't grasp this principle.



The actual amount of energy that must be put into something to relieve it of gravity so that it can levitate is not at all the same as the energy required to merely lift it. Pick up anything, say a heavy vise, and you will transfer from you to it an amount of energy determined by how high you lift it. But a weightless vise would have the same amount of imbued ("potential") energy at any height whatsoever. This suggests that it may not even be possible to calculate the energy input needed for levitation. Nevertheless, the calculation can be made, as I will show.

Consider the example of a medium or guru who cuts off all the gravity affecting

himself. From the conservation principle, the rule would have to be that it would take exactly the same amount of energy to separate the gravity from the man as it would to separate the man from the gravity. The latter separation could theoretically be accomplished by transporting him far enough away from the earth to escape its gravitational pull. The energy required to do just that is readily calculable. For a man weighing 70 kilograms, it turns out to be 4.38 billion joules, equal to 1,216 kilowatt-hours. In case this doesn't seem like a large amount of energy, I submit that in the context of this discussion the amount is not just large, it's *enormous.* Here's this self-levitator sitting there with no electrical connection, no fuel tanks, and proposing to draw out of nowhere, in a short space of time, sufficient energy to blow up his house several times over![1]

I don't know where a levitator would get that kind of energy, but again let's give him the benefit of the doubt. At least it's a one-time expenditure. Once aloft, the levitator could theoretically stay there indefinitely without effort. Upon de-levitation the energy would be available for possible return to the hidden sources. (Let's hope it wouldn't have to be returned as heat. The self-levitator would become a self-incinerator!)

But counteracting gravity would be only one of a levitator's problems. We should look now at the consequences of just being weightless. Most people are familiar with the concept that, were it not for gravity, everything loose on the surface of the earth would fly off into space because of the centrifugal force generated by the earth's rotation.[2] Take away the levitator's gravity and he's going to head for the ceiling or the sky; there's no getting around it.

But not as quickly as one might think. Even at the equator, where the effect is strongest, it would take a levitator 12 seconds to go from the floor to an 8-foot ceiling. If he's in an auditorium with a 30-foot ceiling, he's in for a trip of 23 seconds. Even though he would accelerate all the way, he's not likely to be injured colliding with the ceiling. He'll be going only 2½ feet per second at the time of impact. At least, such a trip would make an impressive demonstration. It could be made more impressive yet by taking it outdoors, where a demonstrator could place himself a mile high in just over 5 minutes! It is curious that the Maharishi and his adepts eschew such demonstrations.

We see that for practical purposes a levitator would have to be restrained in some manner. The force involved would be less than a pound, so a slender tether would do the trick. The tether wouldn't be noticed in a darkened room; but it would fail the "feel" test or the hoop test, if applied.

Are the consequences of these physical laws appropriately treated in reports of actual observation? I fear not. Consider the following, from Steve Richards, the author of at least three books on the paranormal: "It also proves that that person has reached a certain stage of what TM calls 'Enlightenment.' A person who rises three feet into the air is said to be more enlightened than a person who rises only two. And a person who can levitate a foot in the air is more enlightened than a person who cannot levitate at all." If levitation is achieved by means of control of gravity, and Richards is one

of those who says it is, then this picture makes no sense. The problem for a self-levitator would not be rising to an appreciable height, but, rather, keeping from soaring too high.

But couldn't a levitator solve that problem by cutting off less than all of his gravity, leaving a tiny bit? The answer to that question is most interesting. Even a hair, with its tiny weight, will fall. Fortunately our levitator, even sans most of his weight, would have the advantage of his undiminished mass. What he could do, if he is sufficiently far from the earth's poles, is to effectively turn himself into a satellite circling the earth! The necessary theory has been long in place. Around a hypothetical small planet, with small gravitational attraction, even a small tangential velocity would sustain a satellite in orbit at a given altitude. If we let our levitator reduce his gravitational attraction, that would be the equivalent of turning the earth, so far as he is concerned, into the postulated small planet. He, like all of us in low and middle latitudes, would already have a pretty good tangential velocity—and would be already almost 4,000 miles aloft. (Gravitational attraction is reckoned from the center of the earth.) So he need only adjust his weight to match the centrifugal force appropriate to the precise altitude of his choosing; and there he will orbit.[3]

But the adjustment must be made with considerable precision. The difference between the initial energy input required to free him completely from gravity and that needed to put him into Earth orbit near sea level is less than 0.4 percent.

This postulated diminished-gravity procedure would work fine at the equator. If the demonstrator were content with heights of a few feet, his consequent drift, otherwise to the west, would be practically zero. That is to say, he would be actually in synchronous orbit, just like the communications satellites much higher up. To observers it could look just like the levitation trick as traditionally described. Unfortunately, the reports don't mention anything about having to be at the equator.

Contrast this picture with the situation at other latitudes. There, sideways movement would become a problem; and adjustments to gravity would do nothing to alleviate it. Suppose the demonstration were to take place in a certain ashram near Eugene, Oregon, 44° 3′ N. Suppose a guru sits, in his full-lotus position, at the north end of the ashram's meeting hall. As soon as he levitates clear of the floor he will start moving south.[4] Even if the south wall is 100 feet away he will hit it in just under 61 seconds. But that's nothing! Take away the wall or do the stunt outdoors and our guru would be off on a long, fast trip. If it were not for air resistance (and provided that he flew high enough to clear obstacles), that trip would take him, in little over a day, clear around the earth to the Altai Mountains of Mongolia. There his ground speed would slow for an instant to a complete stop, permitting him to descend without injury.

That's flying carpet stuff; one wishes that it were really possible. At points along the way the ground speed would exceed 700 mph. The flight path

would lie over sundry South Sea islands to a point just west of New Zealand, where the traveler would loiter a bit before starting generally north again. At the turnaround he would be already 7,600 miles from Eugene. On the return north to the original latitude the flight path would lie between Australia and New Guinea, clipping corners of each. Thence squarely over Mindanao, and on over China to those Mongolian mountains.

The latter location sounds like a great one for meditating; any guru seeking to live up to the standards of his profession ought to be eager to make a trip like this. Not even the problem of air resistance would be a decisive hindrance. If the voyager were one who had the capacity to levitate some weight beyond his own, he could equip himself for survival in space.[5] The point to be made here is that the 200-mile height necessary to avoid atmospheric drag is the merest trifle from the standpoint of gravity control.

Such exciting possibilities aside, antigravity, if it could be achieved, would still present problems. We've mentioned several, but there are others—for instance, those related to the fact that gravitation is a field. That field, whatever its hidden nature, is known to be altered by changing relationships between masses. A mass upon which gravity has little or no effect would undoubtedly alter that field in special ways. I would not pretend to know exactly how, but by analogy with electrostatics the sense is that the distortion of the field would have unavoidable effects on nearby objects. Probably they'd be repelled. One can't be sure; it would be helpful if there were reports, say, of gloves or purses being repelled by a levitated table. Or of too-loose shoes being repelled from a medium's feet.

I like to think about what effect the considerations featured herein, taken together, would have on the stage performance I mentioned at the start, just supposing it were a genuine demonstration and not mere stage magic. It would certainly make for a more exciting show! The magician would be continually chasing and retrieving the young woman to keep her within the confines of the stage. Or he'd be fishing her down from aloft with a hook. She and the prop hoop would repel each other, so it might require an assistant to help wrestle her through it. Her hair would probably flare out in all directions. And her gown would billow out and upward, as if she were standing over one of those carnival air-jets.

Ah well, the imagination, at least, is not shackled to the rules of reality.

Notes

1. There have been no reports of heating or turbulence in the vicinity of a subject in the act of levitation. The figure given here presumes that the energy altering the gravitational field is transferred thereto cleanly without waste. By contrast, if you use a means such as a rocket launch to move something out of the solar system, you must expend enormously more energy than this because only a small portion of it goes into the payload itself. For a 70-kilogram load destined for far space, the minimum kinetic energy required to be put into the payload proper would be just the same as the figure cited.

2. Actually, without gravity the entire earth would disintegrate. But the observation is intended to apply to individual objects, and to that extent it is valid.

3. Just as a rocket launch requires two firings to put a satellite into a settled orbit, the levitator would have to make two adjustments to gravity; the first a huge reduction to free him from the ground and then a tiny further reduction halfway around his first orbit.

4. An interesting question can be asked at this point: If there exists a force that would urge an unanchored guru toward the equator, why don't *all* objects in middle latitudes feel such an impulse? The answer is that they do! For instance, the great skyscrapers of this country all lean (or should) slightly to the north for counterbalance. At the latitude of New York the mean of lean is on the order of 0.2°. This happens to be a whopping amount in terms of the modern capacity for measuring such things. Still, it will go undetected by such instruments as the builder's transit. Why? Because the bubble in the transit's level is displaced by an equivalent amount. Similarly for a plumb bob. Not just bubbles and plumb bobs, but the sea—in fact the general shape of the earth itself—is affected by the same force that would move the guru. Which all ties into the fact that the earth is an imperfect sphere, being slightly squashed in the north-south dimension.

5. Because of the possibilities treated herein, any credible demonstration of levitation would certainly arouse the attention of NASA, who would probably be delighted to provide the necessary gear. NASA's space suits weigh only 200 pounds with six hours of supplies, despite having incorporated ball-bearings in all the necessary joints and including such luxuries as radio gear. Equipment for mere passive flight might well prove to be simpler and lighter.

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Unshrouding a Mystery: Science, Pseudoscience, and the Cloth of Turin

Shroud proponents appear to have started with the desired answer and worked backward. This led them to ignore or discount abundant evidence that the shroud was a medieval relief.

Joe Nickell

CLAIMS THAT the authenticity of the Shroud of Turin—imprinted with the image of an apparent crucified man and touted as the burial cloth of Jesus—have long been unraveling. But now, to all but entrenched cultists, the issue is settled: The flax from which the linen was made was harvested in about the middle of the fourteenth century, around the time an artist reportedly confessed he had "cunningly painted" the image.

The determination that the "shroud" dates from the Middle Ages rather than the time of Christ was officially reported on October 13, 1988, after three laboratories carbon dated samples of the cloth. Using accelerator mass spectrometry, labs at Oxford, Zurich, and the University of Arizona obtained dates in very close agreement: The age span was circa A.D. 1260-1390, and it was given added credibility by correct dates obtained from a variety of control swatches. (Hilts 1988; Suro 1988). (These were from the first century B.C. and the eleventh and fourteenth centuries A.D., respectively.)

The results brought full circle the scientific study of the alleged relic that began in 1898, when the shadowy image was first photographed. Discovery that it was a quasi-negative (its darks and lights approximately reversed) prompted attempts to explain the image-forming process. When experiments demonstrated this was not simple contact (there would have been severe wraparound distortion) or "vaporography" (the postulated vapors could have produced only a blur), authenticity advocates were reduced to formulating increasingly bizarre "theories." Of course they tried to make these sound as "scientific" as possible.

One Los Alamos scientist opined the image was caused by "flash photolysis"—i.e., a burst of radiant energy, such as that Christ's body might have

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yielded at the moment of resurrection. A shroud enthusiast writing in William Buckley's *National Review* suggested the image was created by thermonuclear reactions and was analogous to laser-produced holograms. And a nun and a Utah chemist concocted a hot-corpse theory: that crucifixion-intensified body heat combined with the alkalinity of a limestone tomb to produce the image through a "mercerization process" (Nickell 1987: 87, 93, 152).

If they could explain the shroud image only by such pseudoscientific nonsense, shroudologists—e.g., those from the Shroud of Turin Research Project (STURP)—nevertheless insisted it could not have been the work of an artist, medieval or otherwise. It is instructive now to recall some of their arguments and sentiments.

Medical Evidence. In 1978, STURP pathologist Robert Bucklin asserted: "If I were asked in a court of law to stake my professional reputation on the validity of the Shroud of Turin, I would answer very positively and firmly that it's the burial cloth of Christ—and that it is Jesus whose figure appears on the Shroud" (Goldblatt 1982). Bucklin and other pro-shroud pathologists argued that the image contained details so anatomically correct as to have been beyond the ability of a medieval artist to portray. Yet a footprint on the cloth is inconsistent with the position of the leg to which it is attached, the hair falls as for a standing rather than a recumbent figure, and the physique is so unnaturally elongated (similar to figures in Gothic art!) that one pro-shroud pathologist concluded Jesus must have suffered from Marfan's syndrome.

