



**NMSR
REPORTS**

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New Mexicans for Science and Reason

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New Mexicans for

Science & Reason (NMSR)

NMSR is a non-profit group with the goal of promoting science, the scientific method, rational thinking, and critical examination of dubious or extraordinary claims. NMSR meets on the second Wednesday of each month, at the UNM Law Building. *NMSR Reports* is its official newsletter.

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MARCH MEETING

NEW MEXICANS FOR SCIENCE AND REASON
will have a forum on

Creationism in New Mexico

Scheduled speakers include:

Mark Boslough

John Geohegan

Bill Meikle

Marvin Mueller

Dave Thomas

7 PM WEDNESDAY, March 13th

Room 2406, UNM Law Bldg.
1117 Stanford NE

Bring a friend.

Feb. '96 Meeting - Dr. Alan Hale

By Dave Thomas

The February 16th NMSR meeting with Alan Hale was one of our most memorable and well-attended ever. Dr. Hale, who works at the Southwest Institute for Space Research in Cloudcroft, NM, spoke on "Comet Hale-Bopp: Potentials and Opportunities." Hale began by quoting Isaac Asimov: "The most exciting phrase to hear in science, the one that heralds new discoveries, is not 'Eureka!' (I found it!) but 'That's funny'..." Hale's specialty is extrasolar planets, but he has had a longtime interest in comets. One Friday night last year, he was trying to confirm the brightness of a comet he was researching for his weekly column in the *Alamogordo Daily News*. However, it was cloudy, so Hale tried again the next night (Saturday, July 22nd, 1995). Hale went outside near 11 PM, but the comet was hidden behind his house. After checking on a different comet he'd been following, Hale had to choose between moving his telescope, or waiting an hour or two for the other comet to rise above the house. Dr. Hale chose the lazy (and lucky!) alternative. While he was waiting, he checked out the globular cluster M70, located in the constellation of Sagittarius. He had just observed M70 a few weeks earlier, but this time he noticed something that was not there earlier - a funny-looking "fuzzy object." Hale increased his telescope's magnification, and the object still looked fuzzy - it was not a group of stars. He then confirmed that he was indeed looking at M70. Hale began to suspect that the object might be a comet, but at that point thought it unlikely to be previously unknown - he joked to himself "Sure, I just point my telescope at a random spot in the sky and find a comet!" Dr. Hale drew a

diagram of the object's position, and measured its brightness. If it was a comet, the object would visibly move against the star background in a matter of hours. So, Hale decided to check the object again in a few hours. He went upstairs to consult his catalogs, but found no known comet, galaxy, star cluster, etc. that would appear near M70 that night. Hale logged into the Internet to check the Central Bureau for Astronomical Telegrams at Cambridge, Massachusetts, but found no information on his possible comet. He e-mailed a tentative notification to Cambridge, went downstairs, and checked the object's position again - *it had moved to the West*. At this point, Dr. Hale began to get very excited. He ran upstairs, sent another e-mail message to Cambridge, and woke up his wife to ask her "Do you want to have a look at Comet Hale?" He followed the comet until 3 AM, when it set. The tired astronomer tried to sleep for a few hours. In the morning, he received an e-mail message from Brian Marsden at Cambridge, which said that Thomas Bopp, in Arizona, had confirmed the location of the new comet. It turns out that Bopp and Hale had observed the object within just a few minutes of each other. Because Bopp was out in the "boonies," however, Hale's message reached Cambridge first. Hale also gave a better window of the timing of the discovery than Bopp, so his name appears first. The new comet was announced as Hale-Bopp in International Astronomical Union circular 6187.