Blood. Although the "blood" stains on the shroud failed a battery of tests conducted in 1973 by internationally known forensic serologists, and although the distinguished microanalyst Walter McCrone determined the stains were actually tempera paint containing red ocher and vermilion pigments, two STURP scientists, John Heller and Alan Adler, claimed they had "identified the presence of blood." However, at the 1983 conference of the prestigious International Association for Identification, forensic analyst John F. Fischer explained how results similar to theirs could be obtained with tempera paint, and he demonstrated why spectral data were inconsistent with the STURP scientists' claims. As it happens, neither Heller nor Adler is a forensic serologist or a pigment expert, prompting one to question just why they were chosen for such important work. Heller admitted that McCrone "had over two decades of experience with this kind of problem and a worldwide reputation. Adler and I, on the other hand, had never before tackled anything remotely like an artistic forgery" (Heller 1983; 168).

Beyond the questions of chemistry were other problems pertaining to the supposed blood: It had failed to mat the hair and instead flowed in rivulets on the outside of the locks; it appeared on the cloth in "picturelike" fashion and included the ostensible transfer of *dried* blood; and it remained red, unlike genuine blood, which blackens with age.

"3-D" Properties. Another pair of STURP scientists, John Jackson and Eric Jumper, applied an image-analyzer "test" to the shroud image—an analysis of their own devising, involving the use of an instrument actually

designed for analyzing photos of planets. They claimed the shroud image had unique three-dimensional properties that "ordinary" photographs and paintings lacked. In fact, however, the shroud image's 3-D profile—as revealed by a microdensitometer plotting of its lights and darks from a photo-transparency—is grotesque, and it was only by employing a series of questionable "corrective" factors that they obtained their visually pleasing results. Moreover, whereas the shroud image is six centuries old, is apparently much faded, and may once have been washed—thus yielding softened edges favorable to 3-D reconstruction—the images used for comparison were contrastingly new. Not surprisingly, when experts at a textile laboratory artificially aged and washed an artist's simulated shroud image (as demonstrated on a skeptical program on the shroud aired on the Discovery channel on July 31, 1987) 3-D results were obtained that were reportedly comparable to those STURP had derived from the shroud image.

Other Factors. Among additional elements that were supposed to help "authenticate" the shroud were alleged imprints of Roman coins in the region of the eyes, and the reported presence of Palestinian pollens on the fabric. Alas, only predisposed viewers could see the former, and claims for the latter were challenged by a Smithsonian botanist. (The retired criminologist who "identified" the pollens suffered a blow to his credibility just before his death in 1983: He had represented himself as a handwriting expert and pronounced the "Hitler diaries" genuine.)

Apart from specific methodological criticisms and the question of competence, the essential difference between authenticity advocates and skeptical investigators seemed to be one of basic orientation to evidence. Skeptics allowed the preponderance of *prima-facie* evidence—the shroud's lack of historical record before the mid-fourteenth century, the reported forger's confession, the similarities to Gothic art, the presence of pigments, and additional clues—to lead them to a conclusion: The shroud is the handiwork of a medieval artisan. Not only do the various pieces of the puzzle interlock and corroborate one another (for example, the confession is supported by the lack of prior record, and the red "blood" and presence of pigments are consistent with artistry), but a simple artistic rubbing technique is demonstrably capable of producing shroudlike images (Nickell 1987: 101ff.).

In sharp contrast was the approach of shroudologists who appeared to start with the desired answer and work backward to the evidence. Lacking any viable hypothesis for the image information, they offered one explanation for the lack of provenance (the cloth might have been hidden away), another for confession (the reporting bishop could have been mistaken), still another for the pigments (an artist copying the shroud could have splashed some on), and so forth (Wilson 1979: 136; Stevenson and Habermas 1981: 104; Heller 1983: 212).

Evidence for their bias had long been apparent. Months before they conducted any tests on the cloth, scientists from STURP were making rash statements. One said: "I am forced to conclude that the image was formed by a burst of radiant energy—light, if you will. I think there is no question about

that." Another asserted, "I personally believe it is the shroud of Christ, and I believe this is supported by the scientific evidence so far." And an Episcopal priest who described his work at a government lab by boasting, "I make bombs," said of the shroud's authenticity: "I believe it through the eyes of faith, and as a scientist I have seen evidence that it could be his [Christ's] shroud" (Nickell 1987: 115).

A further example came from Air Force scientist Eric Jumper, who was a leader of STURP and a member of the Executive Council of the pro-authenticity Holy Shroud Guild. After only a preliminary examination of the "relic" had been made in 1978, Jumper asserted: "There's no doubt about it—it's a grave cloth!" Soon, archconservative Phyllis Schlafly (1979) pronounced: "At long last we have the proof demanded by the doubting Thomases. This proof is the Shroud in which the body of Jesus was wrapped."

Given such attitudes, it is not surprising that shroud devotees now challenge the implications of the carbon-14 dating tests. While some apparently do not question the medieval date, they agree with the Archbishop of Turin that the imaged cloth is a mysterious icon still suitable for veneration and able to work miracles (Suro 1988). Many other shroudologists—particularly those in leadership positions—are refusing to accept the scientific findings, which would be tantamount to admitting they had misled their credulous troops for, lo, these many years. As an Episcopal priest who operates a shroud center in Atlanta huffed: "Before it's over, it will be the accuracy of the carbon-14 tests [that are] in question, not authenticity of the shroud" (Hilts 1988).

Many are already calling for new tests. And it seems likely, if we can judge from past history, that they will want them conducted by loyal shroudologists—perhaps by a pious team of ophthalmologists who adopted radiocarbon dating as a hobby.

Still others are taking a simpler tack, suggesting that the hypothesized burst of radiant energy at the moment of resurrection (or, alternatively, the fire of 1532) changed the carbon ratio. With such a "theory" and a few appropriate calculations, shroud "science" should be able to "correct" the medieval date to a first-century one. Stay tuned.

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Rather Than Just Debunking, Encourage People to Think

The skeptical movement has an excellent opportunity to encourage better thinking skills. One way is to stimulate audiences to treat popular 'mysteries' as puzzles they can solve by asking the right questions.

Al Seckel

READERS of the SKEPTICAL INQUIRER are justifiably concerned about several recent national surveys that indicate that among the general population there is widespread ignorance about science and a growing belief in the pseudosciences (channeling, reincarnation, ESP, astrology, biorhythms, pyramidology, crystal power, UFOs, and so on).

However, there is a problem that is much broader and more far-reaching than the fact that many people believe in unfounded ideas that *in themselves* really don't matter in the grand scheme of things. (After all, who really cares that Shirley MacLaine wears a crystal that she believes emits strange powers or that other people believe that the earth has been visited by extraterrestrials intent on capturing young women for sexual purposes?)

The problem, as I see it, is that the widespread and growing belief in various pseudosciences is just one small indication that people are not evaluating information properly. And this does have serious consequences.

I used to think that overpopulation, starvation, the demise of the rain forests and topsoil, the carbon-monoxide buildup, nuclear proliferation, and so on, were basic global problems, but it finally dawned on me that they were all merely consequences of the human thinking process, individually and collectively: how we think, how we build up belief systems, why we follow certain leaders, and how we see challenges and create institutions to meet them.

People are constantly bombarded by the media, by sales representatives, and by their friends with information that is highly questionable. They are

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asked to accept ideas that, after the smallest amount of probing, could be shown to be invalid. The promoters of such ideas have nothing to fear, because they know people have not learned to ask the proper questions.

Such a credulous attitude stems in part from the fact that people are almost always told what to think or what not to think—by their churches, by their governments, by their schools, or by their parents. The emphasis has always been to teach someone *what* to think rather than *how* to think.

Educational studies have documented the fact that critical-thinking skills are seriously declining among schoolchildren. And without criteria for distinguishing science from nonscience and fact from fiction, teachers, too, can be caught in the trap of believing in and disseminating unsupported contentions. It is unfortunate, therefore, that most people are not learning the necessary skills needed to analyze the claims being made.

Even skeptics are not immune. Some debunkings have been made when there was just not enough information available to come to a conclusion, much less a robust one. Even skeptics must be able to say "I don't know" and wait for the explanation of a "mystery" rather than providing answers that are wrong or embracing a "solution" unquestioningly simply because it comes from a well-known debunker.

Now that the problem is stated, what can the skeptical movement do about it? Since the paranormal and the occult are of considerable interest to many people, skeptics have a marvelous opportunity to encourage better thinking skills by discussing various pseudo- and fringe-sciences in a particular way. The skeptical movement *can* be an extremely valuable social force if it puts the emphasis on teaching better reasoning skills rather than confining itself simply to debunking erroneous popular notions. Unfortunately, the opportunity to use the pseudosciences to teach reasoning skills is too often missed.

For the most part, the refutations of pseudoscience that one finds available in the skeptical literature aim primarily at debunking a mystery or pseudoscience instead of attempting to develop necessary skills in the reader. In other words, the debunking of a mystery or pseudoscience is an end rather than a means.

What does the skeptical movement accomplish by debunking the Bermuda Triangle, the false visions of a tabloid psychic, or the latest UFO sighting? Possibly not much in the long-range view. Although a skeptic may have presented the solution to one mystery, he or she rarely provides a means for the reader or the listener to figure out the next one—and there will always be a next one: a new triangle will appear off some country's coast, another psychic will make predictions, and reports about UFOs will continue to appear in the media and hence in people's imaginations. But although the places, dates, and names change from mystery to mystery, the same faulty reasoning patterns that led people to believe that something paranormal was taking place always reoccur. (No doubt this underlying pattern is what makes so many skeptical scientists appear to be closed minded. In fact, scientists are often just bored; they have seen the same mistakes made many times before.)

Perhaps the skeptics have directed their efforts to too many effects rather than to one of the main underlying causes of credulity. CSICOP and some of the local skeptical groups have done a wonderful job publicly disseminating rational and scientific alternative explanations for various popular pseudo-mysteries and other occult claims. However, I would like to see some other methods used as well.

The time has come to discuss various pseudosciences in a fashion that is aimed, first, at helping people develop necessary reasoning skills and, second, at demonstrating how to recognize some of the techniques that are used to distort the thinking process.

How to Ask Questions

One of the most effective ways to deal with extraordinary claims is by learning how to ask the right questions. This enables one to separate the essentials from the nonessentials and get right to the heart of the matter. For example, what is the claim being made? Are there alternative explanations? How can you test the various hypotheses offered? Have you been told the full story? And so on.

How then does one use the pseudosciences to teach reasoning skills? One approach might be the following: Treat paranormal "mysteries" as fun and as interesting puzzles to be solved *by your audience* through proper questioning and probing. This process will allow them to reach the correct conclusion themselves with an accompanying "Aha!" or an "Oh, I get it now!" reaction.

The next time you are asked for or are presenting the solution to a paranormal mystery ask your audience what they think. Can they suggest any natural explanation or present an alternative possibility? How would they check out or test the various possibilities? The idea is to get your audience to compare the different explanations and then think of ways to test the various hypotheses. After all, before you can say that something is *out* of this world you must first make darn sure that it isn't *in* it! Make sure your audience has all the information, because you can make a mystery out of anything by leaving out half the facts.

Encourage your audience, but give them as little help as possible. Once they have hit upon the correct solution you can support it with facts gleaned from the work of the debunkers who have already gone through this process.

This approach, if properly executed, frequently produces an Aha! reaction from your audience. It gets them to actively participate; and, moreover, a participating audience is an attentive one. Most important, they have reached the conclusions themselves.

Avoid Jargon

Always give examples that people can relate to their everyday experience and avoid jargon. For example, in some explanations of the phenomenon of firewalking speakers from the skeptical movement would tell their audience

that moisture protects the firewalker's feet by means of the "Leydenfrost effect," giving the example of how water droplets will skip around on a hot skillet. First of all, there are always simpler words. Secondly, in this example a lay audience might wonder how water dancing around on a hot skillet relates to protecting a firewalker's feet from injury. Instead, the speaker should have avoided the "Leydenfrost" term altogether and simply stated that evaporating water vapor provides protection from heat. After all, how do you test a hot iron? Most people would be able to relate this to their own experience and get an "Aha!" reaction.

Don't Deny Experiences

There is an even more important point that needs to be stressed. Many of the so-called paranormal claims (out-of-body experiences, walking across hot coals, the fortune-teller's ability to perform "readings") are genuine experiences. People do have out-of-body experiences, others can walk across hot coals, and fortune-tellers and astrologers can sometimes reveal what appear to be specific insights into their clients personalities. And many people have had some sort of "paranormal" experience they cannot readily explain. It does not help the skeptic's case to deny an experience that a person genuinely believes he or she had. It just sets up the skeptic as closed-minded. Most people, however, will allow you to help them figure out alternative explanations for their genuine experiences, providing you are not confrontational or smug. So next time don't tell your audience it doesn't work or didn't happen, just ask them if there could possibly be an alternative explanation.

Turning Negatives into Positives

Too often, skeptics appear to be negative in tone because they stress how things do not work and often neglect the interesting or remarkable things that *are* taking place in the situation.

Take, for example, past-life regressions, the ability of some people under hypnosis to appear to recall a series of historical events. Instead of declaring that they are a lot of bunk and involve a lot of people getting "ripped off," the skeptic might instead emphasize that they are in fact a very interesting example of how the brain stores and accesses forgotten information. (See Melvin Harris's excellent article in the Fall 1986 issue of FREE INQUIRY for a detailed explanation of cryptoamnesia and past-life regressions.)

Try not to fall into the trap of referring to yourself as "against Bigfoot" or "against UFOs," and so on. After all, it would be quite thrilling if these things existed. The skeptic should make it clear that he or she is "against" flimsy evidence, not the phenomenon itself.

End with a Hook

If at all possible try to leave your audience with something positive to think

about, perhaps even a further mystery. Most of the popular paranormal pseudodocumentaries and books are successful because they leave their audience wondering at the end. Alan Lansberg, the producer of the popular show "In Search Of," knew how important it was to end each mystery with a further question, a "hook." Skeptics can do this too! And without sacrificing any commitment to truth.

For example, last year the Bay Area Skeptics tested a dog named Sunny, whose owner claimed that the dog could solve mathematical problems. A straightforward scientific test was set up that showed that the dog was responding to unconscious cues from its owner. After reading the published results of the test, I wanted to write about it in my column in the *Los Angeles Times*. But the story had exactly the same form as all the ones before: claim made, claim disproved. There was nothing in the group's report that left me or the reader with anything further to think about. I wanted, however, to leave my readers with something to ponder. So I wrote up the whole story, the test procedures and the results, but I ended the article on a positive note: "Although we think Sunny cannot correctly answer questions except when [his owner] cues the answer, it is fun to wonder just how much dogs can understand from subtle cues received from their masters."

It should not be our aim to encourage people to become cynical or unduly suspicious of everything that is said and written, but rather to continue to think about the ways they come to know about the world. The scientific method is not something confined to a research laboratory; it is the best method that has been devised by the human mind for detecting error and, just as important, for confirming shared experience. It has shown us time and time again that there is no shortcut to knowledge.

People enjoy pseudoscience; a belief in the fantastic can fulfill many emotional needs. However, educational development and our chances for survival are dependent upon our ability not to rationalize but to reason. •

CSICOP Subcommittee Plans Lecture Series

CSICOP has established a College and University Lecture Series Subcommittee. Lectures on science, critical thinking, and the paranormal are scheduled for the 1989-1990 academic year at several universities and colleges in the Western New York area, and there are plans for similar series in other parts of the country.

Serving on the board of this new subcommittee are Paul Kurtz, Ray Hyman, Paul MacCready, Steven Shore, and Al Seckel.

If you are interested in sponsoring and/or participating in such a series at your local college or university, please contact Ranjit Sandhu, CSICOP, P.O. Box 229, Buffalo, New York 14215-0229.

MJ-12 Papers 'Authenticated'?

A look into the claim that linguistic analysis has proved these crashed-saucer documents to be genuine.

Philip J. Klass

"LINGUISTICS EXPERT Vouches for MJ-12 Briefing Paper" was the headline in the *MUFON UFO Journal. The International UFO Reporter,* published by the Hynek Center for UFO Studies (CUFOS), headlined its article "MJ-12 Document Authentic, Says Expert." *UFO* magazine's headline was "Linguistic Analysis: MJ-12 Document Validated."

This disputes my own findings that the "Top Secret Eyes Only" documents—which seemingly reveal that the U.S. government recovered two crashed flying saucers and the bodies of four UFOnauts in 1947 and 1950—are counterfeit, for the many reasons detailed in *SI.* (See Winter 1987-88: 137-146; Spring 1988: 279-289.)

The newsletter *Focus,* published by William L. Moore, who released the MJ-12 documents, which seemingly confirm claims made in a book he coauthored in 1980, headlined its article: "MJ-12 Document Is Real, Says Expert."

The "expert" is Roger W. Wescott, professor of linguistics at Drew University in Madison, New Jersey, whose vita suggests he should be well qualified for such an assignment. Wescott also has a longstanding interest in a broad spectrum of the paranormal, including UFOs, which could explain why he was selected to make a linguistic analysis of the MJ-12 papers by Robert H. Bletchman, MUFON's state director for Connecticut.

Wescott finds the popular extraterrestrial-craft explanation for UFOs too prosaic for his taste. Instead, as he later explained to me, he sees a direct connection between UFOs and "these things that have been around for

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Philip J. Klass, a veteran aerospace journalist and investigator of UFO claims, wrote two earlier articles in SI *on the MJ-12 papers.*

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centuries [such as] fairy phenomena, wee folk, strange events of all kinds, strange appearances that baffle people."

Wescott spent a total of eight hours on his analysis, for which he was paid $1,000—jointly provided by MUFON (Mutual UFO Network), CUFOS, Fund for UFO Research, and Moore's own "Fair Witness" organization.

The principal portion of the MJ-12 papers is what purports to be a Top Secret/Eyes Only document used by Rear Adm. R. H. Hillenkoetter to brief President-elect Dwight D. Eisenhower on November 18, 1952, on the history of the so-called Top Secret Majestic-12 Committee. This committee allegedly had been created by President Harry S Truman on September 24, 1947, to analyze the crashed saucers and alien bodies and to cope with resulting national defense issues.

Hillenkoetter had been director of the Central Intelligence Agency in mid-1947, when the first crashed saucer allegedly was recovered. He held that post until the fall of 1950, when he returned to the Navy and was assigned a post in the Pacific. If the MJ-12 papers are to be believed, Hillenkoetter not only continued as a member of MJ-12 during his Pacific duty but was selected to brief President-elect Eisenhower.

On November 1, 1987, after I learned that Wescott had been approached by Bletchman, I sent him several white papers, pointing out what seemed to me to be serious discrepancies that indicated the documents were counterfeit.

The most important of these focused on a stylistic issue that I expected would especially interest Wescott. The alleged Hillenkoetter briefing document *consistently* used an extremely unusual mixed military-civil format for writing a date. The format typically used by civilians, for example, is "November 18, 1952" while the military format would be "18 November 1952."

But the MJ-12 briefing paper *consistently* used a mixed format with a superfluous comma, for example, "18 November, 1952." Additionally, when there was a single-digit date, the MJ-12 document had a zero before the digit, i.e., "07 July, 1947." This style was not used in the United States in the early 1950s, when the document allegedly was written.

I also sent Wescott a white paper that revealed that William L. Moore *consistently* used this same unusual format, with a "superfluous comma" and a "preposed zero" before a single-digit date. My paper provided photocopies of 13 examples from Moore's personal letters to me with superfluous comma and preposed zero underlined.

A critical question was whether Hillenkoetter also used this mixed military-civil date format prior to November 18, 1952, when the briefing document was allegedly prepared. At my request, the Truman Library provided me with four letters Hillenkoetter had written to President Truman in 1948-1950 during his tenure as CIA director.

Every one of these genuine Hillenkoetter letters/memoranda used the traditional military date format, *without a superfluous comma.* Three of the four were written on single-digit dates but *none used the preposed zero* found in the MJ-12 document.

To the best of my knowledge, the only two examples of the consistent use of this mixed military-civil format for writing the date and a preposed zero are William L. Moore's letters and the alleged Hillenkoetter briefing document.

In early 1988, Stanton T. Friedman, Moore's longtime collaborator, who has strongly endorsed the MJ-12 papers, visited the Truman Library to obtain copies of Hillenkoetter letters/memoranda so that he could give them to Wescott for his comparison of their style-format with that of the MJ-12 papers.

Friedman later provided me with copies of 16 additional Hillenkoetter letters/memoranda written between 1947 and 1950, before he returned to sea duty. *Every one of these uses the conventional military date format, i.e., without a superfluous comma.* Four of these were written on single-digit dates but *none of these used the preposed zero found in the MJ-12 documents.* Additionally, every one of these authentic Hillenkoetter letters/memoranda showed the writer's name as "R. H. Hillenkoetter," whereas the MJ-12 papers refer to the briefer as "Roscoe H. Hillenkoetter."

For Wescott's linguistic analysis of the MJ-12 papers, he was supplied with a total of 27 Hillenkoetter documents, including those he wrote as CIA director as well as private letters written after he had retired.

Wescott told Bletchman he would make his assessment based on "stylistics"—a discipline of linguistics that deals with the more or less unique design and syntax characteristics of a person's written language. On April 3, 1988, Wescott wrote Bletchman to render his verdict. Wescott's letter revealed that he had misunderstood the issue of the *mixed* military-civil date format and superfluous comma that I had earlier raised and documented for him.

Wescott said: "The stylistic evidence that [Klass] cites seems to me to be quite inconclusive: I myself, for example, alternate between writing 'April 3, 1988' and '3 April 1988' in my own letters." He added: "In ambiguous situations like this, I tend to follow an equivalent of the legal principle 'innocent till proven guilty.' My analog is 'authentic till proven fraudulent.' "

Four days later, on April 7, 1988, Wescott again wrote to Bletchman to say that Stanton Friedman had just called, seeking a less ambiguous endorsement of MJ-12 authenticity. This motivated Wescott to offer the following endorsement: "In my opinion, there is no compelling reason to regard *any* of these communications as fraudulent or to believe that any of them were written by anyone other than Hillenkoetter himself. This statement holds for the controversial presidential briefing memorandum of November 18, 1952, as well as for the letters, both official and personal."

I couldn't believe my eyes when I read the foregoing in the *MUFON UFO Journal.* The 27 unquestioned, authentic Hillenkoetter letters/memoranda had been supplied to Wescott to provide a stylistic benchmark for appraising the authenticity of the MJ-12 papers. But judging from Wescott's statement, seemingly he spent some of his eight hours in assessing their authenticity. It is not clear what he used as a benchmark for this process.

Wescott sent me a copy of his letter of May 15, 1988, to Mark Rodeghier,

scientific director of CUFOS, thanking him for payment and offering additional views on MJ-12. In this letter, Wescott mentioned the "mixed military-civil format" but again completely failed to grasp the obvious stylistic issue involved.

Commenting on the preposed zero before single-digit dates, which I claimed had not come into use until the 1970s, Wescott said: "If it is like most other matters of style and usage, I would say, it came in gradually and sporadically rather than suddenly and systematically." The critical issue was *when* did the preposed zero first begin to come into use in the United States.

On May 23, I wrote Wescott and asked him to supply me with photocopies of five U.S. military or CIA documents written prior to the MJ-12 document date that used the preposed zero in one-digit dates. To provide additional incentive, I offered to contribute $100 to his favorite charity for each such letter he provided, up to a maximum of $500. On June 18, having failed to hear from Wescott, I wrote him and raised the ante. I offered to contribute $100 per letter for up to ten letters, or a total of $1,000.

After a month passed without a response from Wescott, I wrote to make an additional offer: For each authentic Hillenkoetter letter/memoranda dated prior to November 18, 1952, that used a preposed zero and bore the name "Roscoe H. Hillenkoetter" (rather than "R. H. Hillenkoetter") I would contribute $200 to Wescott's favorite charity, up to a maximum of $2,000.

Thus, if Wescott had any hard evidence to support his claim, he could obtain as much as a $3,000 contribution from me for his favorite charity simply by sending me photocopies of any such documents. Wescott never replied to any of these offers.

By early October, I had written Wescott six letters to which he had never replied, the last being on August 30, so I decided to call him. I reached him in Chattanooga, where he now lives, having accepted a two-year assignment at the University of Tennessee as the "first holder of the endowed chair of excellence in the humanities."

In early correspondence, Wescott had written that in his examination of the MJ-12 papers he had found no "clear evidence of fraud," prompting me to ask for illustrative examples of what he would consider to be "clear evidence of fraud." Wescott replied: "If someone were to come forward and confess fraud and then could show the means by which the fraud was perpetrated, that would be relatively conclusive."

When I asked Wescott, who is 63, how many documents of questionable authenticity he had analyzed during his long career, he replied: "A small number . . . several." He added that authentication "isn't something that I usually do." Wescott said, "The Hillenkoetter documents are the first in which I was asked to do anything official." He explained that in the other instances he had not conducted an analysis and had simply been asked for his "impressions" as to the document's authenticity. Wescott added, "This is not my specialty."

On June 10, 1988, Wescott had sent out a form letter addressed to "Dear Colleagues" to thank those who had written about his then recent assessment

of the MJ-12 papers. He admitted that he had "stepped into a hornet's nest of controversy."

"On behalf of those who support the authenticity of the memo, I wrote that I thought its fraudulence unproved," Wescott wrote. "On behalf of its critics, *I could equally well have maintained that its authenticity is unproved."* (Emphasis added.) *But he opted not to do so.* The question of crashed saucers, Wescott wrote, "like the larger 'ufological' topic of which it is a part, *will remain to perplex us, I suspect, for a long time."* (Emphasis added.)