The first order of business was the determination of the new comet's orbit. Normally, comet positions can be obtained by looking at the parallax between observers widely separated on the Earth. But Comet Hale-Bopp was too far away for parallax to be effective. And for a comet to be visible

at this great distance, it must be really large. Orbital calculations were performed, and these indicated that the orbital period of Hale-Bopp is about 4,200 years. In this trip through the inner solar system, Jupiter will affect the comet, reducing its period to 3,400 years. All this is good news for comet watchers, because it indicates that Hale-Bopp has definitely visited the inner solar system before. Comets on their first trip in from the Oort Cloud have very large orbits (on the order of 10,000 Astronomical Units (AUs)), and correspondingly long periods (millions of years). One AU equals about 149 million kilometers, the average Earth-Sun distance. "Virgin" comets are thought to be covered by layers of organic "crud," which are thought to be burned off on a typical comet's first near-Sun pass. Thus, comets coming in for the first time are not as bright as they are on return trips. Many astronomers think this is the reason that Comet Kohoutek was not as bright as hoped; Kohoutek, also a large comet, will probably be truly spectacular on its second trip around the sun (in a mere 75,000 years). As regards Hale-Bopp, however, the news is good - its "short" (4,000-year) period suggests that it has interacted with the planets before, and that its outer coating has already burned off. This, in conjunction with the comet's large size (about 40 km long, three times the size of Halley's comet) may mean we are in for a really big show in 1997. The comet will come closest to the Earth (within 1.3 AU) on March 22, 1997, and will be closest to the sun 10 days later (April 1st). Tabloid reports of an April Fool's Day Hale-Bopp impact on Earth are simply incorrect.

Dr. Hale mentioned that the comet will be visible with binoculars in March, and visible with the naked eye by mid-summer 1996. He recommended that telescopes

should not be purchased at department stores, where quality is low and price high; his suggestion is to look at the advertisements in *Sky and Telescope* magazine. Hale hopes to observe the comet during a total eclipse of the sun on March 9, 1997, in Mongolia/Siberia (brrr!).

Hale then turned to a discussion of the "hype" surrounding Hale-Bopp and other comets. Richard Hoagland (of "Face On Mars" fame) has declared that Hale-Bopp is under the control of a mysterious alien. Quatrains written by Nostradamus in the 16th century, as well as Hopi Indian prophecies, are now being cited as predicting the appearance of Comet Hale-Bopp. In the 1910 appearance of Halley's Comet, unscrupulous individuals hawked "Comet Pills" to counteract the ill effects of poisonous gases in the comet's tail, even though the total amount of such gases was actually extremely small.

Dr. Hale plans to take advantage of his comet's fame to promote increased science literacy. A WEB site is in the works. He cautioned against complacency about asteroid/comet impacts on the Earth. Although Hale-Bopp will miss Earth by more than 1 AU, the newly-discovered Comet Hyakutake will come within 0.102 AU of our planet. Hyakutake's near-miss of Earth will occur in late March of this year; it was discovered in late January. That's not very much advance warning.

NMSR thanks Dr. Hale for a very entertaining and thought-provoking talk, and thanks Mark Boslough for making the initial "contact." And, we salute Alan Hale for his continuing efforts to encourage public appreciation of good science.

DON'T FORGET - our next meeting is at 7 PM on *WEDNESDAY, March 13th!!*

“GREATEST ENERGY SHOW”

By Harry M. Murphy

The days of snake oil salesmen aren't over yet. On February 26th, I attended “THE GREATEST ENERGY SHOW ON EARTH!” at TVI's Smith-Brasher Hall. The flyer said, “Unlimited energy is available to power all moving vehicles without gasoline or diesel [sic] and with no pollution at all! . . . See how we can make electricity for free from energy taken from air even at night in a snow storm.”

The show was presented by Dennis Lee, an ex-convict who apparently served two years in a California prison for fraud and is now on parole. Lee appeared on at least two radio talk shows (Chris Jackson, KHTL 920 AM and Jay Howard Deme, KOB 770 AM) to plug his show.

Lee, who admits to no training in science or engineering, spoke for four hours to a standing-room only audience. He says he is the Director of Research for Better World Technology (BWT) of Newfoundland, New Jersey. His Albuquerque show was one stop on a 12-state tour which ended in Washington, DC on March 5, with a show to which he invited the President, Congress, the Supreme Court, the IRS, the Pentagon, the FBI, the CIA, the Department of Energy, etc.!