During my telephone conversation with Wescott in October, I asked if he agreed that "if the MJ-12 papers are authentic, it indicates the most extraordinary event of at least the last two millennia?" Wescott replied: "Oh no, I don't think I would go that far." I was surprised at his reply and noted that if the documents were authentic then the United States would have solid proof of extraterrestrial visitations. Wescott replied: "They wouldn't have to be *extraterrestrial.* They could be what's called *'ultraterrestrial.'* " When I sought a clarification of the latter term, Wescott explained: "Meaning they didn't come from outside the earth. . . . Another possibility is that simply there are more dimensions to our existence than we understand and that occasionally there are interferences from one domain to another."

In one of Wescott's very few responses to my letters, he wrote on May 13 to say that he was "not as impressed by CSICOP and the SKEPTICAL INQUIRER as you, because I don't find them genuinely skeptical." Instead he characterized them as "counterfaith."

The foregoing should provide a useful perspective for readers who chance to read an article that cites Wescott's endorsement of MJ-12 authenticity, such as *UFO* magazine's article. It began: "After eight hours of stylistic analysis, noted linguistics expert Dr. Roger W. Wescott has offered what can be considered the first professional authentication of . . . MJ-12 documents. . . ." The magazine quoted Moore as commenting that Wescott is "saying flat out that in his opinion . . . Hillenkoetter wrote it."

The *International UFO Reporter (IUR)* article began: "After comparison with letters and other materials known to have been written by Adm. Roscoe Hillenkoetter, Roger W. Wescott . . . has concluded that the much-disputed MJ-12 document was composed, as claimed, by Hillenkoetter. A later issue of *IUR* carried Wescott's more equivocal assessment of June 10, under the headline: "Statement from Roger Wescott." There was no CUFOS comment or reference to the earlier *IUR* claim that Wescott had authenticated MJ-12.

Considering that the MJ-12 papers represent Wescott's first "official" role in trying to assess the authenticity of a document of great potential importance, some might expect he would write a paper for an appropriate journal. But when he was asked about this possibility, he said he had no such intentions.

Under the circumstances, that is not surprising. •

A Patently False Patent Myth

Did a patent official really once resign because he thought nothing was left to invent? Once such myths start they take on a life of their own.

Samuel Sass

FOR MORE THAN a century there has periodically appeared in print the story about an official of the U.S. Patent Office who resigned his post because he believed that all possible inventions had already been invented. Some years ago, before I retired as librarian of a General Electric Company division, I was asked by a skeptical scientist to find out what there was to this recurring tale. My research proved to be easier than I had expected. I found that this matter had been investigated as a project of the D.C. Historical Records Survey under the Works Projects Administration. The investigator, Dr. Eber Jeffery, published his findings in the July 1940 *Journal of the Patent Office Society.*

Jeffery found no evidence that any official or employee of the U.S. Patent Office had ever resigned because he thought there was nothing left to invent. However, Jeffery may have found a clue to the origin of the myth. In his 1843 report to Congress, the then commissioner of the Patent Office, Henry L. Ellsworth, included the following comment: "The advancement of the arts, from year to year, taxes our credulity and seems to presage the arrival of that period when human improvement must end." As Jeffery shows, it's evident from the rest of that report that Commissioner Ellsworth was simply using a bit of rhetorical flourish to emphasize that the number of patents was growing at a great rate. Far from considering inventions at an end, he outlined areas in which he expected patent activity to increase, and it is clear that he was making plans for the future.

When Commissioner Ellsworth did resign in 1845, his letter of resignation certainly gave no indication that he was resigning because he thought there was nothing left for the Patent Office to do. He gave as his reason the pressure of private affairs, and stated, "I wish to express a willingness that others may share public favors and have an opportunity to make greater

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improvements." He indicated that he would have resigned earlier if it had not been for the need to rebuild after the fire of 1836, which had destroyed the Patent Office building. In any case, the letter of resignation should have put an end to any notion that his comment in the 1843 report was to be taken literally.

Unfortunately, the only words of Commissioner Ellsworth that have lived on for the past century and a half are those about the advancement of the arts taxing credulity and presaging the period when human improvement must end. For example, the December 1979 *Saturday Review* contained an article by Paul Dickson titled "It'll Never Fly, Orville: Two Centuries of Embarrassing Predictions." This appeared side by side with a statement Napoleon is said to have made to Robert Fulton: "What sir, you would make a ship sail against the wind and currents by lighting a bonfire under her decks? I pray you excuse me. I have no time to listen to such nonsense." Poor, maligned Mr. Ellsworth!

If in the case of Commissioner Ellsworth there was at least a quotation out of context on which the "nothing left to invent" story was based, a more recent myth attributing a similar statement to a commissioner who served a half-century later is totally baseless. This new story surfaced in the fall of 1985, when full-page advertisements sponsored by the TRW Corporation appeared in a number of leading periodicals, including *Harper's* and *Business Week*.

These ads had as their theme "The Future Isn't What It Used to Be." They contained photographs of six individuals, ranging from a baseball player to a president of the United States, who had allegedly made wrong predictions. Along with such statements as "Sensible and responsible women do not want to vote," attributed to President Cleveland, and "There is no likelihood man can ever tap the power of the atom," attributed to physicist Robert Millikan, there is a prediction that was supposedly made by Commissioner of the U.S. Patent Office Charles H. Duell. The words attributed to him were: "Everything that can be invented has been invented." The date given was 1899.

Since I was certain that the quotation was spurious, I wrote to the TRW advertising manager to ask its source. In response to my inquiry, I received a letter referring me to two books, although I had specifically asked for the *primary* and not secondary sources. The books were *The Experts Speak,* by Christopher Cerf and Victor Navasky, published in 1984 by Pantheon, and *The Book of Facts and Fallacies,* by Chris Morgan and David Langford, published in 1981 by St. Martin's Press.

When I examined these two volumes I found that the 1981 Morgan and Langford work contained Commissioner Ellsworth's sentence about the advancement of the arts taxing our credulity, although the quote was somewhat garbled. It also contained the following comment by the authors: "We suppose that at just about any period in history one can imagine, the average dim-witted official will have doubted that anything new can be produced; the attitude cropped up again in 1899, when the director of the U.S. Patent

Office urged President McKinley to abolish the office, and even the post of director, since "everything that can be invented has been invented." The authors do not give the name of the commissioner whom they call "director," but it was Charles H. Duell who held that office in 1899. They don't offer any documentation to support that alleged statement, and they would have had a tough time finding any.

It's easy enough to prove that Duell was not the "dim-witted official" so glibly referred to. One need only examine his 1899 report, a document of only a few pages, available in any depository library. Far from suggesting to the president that he abolish the Patent Office, Duell quotes the following from McKinley's annual message: "Our future progress and prosperity depend upon our ability to equal, if not surpass, other nations in the enlargement and advance of science, industry and commerce. To invention we must turn as one of the most powerful aids to the accomplishment of such a result." Duell then adds, "May not our inventors hopefully look to the Fifty-sixth Congress for aid and effectual encouragement in improving the American patent system?" Surely these words are not those of some kind of idiot who believes that everything has already been invented. Other information in that report also definitely refutes any such notion. Duell presents statistics showing the growth in the number of patents from 435 in 1837 to 25,527 in 1899. In the one year between 1898 and 1899 there was an increase of about 3,000. It's hardly likely that he would expect a sudden and abrupt ending to patent applications.

The other book cited by the advertising manager of TRW, Inc., *The Experts Speak,* by Cerf and Navasky, offers a key to how myths are perpetuated. This volume, published three years after the Morgan and Langford work, contains the spurious Duell quote, "Everything that can be invented has been invented," and prints it as though it had formed part of the commissioner's 1899 report to President McKinley. However, unlike the earlier work, *The Experts Speak* contains source notes in the back. The source given reads as follows: "Charles H. Duell, quoted from Chris Morgan and David Langford, *Facts and Fallacies* (Exeter, England, Webb & Bower, 1981), p. 64." Unlikely as it is for the head of the U.S. Patent Office to have said something so silly, evidently it did not occur to Cerf and Navasky to question that statement. They simply copied it from the earlier book. One can expect that in the future there will be more such copying because it is easier than checking the facts.

The irony is that the subtitle of *The Experts Speak* is "The Definitive Compendium of Authoritative Misinformation." One can only wonder how much more misinformation is contained in this nearly 400-page compendium. On the title page the book is described as a "joint project of the Nation Magazine and the Institute of Expertology." Whatever this institute may be, on the theory that the *Nation* is a responsible publication, I wrote to Mr. Navasky, who is editor of that magazine and coauthor of the book, to ask if he could tell me where and when Commissioner Duell made the stupid statement attributed to him. I did not receive a reply. •

Book Reviews

An All-Embracing Theory of Life

Die geistige Welt—Ihre Wesen, Ebenen und grenzwissenschaftliche Phänomene (The spiritual world—its beings, planes, and borderline scientific phenomena). By E. John Speer. Moser Verlag, Lausanne (ISBN 3-907027-00-0). 345 pp. Cloth.

Felix E. Planer

THE PUBLICATION of yet another book on paranormal phenomena, ranging with literally hundreds of such works written in the past few decades, seems hardly sufficient grounds for a review in these pages. Yet John Speer's work is an exception in this field. For, although a good half of its contents consists of accounts of the supernatural phenomena so familiar to students of parapsychology and the occult, Speer has made an attempt to develop an all-embracing theory of life in our universe on which he draws to explain coherently all of those manifestations. His thesis is ambitious in that it not only traces the formation of the universe right from the Big Bang and the subsequent evolution of life, but he also has something to say about the future aims of this evolution and the likely development of human intellect during the next millennia.

The book is written in an authoritative, scholarly style, and essentially in the form of science by revelation, such as, for example, "Creation Science." This is in contrast to science, which needs to be open to challenge, or falsification in the Popperian sense. But, then, it is perhaps not for the academic scientist to impose unilaterally his preferred definition on the concept of science, which after all denotes "structured knowledge." The book is likely to have

Felix E. Planer's book Superstition *has just been published in a paperback edition by Prometheus Books. Dr. Planer lives in Switzerland.*

quite an impact, therefore, on readers well disposed toward parapsychology—less so, presumably, on the skeptic and scientist.

The complete work is a massive effort totaling some 600 pages of large format, divided into two volumes, and written in German. The book under review is the second volume, and it begins with the statement that its contents cannot be fully understood without the prior study of the first volume. Unaccountably, publication of this latter is not scheduled until sometime next year. However, the inclusion of an abstract of volume 1 gives the reader some notion of the underlying theory. Essentially, this is based on an amalgamate of Hinduism, Buddhism, Theosophy, and Anthroposophy with modern quantum theory.

Very briefly, if I have understood Speer's theory correctly, positive and negative entities named "monads" were created by the Big Bang. The positive monads represent the tiniest conscious units of the developing universe. They seek to aggregate into larger entities, such as leptons, especially electrons, and they tend to increase their energy by raising their frequency of vibration, thereby augmenting their consciousness. Such units form the basis of the spiritual world, which in its highest state is given the designation "God."

The negative monads seek to concentrate their energy in agglutinating to tachyons; these, in turn, to quark particles; and thence to the nuclei of atoms. Speer explains the concept of life by the action of the positive, spiritual forces, described as "Etherien Energy," which eventually led to conscious spiritual beings. These have succeeded in creating means to transform negative, material forces into theistical energy. His interpretation of creation leads Speer to a somewhat modified theory of Darwinian evolution, and from there to the Eastern concept of cycles of reincarnation. The cycles are repeated until, through his ethical comportment, the round is ended and the being reunited with God.

In the interaction of conscious subatomic particles of spiritual energy with elementary entities of matter, at speeds exceeding that of light, Speer sees an explanation for practically all supernatural manifestations. It is these phenomena that form the main body of the present volume. In this respect Speer's book is an almost exact counterpart to my own, earlier book *Superstition.* While in *Superstition* an all-embracing hypothesis was put forward—for the first time, I believe—to explain the creation and perpetuation of the beliefs in paranormal and supernatural manifestations, relegating these to the realm of superstition, Speer's theory leads to the acceptance as perfectly genuine of the selfsame phenomena. Possibly, this is not entirely coincidental, in view of some long personal discussions between us on the subject.

In his treatment of psychic phenomena Speer seems, disappointingly, unaware that the majority of manifestations he relates have been revealed to be delusions, pranks, hoaxes, or plain fraud. It is a pity, also, that he does not always take sufficient care about the accuracy of his data. To quote just one example, on page 110 a phenomenon, said to appertain to the "Astral Plane," is referred to that concerns certain photographs of Irish fairies. The photographs are alleged to be kept at the British Museum, to have been taken by two little girls, and to have been authenticated by 300 scientists. A minimum of research into this rather well known prank reveals that the photographs are not kept at the British Museum, that one of the "little" girls was 16 years old and one was employed by a photographer, and that the 300 scientists consist of two or three self-styled "experts" of doubtful competence. (See J. Randi, *Flim-Flam.*)

A sample from the "Ethereal Plane" relates to the power of pyramids. It refers

for example to a "pocket pyramid," constructed by a Czechoslovakian engineer, Robert Pawlita, capable of "magnetizing matches and hypnotizing flies." Then there is mention of the "scientifically minutely tested and confirmed" event of the shifting of matchboxes by the mind alone, a feat performed by the Russian housewife Nina Kulagina. We are told that psi research is taken more seriously behind the Iron Curtain than in the West. Yet a Greek medium, Tatjana Karitida, is reported to move psychokinetically heavy pieces of furniture.

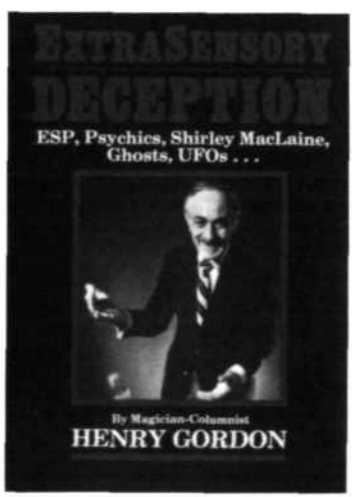
Among the hundreds of similarly astounding manifestations reported, perhaps the somewhat improvident discussion of biorhythms ought to be mentioned. Apparently unacquainted with the massive data proving biorhythms to be an invalid hypothesis, Speer unforgivably urges readers to arrange their lives according to this illusionary theory, without any word of caution. The same may be said of his exposition of the effects of the moon and stars on man's destiny.

The alleged phenomena forming the major part of this volume are on the whole unconvincing. As far as they are intended to underpin the theory expounded of the universe and of life, they leave that theory without tangible support. Moreover, since the theory has been derived essentially from testimony of clairvoyants, and from visions obtained during astral trips, it remains untestable. This renders it akin to fiction; and while it may be thought entertaining, it hardly satisfies the conditions of science. •

Adventures of a Skeptical Magician

Extrasensory Deception. By Henry Gordon. Prometheus Books, Buffalo, N.Y., 1987. 227 pp. Cloth, $18.95.

Wendy Grossman



THIS BOOK is a compilation of three years worth of Henry Gordon's skeptical columns for the *Toronto Star,* plus a few miscellaneous feature articles.

A magician, broadcaster, and columnist, Gordon is a CSICOP Fellow and chairman of the Ontario Skeptics. He writes to debunk, inform, and entertain a mass audience on an unusually wide variety of subjects: Shirley MacLaine, parapsychology, the superstitions surrounding Friday the 13th, UFOs, faith healers, gadgets, the skepticism of Woody Allen, and so on. Some of the pieces are reviews of current books; others are about CSICOP, and phenomena familiar to readers of the SKEPTICAL INQUIRER. Because

Wendy M. Grossman is founder of the British & Irish Skeptic *newsletter.*

these are short pieces, written by a journalist rather than a scientist or academic, they are not deep, scholarly treatises with extensive (or, for the most part, any) references. Rather, they are light, entertaining pieces written by a magician who knows his stuff.

Gordon tells the story of how he appeared as "Elchonen" the psychic and then debunked himself in front of a theater full of believers. He tells about his frustrating interview with Shirley MacLaine, in which he discovered he was only part of the reality she created for herself, a figure in her dream (like the Red King, in *Alice Through the Looking-Glass*). He describes his experiences meeting psychics head-on in public, analyzes holiday superstitions, lambastes his own *Toronto Star*'s printing of baseball players' biorhythm charts, and cites his test of a Ouija board that showed that spirits can't read through brown paper to produce meaningful messages. When this liveliness bubbles through, the book is at its best.

One of the pieces I found particularly enjoyable and interesting was Gordon's discussion of superstitions. He details the origins of some of the most common ones. He traces the practice of knocking on wood back to the Druids, and cites a British psychology class experiment in which students watched 70 percent of the local pedestrians walk out into the street to avoid walking under a ladder that had been placed across the sidewalk. And he finishes up with a warning for those who might prefer to stay safely in bed on Friday the 13th: "Be careful. People have been known to fall out of bed."

Unfortunately this book has neither references nor an index. One can understand why a journalist would not want to put his audience off by quoting references; it is less understandable that they have not been added for publication in book form. The lack of an index is only partly offset by the fact that the table of contents is fairly detailed. Prometheus is *the* publisher one turns to when one is building a skeptical library, and their books *ought* to have indexes!

To the well-informed skeptic, most of Gordon's material will be familiar in kind, though probably not in detail; such a skeptic will find the book to be an entertaining account of the adventures of a skeptical magician. For someone who belongs to the great mass of people who have "never thought about it," or for someone who wants to know what the skeptical point of view is all about, it would make a great gift. •

Some Recent Books

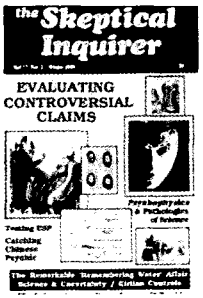
Basil, Robert, ed. *Not Necessarily the New Age.* Prometheus Books, Buffalo, N.Y., 1988. 395 pp., $19.95, cloth. Seventeen scholars examine the New Age movement. Intended to be "a thorough, rigorous, and fair analysis of the movement as a whole." Covers a necessarily wide range of topics from reincarnation and clairvoyance to trance-channeling and transpersonal psychology. Authors include J. Gordon Melton, Carl Sagan, Ted Schultz, Paul Edwards, Martin Gardner, Maureen O'Hara, and Carl Raschke. A much-needed serious examination.

Culver, Roger B., and Philip A. Ianna. *Astrology: True Or False?—A Scientific Evaluation.* Prometheus Books, Buffalo, N.Y., 1988. 228 pp., $13.95, paper. An updated edition of the authors' *Gemini Syndrome,* the best booklength examination of astrology available. The authors are astronomers at Colorado State University and the University of Virginia, respectively.

Planer, Felix E. *Superstition,* rev. ed. Prometheus Books, Buffalo, N.Y., 1988. 377 pp., $15.95, paper. A reappraisal of the entire subject of beliefs not open to rational argument. Originally published in London in 1980, and here updated, the work is divided into five sections: The Meaning of Superstition, Predictions of the Future, The World of Spirits, The World of Magic, and The World of Religion.

Reed, Graham. *The Psychology of Anomalous Experience,* rev. ed. Prometheus Books, Buffalo, N.Y., 1988. 207 pp., $15.95, paper. A welcome update of a book that goes to the heart of many kinds of claims skeptics must continually deal with: subjective experiences, especially unusual ones, that surprise and puzzle those who have them and contribute to misunderstandings and, often, paranormal misinterpretations. Shows how the mind's organizational capacity and its information processing can set the stage for strange events. The author, chairman of psychology at Glendon College, York University, Toronto, says he hopes the book will suggest that many anomalous experiences may be amenable to examination in terms of normal psychological processes.

—*K.F.*



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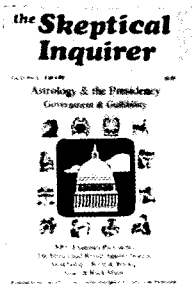

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Articles of Note

Alcock, James E. "Parapsychology: Science of the Anomalous or Search for the Soul?" *Behavioral and Brain Sciences,* vol. 10, no. 4, December 1987, pp. 553-565. Major critical evaluation of parapsychology. This is accompanied by an article by two proponents of parapsychology, K. Ramakrishna Rao and John Palmer. These two articles are followed by 49 short "Open Peer Commentaries" by 53 researchers from a whole spectrum of viewpoints, followed by responses by the authors of the two main articles. The whole package, including pooled references, is 91 pages long. A valuable professional "symposium" in print.

Bartholomew, Robert E. "Flying Saucer 'Abductees' and 'Contactees': Psychopathology or Fantasy-Prone?" Manuscript available from author: Sociology Dept., Flinders University of South Australia, Bedford Park, S.A. 5042, Australia. Review of biographical data on 154 subjects claiming contact with extraterrestrials from the sixteenth century to 1988 extends Barber and Wilson's work on fantasy-prone personalities (FPPs). In 132 cases identifications could be made with one or several FPP characteristics not typically found in the general population.

*Benveniste, Jacques. "Benveniste on the Benveniste Affair." *Nature,* 335:759, October 27, 1988. Strong reply to points raised in previous *Nature* correspondence, by principal investigator of the research in France purporting to find activity levels in a substance after it was serially diluted to the point where no molecules of the substance could remain.

*Benveniste, Jacques. "Benveniste Replies." *The Scientist,* November 14, 1988, p. 10. Reply to earlier article on the Benveniste affair by Bernard Dixon.

Cassileth, Barrie R., and Helen Brown. "Unorthodox Cancer Medicine." *CA-A Cancer Journal for Clinicians,* 38(3):176-186, May/June 1988. Reviews unproved cancer remedies that have achieved popularity in recent years. Includes suggestions for the clinician who must deal with patients attracted to such remedies. Attempts to place "the contemporary zeal for unorthodox practices in social and historical perspective."

Cooke, Patrick. "The Crescent City Cure." *Hippocrates,* November/December 1988, pp. 60-70. Investigation into an unusual experiment in Crescent City, California, to test a new chiropractic treatment—Neural Organization Technique—for dyslexia and other learning disabilities. Not all was as it seemed, however.

Disch, Thomas M. "Primal Hooting." *The Nation,* November 14, 1988, pp. 498-501. Hilarious, caustic review/critique of Whitley Strieber's *Transformation.* The book is for those "who treasure the more exotic forms of untruth." Lambastes

*Extends the bibliography "Guide to 'Dilution' Controversy," *SI,* Winter 1989, p. 145.

the author and publisher for "commercial and psychological self-aggrandizement." Says Disch: "The internal evidence . . . suggests that even if Whitley's aliens had their origins in this waking dreams, they have long since been assimilated into a wholly conscious hoax." Disch contributes his own imagined conversation with Strieber's "ectoplasmic, night-wandering disembodied spirit."

Gardner, Martin. "A View from the Fringe." *Utne Reader,* July/August 1988, pp. 79-83. Critical essay on New Age channeling, reprinted from Gardner's book *The New Age: Notes of a Fringe-Watcher.*

"Glasnost Brings Closer Links for U.S., USSR, 'Psi' Research." *Science & Government Report,* December 1, 1988, p. 1-2. Report on "one of the less visible results of warming Soviet-American relations"—expanded contacts in parapsychology. "The subject is shunned as nuttiness in mainstream American science circles, but is regarded with interest in some parts of Congress and is reportedly a thriving field in the USSR." Briefly reports on a visit to Moscow in September by Scott Jones, a strong proponent of the paranormal who spends considerable time on the subject as a staff member for Senator Claiborne Pell (D-Rhode Island).

Grossman, John. "Quackbuster." *Hippocrates,* November/December 1988, pp. 50-56. Profile of "quackbuster" Stephen Barrett, M.D., and his campaign against "mail-order breast enlargers, megavitamin cancer cures, weight-loss magnets and other dubious and downright ridiculous pills and treatments on which we spend $25 billion a year." This and the Cooke article, above, are part of a "Mirages or Miracles" report titled, on the cover, "Are You Getting Quacked?"

"Investigating the Paranormal." *Experientia* (interdisciplinary journal of life sciences, Basel, Switzerland), vol. 44, no. 4, April 15, 1988, pp. 281-333. A multi-author review critically examining the evidence for the paranormal. Coordinated by psychologist David F. Marks, the review consists of 11 short articles: D. Marks, "Introduction"; P. Kurtz, "Skepticism and the Paranormal: Legitimate and Illegitmate"; J. Randi, "The Detection of Fraud and Fakery"; S. Carlson, "Astrology"; G. Hewitt, "Misuses of Biology in the Context of the Paranormal"; P. Skrabanek, "Paranormal Health Claims"; B. Leikind and W. McCarthy, "Firewalking"; R. Hyman, "Psi Experiments"; C. Scott, "Remote Viewing"; D. Dutton, "The Cold Reading Technique"; and D. Marks, "The Psychology of Paranormal Beliefs." A valuable, authoritative, concise overview.