His show was a non-stop rambling mishmash of pseudoscientific babble and sales pitch. He says that “the energy in magnets is continually being replaced” and asks, “what is that power source?” He says that “we can solve all forms of pollution today,” and “that there is no reason to burn fossil fuels,” and “if you have a perpetual energy source, you have a perpetual motion machine.” He asserts that “I developed the world's most efficient solar energy system!”

He described the use of low boiling

point gases, such as Freon, to collect solar energy and provide sufficient energy to heat a house, provide electricity, and even provide surplus electricity to sell to industry. His solar panels are 8 feet long and 3 feet wide, used four at a time in an 8 by 12 foot array. He claims his system produces “28,000 kilowatts in a year of free electricity” [kilowatt-hours?]. He says he can build such a home system for \$2,500 and that the homeowner will have free power for the rest of his life.

Of course, these types of devices are absolutely impossible according to the 2nd Law of Thermodynamics, which was stated in the following manner by Lord Kelvin: “It is impossible to devise a process whose *only* result is to convert heat, extracted from a *single* reservoir, entirely into work.” The device Lee claims to have developed would constitute a perpetual motion machine of the 2nd kind (as opposed to the 1st kind, which would violate the 1st Law, conservation of energy).

He went on to describe the “Fisher Engine,” a heat engine with no exhaust and no condenser, saying that the steam engine, in use for some 200 years, “was built wrong.” He showed a slide of a “Fisher Engine” with a 6-inch cylinder, which he says develops 80 horsepower. He claims that he can adapt any conventional automobile to use this engine, and that it will then run for 400,000 miles with no oil changes.

Lee demonstrated a Chrysler automobile engine modified to use compressed gas as a power source, using only two cylinders. He said he used carbon dioxide (CO₂), rather than Freon, because his modified engine didn't have a condenser and he couldn't legally vent Freon. He quoted the torque generated by a normal

Chrysler engine (about 150 foot-pounds) and then demonstrated the torque produced by his modified two-cylinder engine by attaching a torque wrench to the crankshaft and opening the valve of the CO₂ bottle. The torque wrench was destroyed, to the delight of the audience, demonstrating a torque far, far in excess of that nominally generated by such an engine. "Think of the power this engine would have if we used all of the cylinders!" he said. He then removed the wrecked torque wrench and let the engine run unloaded for a few noisy seconds.

Setting aside the fact that Lee confused torque with power (as he did force and power throughout his spiel), let us do a back of the envelope calculation of the torque we might expect from his engine, considering only a single cylinder. The gas in a CO₂ bottle at room temperature (20°C) consists of liquid and gaseous CO₂ at a pressure of about 830 PSI. If the piston diameter is 3.4 inches, its cross section area is 9.1 square inches. A pressure of 830 PSI on this piston would result in a force of 7536 pounds. If the stroke length is about 4.1 inches, then the torque (when the crankshaft arm is at 90°) is around 1287 foot-pounds. No wonder the wrench was destroyed!

Of course, this is irrelevant to the question of how much power Lee could generate using a Freon-based heat engine -- even a "Fisher Engine." It was just a flashy demonstration to impress his audience.

While in prison, Lee claims to have developed a "Hot Box," a cylinder about 4 inches in diameter and 18 inches long (and thus with a volume of about 226 cubic inches), which can store 200,000 BTU and which can be used to power automobiles, etc. He claims to be working on a new liquid with a "super-high heat capacity of

2,000,000 BTU per pound."

One BTU (British Thermal Unit) is the amount of heat needed to raise the temperature of 1 pound of water by 1°F (1 BTU is equivalent to about 1054 Joules, or 1.054 Kilowatt-seconds). Now, the density of water is equivalent to about 1 pound per 27.7 cubic inches. Thus, water in the Hot Box volume of 226 cu.in. would weigh about 8.16 pounds. 200,000 BTU in 8.16 pounds of water corresponds to a temperature of 24,700°F (or 13,600°C) -- hot water, indeed! (Tungsten boils at 5,927°C and quartz at 2230°C.) Filling the "Hot Box" with any other material, such as sand, would correspond to even higher temperatures.