Johnson, Robert. "Minor Evangelists, Out of TV's Glare, Have Major Flocks." *Wall Street Journal,* October 10, 1988, p. 1. Subtitled "They Also Earn Big Money With Unusual Pitches; Shades of Elmer Gantry." Report on methods of "minor league evangelists, scratching away in the sawdust tradition of Elmer Gantry," who "criss-cross the nation, offering their followers solace but also a chance to become a little poorer." Calls them "a hidden industry" that takes in tens of millions of dollars a year. A number "employ bizarre and sometimes questionable business practices," such as Jim Whittington's direct-mail solicitation letter saying that some who oppose his ministry die. He gets a 12-percent response rate, four times greater than normal.

Joyce, Christopher. "Healthy Scepticism in an Unhealthy Age." *New Scientist,* December 3, 1988, pp. 78-79. Critical report on the New Age, based on coverage of CSICOP's November 1988 Chicago conference.

*Lesser, Frank. "Still Trying After All These Years." *New Scientist,* August 11, 1988, pp. 62-63. Subtitled "Homeopathy Has Yet to Prove Its Case," column casts a critical eye on homeopathy and its claims.

*Maddox, John. "Waves Caused by Extreme Dilution." *Nature,* 335:760-763, October

27, 1988. Detailed, strongly stated column by the editor of *Nature* responding to the controversy surrounding the journal's publication of French group's research report alleging biological activity after extreme dilutions and the subsequent on-site investigation by Maddox, Walter Stewart, and James Randi. In his 15 years as editor, says Maddox, "I have known nothing like the controversy touched off by the publication [of these reports]." Maddox describes more of the background of the negotiations between the parties involved, responds forcefully to the criticisms of *Nature*'s handling of the controversy, and provides additional explanation about why he believes the French research, however motivated and in marked distinction from merely erroneous research, was "conducted carelessly, allowing sharp inferences to be drawn from insubstantial data." With this response, and Benveniste's in the same issue (see above), *Nature* says correspondence on the Benveniste affair in its pages is now closed.

Martens, R., I. W. Kelly, and D. H. Saklofske. "Lunar Phase and Birthrate: A 50-Year Critical Review." *Psychological Reports,* 1988, 63, 923-934. Review examines 21 studies for which data relating to lunar periodicities and birth have been analyzed. Finds "there is insufficient evidence to support such a relationship. Most studies have reported negative results, and the positive studies contradict each other."

McCarthy, Michael J. "Handwriting Analysis as a Personnel Tool." *Wall Street Journal,* August 25, 1988, p. 19. Subtitled "Major Firms Begin Using It; Skeptics Scoff," article reports how "handwriting analysis is quietly spreading through corporate America." Points out, however, that "many psychologists contend that graphology isn't much use as an indicator of personality." Includes sidebar "Who Am I? It Depends on Whom You Ask," showing diverse results of submitting the same handwriting sample to three handwriting services. They sometimes agreed, sometimes contradicted one another.

*Page, Jake. "Dilutions of Grandeur: Homeopathy." *American Health,* November 1988, pp. 78-82. Good report on medical view of homeopathy and the Benveniste-*Nature* controversy. Subtitled "Homeopaths claim their remedies can heal. Critics say they're selling distilled water—and the placebo effect."

Palmer, John A., Charles Honorton, and Jessica Utts. "Reply to the National Research Council Study on Parapsychology." A special report prepared for the Board of Directors of the Parapsychological Association, Inc., 1988, 24 pp. (Available as a booklet for $2 from the PA, P.O. Box 12236, Research Triangle Park, NC 27709.) Report by parapsychological leaders disputing the study by the NRC (subject of an article in the Fall 1988 *SI*) that reached negative conclusions about the field. Asserts that the NRC report "does not represent an unbiased scientific assessment of parapsychology" and that its conclusion of no scientific justification for the claims of parapsychology from research conducted over a period of 130 years "is totally unwarranted."

Pankratz, Loren. "Fire Walking and the Persistence of Charlatans." *Perspectives in Biology and Medicine,* vol. 31, no. 2, Winter 1988, pp. 291-297. Report on the "disturbing part of the fire walking craze. . . , its implicit endorsement of medical and psychological quackery."

Patrusky, Ben. "On an Antidote for Science Phobia." *Issues in Science and Technology,* Fall 1988, pp. 94-98. Good essay by respected science writer who sees science not as a remote mythified priesthood but as a "fabulous mystery story." He urges scientists to "let people in on the well-kept secret that science is very much a human endeavor, practiced by flesh-and-blood folk." Otherwise, he

says, it's like presenting only the score of a ballgame or the conclusion to a mystery story without letting the public see the game or get in on the mystery itself.

"Science Observer: A Special Report on Scientific Literacy." *American Scientist,* September-October 1988, pp. 439-449. A three-article report: "How Much Science Does the Public Understand?"; "Volunteer Scientists in the Classrooms"; and "Why Isn't Popular Science More Popular."

Siegel, Ronald K. "Long Day's Journey Into Fright." *Omni,* December 1988, pp. 87ff. Article by noted UCLA psychologist on laboratory experiments into the physiology of hallucinations.

Sipchen, Bob. " 'New Age' Skeptics Have a Convergence All Their Own." *Los Angeles Times,* November 13, 1988, VI 1ff. Journalistic report on CSICOP's 1988 Chicago conference with good summaries of the talks about the New Age.

*Stewart, Doug. "Interview with Walter Stewart." *Omni,* February 1989, pp. 65. ff. Interesting interview with NIH scientist battling scientific misconduct contains many important first-hand observations about the Benveniste affair in France, which Stewart, John Maddox, and James Randi investigated for *Nature.*

"The Twilight Zone in Washington." *U.S. News & World Report,* December 5, 1988, pp. 24-30. Report on the "extensive interest in psychic phenomena" in Washington. " 'At any given time, about one fourth of the members of Congress are actively interested in psi,' " it quotes Congressman Charlie Rose (D-N.C.). Little skeptical questioning here about this interest among legislators, aides, and others, but includes much useful information. A brief sidebar, "The Communists' Psychic Edge," reports on interest in psychic phenomena in the USSR and China.

Wheeler, David L. "Parapsychologists Fire Back at a National Academy Report That Called Field Unscientific and Experiments Flawed." *Chronicle of Higher Education,* September 14, 1988, A5ff. Reports on response by Dean I. Radin and other parapsychologists critical of National Academy of Sciences report that criticized performance-improvement techniques, including parapsychology. (See *SI,* Fall 1988.)

Williams, Stephen. "Fantastic Messages from the Past." *Archaeology,* September-October 1988, pp. 62-70. Essay by Harvard archaeologist who teaches course called "Fantastic Archaeology" about why he and his colleagues get annoyed at pop theories and pseudoscientific writings in archaeology—ancient astronauts, lost continents, Mystery Hill, New Age claims, and the like. "I hate these messengers who cannot, or will not, tell truth from fiction," he says. "Crank scientists and rogue professors can really hurt the profession and distort the messages of the past that we are trying to decipher and pass on to the public." Besides, they detract from "the truly fantastic discoveries made yearly in archaeology."

—Kendrick Frazier, EDITOR

From Our Readers

Backmasking brouhahas

Tom McIver's article "Backmasking, and Other Backward Thoughts About Music" (*SI*, Fall 1988) highlights the paranoia that all too often accompanies fundamentalism. Some readers may not be aware, however, that in many cases the existence of the purported backward "messages" on rock-and-roll recordings has been debunked.

In his engaging book *Big Secrets* (Quill, 1983), William Poundstone details his examination of some of the more notorious claims; those messages found to be present were innocuous. A follow-up report is contained in Poundstone's *Bigger Secrets* (Quill, 1986). Other material of interest to skeptics covered in these books includes subliminal effects in motion pictures, Scientology revelations, and "psychic" stunts by Kreskin and Uri Geller.

John Prager
Bay City, Mich.

It is unfortunate that Tom McIver was unaware of my research on backward messages in rock music. In 1982, I submitted written testimony to the legal counsel for California's Consumer Protection and Toxic Materials Committee. The paper focused on the absurdity of a music-labeling law and also attacked the notion that our minds could comprehend backward speech.

In the process of examining recordings, I was surprised to find there were indeed recognizable words and phrases when certain tapes were played in reverse. Some of these recordings are listed by McIver. With the help of phonetician Ian Catford and speech scientists Ray Daniloff and George Allen, I was able to show, using phonetic analysis and voice prints, that a few singers had slurred lyrics in order to produce intelligible utterances when played in reverse (cf. Walker and Daniloff 1983; Walker 1985 and 1987). I was able to reproduce several of the forward/backward segments found on Led Zeppelin's "Stairway to Heaven" and Electric Light Orchestra's "Eldorado." These two songs contained many reversed segments. In fact, virtually every line of "Stairway" seems to have a targeted "backwording."

McIver mentions one of the "Stairway" messages, "Here's to my sweet Satan," which derives from the reverse of "There's still time to change. . . ." It is slurred by singer Robert Plant so that the word "there's" is produced by nasalizing with tongue tip in an initial /d/ position. It can be roundly transcribed as /ndes/, and in reverse becomes /sedn/ which is close to "Satan." Several lines in the song begin with "There's." The reversals are distorted, but the listener's perceptual restoration kicks in. These reversals are too numerous to be simply discarded as coincidence. Besides, there are clues in the lyrics that there is something hidden in the song—e.g., "If you listen long and hard, the tune will come to you at last."

Jimmy Page of Led Zeppelin has been obsessed with the infamous occultist

Aleister Crowley; it was Crowley who advocated listening to phonographic recordings in reverse—back in 1929! Doing things backward has long been associated with ceremonial magic. Page purchased Crowley's Scottish mansion, where he and Plant ostensibly composed "Stairway" their first evening in the house. Plant hinted that it was as if someone were pushing his pen—the departed Crowley no doubt. It is my contention that several rock groups have attempted backwording because of Crowley's teachings. Whether or not they erroneously believe that the "subconscious mind" can be affected by these reversed messages is something only the recording artists can answer. The fundamentalists, however, have caused much ado about GNIHTON.

Michael W. Walker
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———. 1987. How to produce forward/backward recordings (without supernatural guidance). *Journal of Popular Music and Society,* 11(2):91-93.

Walker, M. W., and R. G. Daniloff. 1983. On the controversy surrounding backward messages in rock music. American Speech-Hearing-Language Assoc. convention, Cincinnati.

Like Tom McIver, I too was quite taken aback with the article in the *Los Angeles Times* on Susumu Ohno and the musical DNA. With the great deal of ambiguity afforded for each note, one can easily write a tuneful melody from any portion of DNA or RNA. In fact, soon after I read the article, I copied out a length of DNA from a recent *Science* article and proceeded to write several different, but pleasant tunes from the same DNA strand. The trick lies not only in the ambiguity of the *pitch* and *duration* of each note, but also in the ability to choose any *key* for the piece. Consequently one can decide a priori if the melody should be a G-minor dirge or an A-flat-major waltz. With such lack of limitations, one can compose throughout a broad range of styles and easily project one's feelings about the meaning of a particular gene onto the music. With little additional effort, one can characterize these tunes in the style of a celebrated composer. With the wealth of education behind him, I am surprised that the distinguished scientist Susumu Ohno doesn't recognize this.

David E. Young, M.D.
Walnut Creek, Calif.

Tom McIver correctly notes that rock music was once denounced for its rhythm and " 'savage' jungle origins." He is too polite. The fundamentalists and their friends were a good deal more explicit. Rock, and jazz before it, was regularly condemned as "nigger music." The "jungle beat" was somehow to transform good, white, and presumably sexless Christians into raging rapists and wantons, which is what they assumed all blacks to be. I think it is a good idea to be reminded just how nasty these folks really were, and still are.

Daniel Cohen
Port Jervis, N.Y.

For the first time I was embarrassed and disgusted by one of your articles, Tom McIver's "Backward Masking, and Other Backward Thoughts About Music." What vexed me was not that the article hardly attempted to disprove, beyond mere unsupported statements and the quick mention of one study, the claims fundamentalists make about backward masking (though, admittedly, their nutty quotes are pretty damning in themselves). Nor was I particularly disturbed by the author's somewhat skeptical if not entirely credulous discussion of subliminal messages. However, in the last paragraph of his summation, he states as fact something that I consider utter nonsense and that is entirely irrelevant to the article

and the journal. He states: "The ironic thing about the anti-backmasking crusade is that much of the music accused of harboring these demonic messages truly is an unhealthy influence on kids."

There it is, an ignorant, biased, bald assertion. For these words no proof is offered, no authorities are cited, no arguments are made; it's simply stated as if obvious.

First, rock music (even the "unhealthy" kind McIver probably is referring to, most likely heavy metal and maybe some punk, though he doesn't bother to enlighten us) gives a large number of people much joy, and even seems to positively inspire a few. Second, even if McIver's incredible statement were true, the SKEPTICAL INQUIRER is not the proper forum for it; possibly some journal that discusses psychology or sociology would be interested in printing his anti-rock-and-roll message. . . .

Steven Kurtz
Los Angeles, Calif.

Orgone Obsession

I enjoyed Martin Gardner's article "Reich the Rainmaker: The Orgone Obsession" (*SI*, Fall 1988), an excellent exposé of the claptrap ideas of this flaky mad scientist; but lest readers of the SKEPTICAL INQUIRER think that "Orgonomy" died more than 40 years ago along with Wilhelm Reich, I have news for them.

Orgone therapy is alive and well, at least in the Washington, D.C., area, and is advertised in the Spring 1988 issue of *Pathways*, a newsletter in tabloid form containing hundreds of ads for every imaginable sort of metaphysical manure, holistic horror, and psychic pablum, plus a few that are very hard to imagine.

A local M.D. and psychiatrist is advertising his services as an "orgone therapist" who has been trained under one Ellsworth Baker, M.D., no less, and vows to renew one's love life and orgone energy toward the successful fulfillment of one's mental and physical health. Old frauds never die, they don't even fade away. They are constantly being rediscovered and passed off as New Era discoveries.

One can easily understand why Paul Kurtz is suffering his "skeptics burnout" in this war without end. CSICOP may win a few battles here and there, but as P. T. Barnum reminded us, gullible humans are being born every minute; and they will forever be conned by the greedy media putting money ahead of truth.

W. H. Watkins
Sperryville, Va.

Jahn on Princeton experiments

I would like to make just a few brief points of response to the two paragraphs alluding to our work in "Improving Human Performance: What About Parapsychology?" (*SI*, Fall 1988, p. 40).

1. While 50.02 percent success in the controlled PK [psychokinesis] experiments is indeed about the regularly replicated level, over our present 760,000-trial REG database the statistical likelihood of this results occurring by chance is 2×10^{-4}. Over a comparable database, our macroscopic Random Mechanical Cascade (RMC) experiment yields essentially the same statistical result. We regard the identification of this particular scale of effect as an important quantitative indicator of the nature of the phenomena involved.

2. The vague accusation of "inadequate documentation" should be balanced by the following fact: We have issued more than 1,000 pages of documentation, including several refereed journal articles, scores of technical reports, and one entire book, wherein are presented in full all data, all protocols, and all technical equipment and procedures ever employed in this laboratory. All of these were provided to the NRC committee, and are available to any interested reader.

3. As we have regularly informed all previous propagators of the myth, including the authors of the NRC report, the attribution of the success of the experiments solely to one prolific operator is both qualitatively and quantitatively incorrect. For example, of the 33 operators who have completed one or more

REG experimental series, more than two-thirds have achieved results in each of the directions of intention. Of these, three have been statistically significant in the high direction; three in the low direction; and five in the high-low split. The single operator to whom the report refers actually ranks *twelfth* in high-intention-effect size and *fifth* in low. To be sure, the comparatively large database of this operator raises the relative contribution to the overall statistical result, but even when equal-size data sets from all 33 operators are concatenated, the combination is still significant at 5×10^{-3}. Once again, we regard this accumulation of total effect from many marginal, but quite replicable, contributions as an important characteristic of the phenomena that has unfortunately been obfuscated by much of the research with "gifted subjects," and by the NRC representation. This issue is discussed in detail in our technical report "Individual Operator Contributions in Large Data Base Anomalies Experiments" (PEAR 88002).

Robert G. Jahn
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Astrology and President Bush

One legacy of President Reagan's involvement with astrology (*SI*, Fall 1988) remains in the White House, if astrologer Joyce Jillson is to be believed. In 1980, she claimed the Reagan campaign hired her to cast horoscopes on all the Republican vice-presidential prospects. George Bush proved to be Ronald Reagan's best astrological match.

In July 1980, Jillson responded to a question from the *Los Angeles Herald Examiner*. Yes, she confirmed, she had been paid $1,200 by the Reagan campaign to do horoscopes on eight vice-presidential candidates. The horoscopes were a rush order, she said, so Reagan could take them with him on a vacation to Mexico, where he was pondering the selection of a running mate before the Republican National Convention. Of the eight, she found that Bush, a Gemini, would be the most compatible with the Aquarian Reagan.

When the story broke, Reagan campaign spokesman Lyn Nofziger denounced Jillson as a liar. She responded that she was shocked by the attack. "It wasn't my idea to put out this story," she told *San Francisco Chronicle* columnist Warren Hinckle. "I never talk about my clients. I thought the Republicans had leaked it to help update their image."

And there the matter rested for eight years. Back in 1980, the idea that Ronald Reagan would use astrology in his decisions seemed like a zany satire in rather poor taste, something no respectable reporter would pursue further for fear of appearing zany himself.

Now that we know the Reagans consulted astrologers for even minor day-to-day decisions, Jillson's story takes on new importance. It's hard to imagine a couple so devoted to astrology *not* consulting it on such a crucial and delicate matter as picking a running mate. And Jillson's name did come up as one of the White House astrologers of the Reagan administration.

The implication is breathtaking. Here we may finally see George Bush's main qualification for a place in the Reagan White House, and thus why he is president today.

Alan M. MacRobert
Bedford, Mass.

Research on belief systems

Lewis Jones (*SI*, Fall 1988), in responding to my comments about his article on alternative therapies (*SI*, Spring 1988), appears to have missed the point. I suggested that because belief systems powerfully affect illness, wellness, and treatment of any brand, research on these topics should attempt to measure their effects. Lewis calls this "tampering with the results of double-blind trials." I call it designing ecologically valid research models

that account for maximal data.

Jones doesn't respond to the main thrust of my remarks, which is simply that current research, in not addressing the effects of individuals' belief systems, may be shining the flashlight in too small a corner of the darkness.

Martin Reiser, Director
Behavioral Science Services
Los Angeles Police Dept.
Los Angeles, Calif.

Koko criticisms

Years ago—when I was getting my humble B.A. in behavioral science at Rice University—a psychology professor solemnly warned me against "anthropomorphism," the belief that animals have feelings like human beings. If the professor intended merely to caution against the naive attitude displayed by some animal lovers, then his comment was justified. However, the assumption that animals have *no* feelings similar to those of human beings is a fallacy, no more scientific than the belief that animals are "just like us."

Emotions exist because they motivate certain kinds of behavior. For example, fear motivates one to flee or hide; anger causes aggressive behavior. Behaviors consistent with fear and anger can be observed in animals as well as humans. Also, one may observe the associated physiological processes: Frightened animals turn pale, angry ones flush. While we can never know exactly what animals feel, it is reasonable to believe that their subjective mental experience is at least partly similar to our own.

Now comes Robert Sheaffer, who resurrects the anthropomorphism fallacy in Psychic Vibrations (Fall 1988). He ridicules Penny Patterson for asserting that a gorilla could feel a need for motherhood. He seems to feel (assuming that his subjective mental experience is similar to mine) that this assertion is ridiculous on its face. I am unaware of any principle—other than the anthropomorphism fallacy—that would explain his irrational belief.

I am not able to pass judgment—pro or con—on Patterson's research. However, I do know that sexual ignorance is widespread among human beings, and Sheaffer makes an illogical leap by implying that the gorilla Koko is wiser. Also, sexual problems are by no means rare among humans who speak to each other perfectly well, and I don't see why things should be easier for gorillas—articulate or otherwise.

I would like to know what this sort of thing is doing in my beloved SKEPTICAL INQUIRER.

Forrest Johnson
Goleta, Calif.

Robert Sheaffer's comments on gorillas Koko and Michael stirred memories of my afternoon with Michael. My daughter and I were in Palo Alto in the summer of 1978 to talk with Ann Southcombe. She had left the Cincinnati Zoo to join Penny Patterson at the trailer complex behind the Stanford Art Museum. Ann's responsibility was Michael, then a playful pup of 70 pounds or so. We decided to talk while taking Michael for a walk. I had the unique honor of holding the leash in a brief trip around the museum. What do you do when a playful gorilla climbs up your arm? I vaguely remember a playful gorilla nip on my thumb that drew no blood. Ann commented that Michael did not like other males; his mother had been killed when he was captured. After returning to the trailer, Ann demonstrated the limited signing vocabulary then possible. There was a flurry of fur and fingers. Ann laughed and explained that Michael had said he had been a very bad boy in attacking her friend! Our visit ended without meeting either Penny Patterson or Koko. I understand that Ann left a few years later for more practical animal-training elsewhere.

Sheaffer refers to Michael's "unpredictable and sometimes dangerous behavior [requiring] physical restraint." I suspect the truth is that a mature male gorilla simply does not know his own strength. Gorillas are gentle animals that lack the desperate viciousness of many

carnivores. Sheaffer's a priori analysis concludes that Patterson's signing is fraudulent because Koko and Michael have not produced offspring. Is it possible that they perceive themselves as siblings and refuse incest? (Kibbutz roommates usually choose other mates.) What are the conditions of captivity? Zoo experience has shown that caged animals are less likely to mate than those who feel the freedom of open settings.

John H. Hubbard
Cincinnati, Ohio

About a year ago I subscribed to your publication in the hope that your contributors would, with open minds, address truly controversial issues. Instead, I find articles debunking poltergeists, orgone boxes, seers, the human face on Mars, and the like. It seem to me that people who believe in these things, if they read at all, would read the *National Enquirer,* not the SKEPTICAL INQUIRER. So, who, I began to wonder, is your audience?

I found I didn't want to know when I read Robert Sheaffer's short piece in Psychic Vibrations on Koko the gorilla. Although animal behavior is one of the most exciting fields of science, with animal awareness and animal communication two of the most promising areas of inquiry, Sheaffer doesn't seem to know it, since he is still a combatant in the tedious and ancient ape-signing wars.

From the tone of Sheaffer's article, he seems to expect his readers to join him in sneering at something. At what? At the difficulties that have beset Patterson in maintaining her gorillas? At the fact that the public is interested in these gorillas? Should we be snickering at the inability of a captive male gorilla to mate? Hasn't Sheaffer heard of the difficulties in getting animals to mate in even the most advanced captive-breeding programs?

Better to stick with what you do well. Lay it on us about the tarot cards. Do they really tell the future?

Elizabeth Thomas
Peterborough, N.H.

Infection irony

I read your article "The China Syndrome" by Paul Kurtz (Fall 1988). In reference to one of the group contacting a bronchial infection, I too was amused that he was given antibiotics as well as snake bile. One hopes the infection was bacterial in origin rather than viral. All too often bronchial infections are due to viruses and are thus not treatable with antibiotics. Unfortunately there is such a demand from the lay public to treat everything with antibiotics that it is not unusual for the encumbered physician to prescribe them for infections they know cannot be helped by antibiotics.

If this was a viral infection, then the antibiotic and the snake bile were of equal efficacy.

Raymond P. Cloutier, M.D.
(No address given)

Anti-quackery actions

I take exception to the statement in Roger McKeown's letter (*SI,* Fall 1988) that Walter Clark's questioning of anti-quackery actions by government (*SI,* Spring 1988) "sounds like health-care libertarianism." The individual rights supported by libertarians do not include the "right" to fleece the public by quackery. The Statement of Principles of the Libertarian Party says that members ". . . support the prohibition of robbery, trespass, *fraud, and misrepresentation.* . . ." (emphasis mine). The party platform advocates effective laws to these ends.

I think the letters by Clark, McKeown, and Trevor Danson in the same issue, commenting on the proper role of government in health care, raise a much larger issue, since each treats a major social theory (welfare statism, laissez-faire economics, and social Darwinism, respectively) in a skeptical light. I commend each of them for thus reminding us of the need to keep probing the social-scientific assumptions behind our political positions.

Stephen Brinich
Arlington, Va.

Take peanut before IQ test

With respect to the article "High-Flying Health Quackery" (*SI,* Summer 1988), and in a way related to the series of articles "CSICOP in China," I have transcribed below the interesting health claims to be found on a package of sugared peanuts served to me on a CAAC flight from Guilin to Beijing in May 1987:

MIRIXING Peanuts: "This crisp, tasty peanut is famous as 'bean fruit' abroad. Its main compositions: fresh peanuts, Kanbalkob, fine wheat flour, sutabiroozu and cane sugar. . . . This peanut contains Vitamin E and eight amino acids which [are] vital for [the] human body. It can lower cholesterol levels, prevent arteriosclerosis and heart disease, at the same time it has a function of raising children's intelligence and keeping human vitality."

Perhaps I should eat more of these.

Steven P. Levine
Associate Professor of
Industrial Health
University of Michigan
School of Public Health
Ann Arbor, Mich.