The bottom line: Speaking through Mike, an assistant, Lee says that BWT has set aside five dealerships for each of the stops on his national tour, and that such dealerships are trading for \$10,000. Interested persons were invited to sign up for more information at the end of his show. After the show, at least a dozen people were crowded around the BWT sign-up table. Barnum was right!

What makes Lee's pitch so persuasive that some people swallow all this hokum?

In addition to Lee's two flyers, three other items were distributed at the show: (1) The Free American a 28-page tabloid-size "Patriot" newspaper published in Tijeras, New Mexico; (2) A flyer announcing a workshop on "Common Law Living Trusts" and "How to beat the Income Tax system;" and (3) A flyer announcing a talk on "CIA mind control experiments" and "the true goals of the New World Order." These materials appeal to persons who have a deep distrust of government, international organizations, scientists, bankers, oil companies, power companies, the news

media, etc. Conservative radio personality Rush Limbaugh classifies these people as "Kooks." They tend to believe in international conspiracies, UFO coverups, mind control plots, etc. Judging from audience response, perhaps some 10 to 20 percent of the attenders were such people -- and it was to them that Lee targeted his pitch.

Lee's spiel had the feeling of a revival meeting; four non-stop hours in a hot, packed room, with his voice booming from the loudspeakers, and no break for audience questions. His audience, immersed in Lee's torrent of words, had no time to think, only to applaud.

Early on, Lee said that he had been imprisoned without a trial and this, coupled with his boast that he had no technical training, made him appear to be just another "good ol' boy" fighting an oppressive bureaucracy. He said he came from a "non-rich background" and was amazed to find himself worth \$50,000,000 (apparently before he went to prison) -- a "good ol' boy" who made good.

He asserted that the Government had developed the "World's Most Efficient Engine" for \$30,000,000, found that they "couldn't break it," and presumably suppressed it.

He claimed that he and his technical advisors received death threats from the Sheriff just before his trial (that he didn't have?), and that his advisors vanished (at least for a while). He claimed that he had "proved in a Court of Law that we can make free electricity" and that the fraud charges against him were dismissed. (Yet he served two years.)

He railed against the power companies, the banks, the "smokestack economy," the "Illuminati," and the "New

World Order," and claimed that he had "options from God." His target audience ate it up.

He derided the ozone holes, said that CFC's are heavier than air, questioned how ozone is made, asked how many refrigerators there are at the North Pole, claimed ozone doesn't block the ultraviolet rays that cause cancer, and said that -- anyway -- there isn't direct light from the sun at the poles! He claimed the ozone holes have always been there and were discovered around 1900. He suggested that the current interest in the ozone holes is a reaction to his work using Freon in his energy machines. He also claimed that DuPont's patent on Freon has expired and that that is the real reason for reports on the ozone holes and for developing alternative refrigerants. And his target audience cheered.

The show was a learning experience -- but not of new technology, but rather the old hokum of a snake oil salesman.

Thanks to John Geohegan, who also attended the show, for his technical advice in preparing this report, and to John and Dave Thomas for editorial suggestions.

MAGNETIC WATER TREATMENT

By John Geohegan

Bill Meikle has suggested investigation of a locally advertised magnetic water treatment device. Here is what I have found: the device is the GMX Magnetic Fluid Conditioner, manufactured by GMX Corporation in Chino, California. In its smallest version it consists of two permanent magnets mounted to cause a magnetic flux through the copper inlet pipe of a home water heater. GMX claims the following benefits, among others: prevention of scale build-up on the inside of pipes and other surfaces, removal of existing

build-ups, improved water flow, increased water heater and appliance efficiency, reduced water spotting on dishes and glasses. If used instead on gas and diesel engines, GMX claims that fuel conditioners “fracture” the hydrocarbon chains causing more complete burning, greater fuel efficiency, and reduction of harmful emissions. All conditioners come with a 90 day money-back guarantee. I was skeptical of the idea of treating water magnetically and requested technical information from the local distributor, who has been very cooperative. I found additional articles at UNM's Science and Engineering library. GMX takes the position that magnetic water conditioning increases the capacity of the water to hold calcium and magnesium salts in solution and thus prevents any scale build-up. GMX claims both that water molecules are aligned and that calcium molecules are rearranged to stay in suspension. For the most part, their claims follow those of Elliott Raisen, PhD, in Paper 117 of *Corrosion 84*, presented at a New Orleans conference in April of 1984. Raisen claims that “magnetohydrodynamics” increases the surface energy and solubility of solids in the water, but does not discuss altering the structure of the water. He does not discuss the sizes or arrangements of the permanent magnets used in the various installations he describes as effective. In contrast with the GMX rationale, other papers describe a reduction of solubility causing precipitation in the water itself instead of on boiler walls, forming a soft sludge which is easily removed. The most convincing paper I found was published in *Water Research*, Vol. 29, No. 3, pp. 993-940 (1995), describing an experiment performed at McGill University using a nuclear magnetic resonance spectrometer to treat

saturated solutions of calcium sulfate in water. The conclusion was that the results were consistent with claims of inducing precipitation of inorganic crystals and possibly preventing scaling. As to whether homeowners should invest in magnetic devices, most of the clues I found were in statements such as “the jury is still out,” “evidence remains elusive and hard to evaluate,” and “unbacked by adequate development requirements and unsupported by essential characterizing data.” An article in *Consumer Reports*, Feb. 1996, titled “Magnets that don't do much to soften water” describes a two-year test on two electric water heaters installed in one house, one with magnetic treatment and one without. The magnetic device was ineffective. Skeptics will probably wait for stronger evidence before spending \$600 to have these devices in their homes.

TV WATCH: PUBLIC DISSERVICE ANNOUNCEMENTS

“MYSTERIOUS ORIGINS OF MAN”

By Dave Thomas



Quality science was nowhere to be found during the Feb. 25th, 1996 NBC broadcast entitled “The Mysterious Origins of Man.” This show, hosted by Charlton Heston, was filled with some of the most aggressive anti-science propaganda seen since CBS’ “Ancient Mysteries of the Bible” was aired a couple of years ago. The executive producers of “Origins” for BCVideo were

Michael H. Gerber and Robert Watts. It was directed by Bill Cote, produced by John Cheshire, Bill Cote, and Carol Cote, and written by John Cheshire and Bill Cote.

The show did not include comments from even one token “reputable scientist.” Instead, Heston would state the conventional wisdom, and then let the “scientists” interviewed for the show present their fantastic claims unchallenged. The first such “experts” who testified were Michael Cremo and Dr. Richard Thompson, authors of Forbidden Archaeology. They claimed that “Humans of modern anatomical type have been existing for *many many* millions of years into the past,” denying the current consensus that modern man appeared less than a tenth of a million years ago. “Anomalous” cases, such as the alleged 55-million-year-old tools found in Table Mountain in the 1880s by J. D. Whitney, or the supposed 250,000-year-old artifacts found by Virginia Steen-McCintyre in Mexico a couple of decades ago, were discussed. Thompson then declared that the resistance of

mainstream science to these findings is not a “deliberate conspiracy,” but an “*automatic rejection*” by almost all scientists of any evidence that doesn't conform to existing theories. He stated that this routine “hiding” of anomalous results prevents science from progressing. If the assertion that scientists ignore all unusual or contrary data is true, then indeed, science would not progress. My question is: if this is the case, how can Thompson explain the fact that science *has* progressed, especially in the last century? Many new ideas have come along to upset existing paradigms - relativity, quantum mechanics, continental drift, and punctuated equilibrium, to name a few. Thompson's argument that scientists have ingrained antipathy to new or controversial ideas is clearly specious.