Blasphemous creationists

I've read Jacobson's letter (*SI,* Fall 1988) about the absurdness of the creationist proposition. One may in reasoning not limit God's power, as Ockham already said. Only logic may be considered as binding for God too. Therefore it is not absurd to assume that God created the world together with its past 6,000 years ago, or maybe 6 seconds ago. Creationists maintain that there is evidence for this; in other words, God tried to forge a past, but He or She bungled it, leaving it for us to detect the flaws. An infinitely good and almighty and omniscient God doesn't leave any flaws. So we scientists are justified to assume that the universe is exactly as if it had existed ever since the Big Bang or what have you. It is the creationists who blasphemously are claiming that God is cheating us in a stupid way. After all, flaws that can be detected by lowly life forms like microbes, mice, and men are below the the dignity of a competent Supreme Being. Of course, for a God created in the image of a Jimmy Swaggart or a Duane Gish, things might be entirely different.

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In defense of psychoanalysis

I would like to comment on Wendy Grossman's book review (*SI,* Fall 1988) of *Pseudoscience and the Paranormal* by Terence Hines. She supports his view of psychoanalysis as a therapy that "parallels those of other therapies more commonly accepted as pseudoscientific." While I would agree with some of the current criticisms of psychoanalysis, I think a complete white-washing of what it has to give to us is a great mistake.

Has Hines not read the studies that show psychoanalytically oriented psychotherapy to be superior to placebo? Few psychologists, psychiatrists, or other mental-health workers would put *everything* Freud said in the same category as Uri Geller.

Psychoanalysis also depends heavily on other tools besides the interpretation of dreams, and not all denials of patients are taken as latent admittances. The most important cornerstones in psychoanalytic theory and practice (used also in most other forms of psychotherapies) are the existence of the unconscious and of the phenomenon of transference. Even if psychoanalysis has its flaws, one cannot deny its contributions to our understanding of the mind. Just as Newtonian physics cannot describe the universe vis-à-vis Einsteinian relativity, one cannot deny the basic contributions Newton made.

One does not need an elaborate interpretation of dreams to help a patient with unconscious transferences that cause trouble. More clearly, for instance, if someone grew up in a family where there was a lot of violence and has a timid

kind of character because unconsciously he fears the rest of the world may explode on him, the therapist can help him objectify his distortions and help him realize that to be more assertive will not bring on attack. The transference is the recreation of feelings from old relationships in new ones though there is no basis for it in reality. One does not need to resort to fancy psychoanalytic jargon, dream interpretation, or oedipal analysis to obviously and concretely see the importance of this example.

Grossman also alludes to "research that has found neurochemical origins for many 'disorders,' contradicting some major psychoanalytic theories." This is partially true. Some biological research into autisim and schizophrenia has hit hard on old analytic theories. This still does not blow the importance of psychoanalytic principles off the map (remember Newton). If a patient's neurotransmitters go awry when he is stressed and he becomes depressed because of this chemical imbalance, it is true that his unconscious did not directly cause the depression; but in a susceptible patient, decreasing stress may prevent a relapse (see example above). In this case, neurochemical and psychoanalytic theory are not mutually exclusive. A patient can take antidepressant medication and work through those distortions that may cause stress in psychotherapy.

Keeping in line with CSICOP's philosophy, we should not jump to dramatic conclusions based on incomplete evidence. The subtitle of Hines's book, "A Critical Examination of the Evidence," is parsimonious in teasing apart the pseudo from the science and avoiding that sinister all-or-none thinking.

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We hope that these brief explanations help you understand some of the problems you may encounter. Please rest assured that the SKEPTICAL INQUIRER staff is working very hard to resolve them as quickly as possible.

the Skeptical Inquirer

Local, Regional, and National Organizations

The organizations listed below have aims similar to those of CSICOP and work in cooperation with CSICOP but are independent and autonomous. They are not affiliated with CSICOP, and representatives of these organizations cannot speak on behalf of CSICOP.

UNITED STATES

Alabama. Alabama Skeptics, Emory Kimbrough, 3550 Watermelon Road, Apt. 29A, Northport, AL 35476.

Arizona. Tucson Skeptical Society (TUSKS), Ken Morse, Chairman, 2509 N. Campbell Ave., Suite #16, Tucson, AZ 85719.

Phoenix Skeptics, Michael Stackpole, Chairman, P.O. Box 62792, Phoenix, AZ 85082-2792.

California. Bay Area Skeptics, Rick Moen, Secretary, 4030 Moraga, San Francisco, CA 94122-3928.

Society for Rational Inquiry, Terry Sandbek, 4095 Bridge St., Fair Oaks, CA 95628.

Southern California Skeptics, Al Seckel, Executive Director, P.O. Box 5523, Pasadena, CA 91107; San Diego Coordinator, Ernie Ernissee, 5025 Mount Hay Drive, San Diego, CA 92117.

Colorado and Wyoming. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306.

District of Columbia, Delaware, Maryland, and Virginia. National Capital Area Skeptics, c/o D. W. "Chip" Denman, 8006 Valley Street, Silver Spring, MD 20910.

Florida. Tampa Bay Skeptics, Gary Posner, Secretary, 6219 Palma Blvd., #210, St. Petersburg, FL 33715.

Georgia. Georgia Skeptics, Keith Blanton, Convenor, 150 South Falcon Bluff, Alpharetta, GA 30201.

Hawaii. Hawaii Skeptics, Alicia Leonhard, Director, P.O. Box 1077, Haleiwa, HI 96712.

Illinois. Midwest Committee for Rational Inquiry, Michael Crowley, Chairman, P.O. Box 977, Oak Park, IL 60303.

Indiana. Indiana Skeptics, Robert Craig, Chairperson, 5401 Hedgerow Drive, Indianapolis, IN 46226.

Iowa. ISRAP, Co-chairman, Randy Brown, P.O. Box 792, Ames, IA 50010-0792.

Kentucky. Kentucky Assn. of Science Educators and Skeptics (KASES), Chairman, Prof. Robert A. Baker, Dept. of Psychology, Univ. of Kentucky, Lexington, KY 40506-0044.

Louisiana. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM), Henry Murry, Chairman, P.O. Box 15594, Baton Rouge, LA 70895.

Michigan. MSU Proponents of Rational Inquiry and the Scientific Method (PRISM), Dave Marks, 221 Agriculture Hall, Michigan State Univ., East Lansing, MI 48824.

Great Lakes Skeptics, Don Evans, Chairman, 6572 Helen, Garden City, MI 48135.

Minnesota. Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416.

St. Kloud ESP Teaching Investigation Committee (SKEPTIC), Jerry Mertens, Coordinator, Psychology Dept., St. Cloud State Univ., St. Cloud, MN 56301.

Missouri. Kansas City Committee for Skeptical Inquiry, Verle Muhrer, Chairman, 2658 East 7th, Kansas City, MO 64124.

Gateway Skeptics. Chairperson, Steve Best, 6943 Amherst Ave., University City.

New Mexico. Rio Grande Skeptics, Mike Plaster, 1712 McRae St. Las Cruces, NM 88001.

New York. Finger Lakes Association for Critical Thought, Ken McCarthy, 107 Williams St., Groton, NY 13073.

New York Area Skeptics (NYASK), Joel Serebin, Chairman, 160 West 96 St., Apt. 11M, New York, NY 10025-6434.

Western New York Skeptics, Barry Karr, Chairman, 3159 Bailey Ave., Buffalo, NY 14215.

North Carolina. Chairperson, Mike Marshall; Meeting Organizer, Dave Olson, 2026 Lynwood Dr., Greensboro, N.C.

Ohio. South Shore Skeptics. Page Stephens, Box 5083, Cleveland, OH 44101

Pennsylvania. Paranormal Investigating Committee of Pittsburgh (PICP), Richard Busch, Chairman, 5841 Morrowfield Ave., #302, Pittsburgh, PA 15217.

Delaware Valley Skeptics, Brian Siano, Secretary, Apt. 1-F, 4406 Walnut St., Philadelphia, PA 19104.

South Carolina. South Carolina Committee to Investigate Paranormal Claims, John Safko, 3010 Amherst Ave., Columbia, SC 29205.

(continued on next page)

Local, Regional, and National Organizations (Cont'd)

Texas. Houston Association for Scientific Thinking (HAST), Steven Schafersman and Darrell Kachilla, P.O. Box 541314, Houston, TX 77254.

North Texas Skeptics, Eddie Vela, Secretary and Treasurer, P.O. Box 22, Arlington, TX 76004-0022.

West Texas Society to Advance Rational Thought, Co-Chairmen: George Robertson, 516 N Loop 250 W #801, Midland TX 79705; Don Naylor, 404 N. Washington, Odessa, TX 79761.

Washington. Northwest Skeptics, Philip Haldeman, Chairman, T.L.P.O. Box 8234, Kirkland, WA 98034.

West Virginia. Committee for Research, Education, and Science Over Nonsense (REASON), Dr. Donald Chesik, Chairperson, Dept. of Psychology, Marshall University, Huntington, WV 25701.

AUSTRALIA. National: Australian Skeptics, Barry Williams, Chairman, P.O. Box 575, Manly, N.S.W. 2095.

Regional: Australian Capital Territory, P.O. Box 555, Civic Square, 2608.

New South Wales, Newcastle Skeptics. Chairperson, Prof. Colin Keay, Physics Dept., Newcastle University 2308.

Queensland, 18 Noreen Street, Chapel Hill, Queensland, 4069.

South Australia, P.O. Box 91, Magill, S.A., 5072.

Victoria, P.O. Box 1555P, Melbourne, Vic., 3001.

West Australia, 25 Headingly Road, Kalamunda, W.A., 6076.

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Regional: British Columbia Skeptics, Barry Beyerstein, Chairman, Box 86103, Main PO, North Vancouver, BC, V7L 4J5.

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Ontario Skeptics, Henry Gordon, Chairman, P.O. Box 505, Station Z, Toronto, Ontario M5N 2Z6.

Quebec Skeptics: Raymond Charlebois, Secretary, C.P. 96, Ste-Elisabeth, Quebec, J0K 2J0.

FINLAND. Society for the Scientific Investigation of Claims of the Paranormal, Prof. Seppo Kivinen, Chairman, Dept. of Philosophy, Univ. of Helsinki, Unioninkatu 40 B, 00170 Helsinki 17.

FRANCE. Comité Français pour l'Etude des Phénomènes Paranormaux, Dr. Claude Benski, Secretary-General, Merlin Gerin, RGE/A2 38050 Grenoble Cedex.

INDIA. B. Premanand, Chairman, 10, Chettipalayam Rd., Podanur 641-023 Coimbatore Tamil nadu. For other Indian organizations contact B. Premanand for details

IRELAND. Irish Skeptics, Dr. Peter O'Hara, Convenor, P.O. Box 20, Blackrock, Dublin.

ITALY. *Gruppo Italiano d'Indagine Scettica sui Paranormale*, Secretary, Lorenzo Montali, Via Ozanam 3, 20129 Milano, Italy.

MEXICO. Mario Mendez-Acosta, Apartado Postal 19-546, Mexico 03900, D.F.

NETHERLANDS. Stichting Skepsis, Rob Nanninga, Secretary, Westerkade 20, 9718 AS Groningen.

NEW ZEALAND. New Zealand Skeptics, Phil Bradley, Box 10-428, The Terrace, Wellington 4.

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SOUTH AFRICA. Assn. for the Rational Investigation of the Paranormal (ARIP), Marian Laserson, Secretary, 4 Wales St., Sandringham 2192.

SPAIN. Alternativa Racional a las Pseudosciencias (ARP), Luis Alfonso Gámez Domínguez, Secretary, c/o el Almirante A. Gaztañeta, 1-5º D. 48012 Bilbao.

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UNITED KINGDOM. British Committee, Michael J. Hutchinson, Secretary, 10 Crescent View, Loughton, Essex IG10 4PZ.

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Regional: Manchester Skeptics, Toby Howard, 49 Whitegate Park, Flixton, Manchester M31 3LN.

WEST GERMANY. Society for the Scientific Investigation of Para-Science (GWUP), Amardeo Sarma, Convenor, Postfach 1222, D-6101 Rossdorf.

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College and University Lecture Series Subcommittee: Chairman, Paul Kurtz. Contact Ranjit Sandhu, CSICOP, Box 229, Buffalo, NY 14215-0229.

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Parapsychology Subcommittee: Chairman, Ray Hyman, Psychology Dept., Univ. of Oregon, Eugene, OR 97402.

UFO Subcommittee: Chairman, Philip J. Klass, 404 "N" Street S.W., Washington, D.C. 20024.

The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal 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. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining claims of the paranormal.
- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

The Committee is a nonprofit scientific and educational organization. THE SKEPTICAL INQUIRER is its official journal.