The next segment featured Carl Baugh, who talked about the supposed human footprints found alongside dinosaur tracks at the Paluxy River near Glen Rose, Texas. The voice-over introduced him as “archaeologist Carl Baugh,” but the on-screen title referred to him as “anthropologist

Carl Baugh.” In real life, however, Baugh is best known as “*Reverend* Carl Baugh.” Baugh claimed some of the Paluxy trackways include “16-inch human footprints, 12 in a series, alternating left-right-left-right, the right distance apart...” No mention was made of the painstaking research performed by Glen Kuban, Ronnie Hastings, Laurie Godfrey and others a decade ago, which showed conclusively that these trackways are made by *dinosaurs*. When mud fills in the toes of a fresh tridactyl dinosaur print, the resultant track can look similar to a human's. Some of the alleged “human” prints belong in the same left-right series as obvious dinosaur tracks. Kuban and associates also found color indications of dinosaur toes in tracks which were supposedly human. At least these tracks are not obvious fakes, unlike Baugh's next bit of supposedly “most compelling evidence” which was discussed - the Burdick Print. This and similar prints first appeared in the 1930s. They are clearly suspect - the features (toes, heel, etc.) are abnormally shaped,

and much too well delineated. The Burdick print looks nothing like a real imprint of a foot in the mud, and bears little resemblance to human anatomy (even for a supposed “giant”). However, “expert” Dr. Dale Peterson, M.D. assured the audience that the print was “clearly human.” Geologist Don Patton pointed to subsurface contours in a cross-section through the print as evidence that the features were not carved. Next up was a supposed “fossil finger,” with smooth skin-covered flesh “preserved intact,” and with what resembles a fingernail. Peterson pointed to images of finger bones and joints in a CAT scan of the “finger.” However, the “bones” were not clearly distinct - rather, they simply looked like a progressive darkening of the scan in thicker portions of the specimen. Some grooved spherical nodules, from the pre-Cambrian (2.8 billion years old), were also touted as evidence of human artifacts.

Author David Hatcher Childress then claimed that geological time scales are wrong by several orders of magnitude, and that dinosaurs may still be

alive today. He showed a photograph of a supposed “plesiosaur carcass” dredged up on a Japanese fishing boat; Heston condescendingly noted that “Skeptics claim it's the body of a decomposing shark.” [It probably *is*.]

Heston's next target was Charles Darwin himself. Richard Milton, author of Shattering the Myths of Darwinism, stated that not one “missing link” supporting the common ancestry of man and apes has ever been found. Milton stated that “Lucy” is just an ape; he made no mention of the fact that Lucy's teeth are more human-like than ape-like. A cartoon of a tree, with Man on the top branches, and Apes below, was shown; as the animated branch broke, Heston declared “So far, conclusive evidence of a missing link has not been found.” Milton went on to say that the lack of a ape-human missing link was sufficient to topple the entire edifice of evolution. No consideration was given to the tremendous amount of data that support evolution in non-primate species (fossils, comparative anatomy, molecular structures,

etc.).

In the last half of the show, Neil Steede argued that the perfect fit of stones in Incan monuments indicated a high culture, and that the present-day “misalignment” of solstice markers can only be explained if the monuments are over 12 thousand years old. He based this conjecture on a 41,000-year, half-degree wobble of the Earth's axis (which turns out to be a real phenomenon). Graham Hancock, author of Fingerprints of the Gods, cited similarities in the megalithic cultures of Mexico, South America, and Egypt, and then claimed that these prove the common influence of a third, “unidentified” culture. Robert Banval employed more vague astronomical alignments to “prove” that the Sphinx was built 12,000 years ago. Hancock continued with a discussion of “crustal displacement.” Unlike continental drift, crustal displacement (developed by a Professor Hapgood) involves a radical motion of the Earth's entire outer crust. Hancock and others put forth the idea that 12,500 years ago, Antarctica was not at the South Pole, but in a moderate

latitude, and that Atlantis was located there. When too much ice built up on the poles of that “era,” the entire crust slid around, suddenly moving Atlantis/Antarctica to its present cold location. No evidence supporting this fantastic claim was presented, and no one bothered to mention that readily available data clearly refute this hypothesis. For example, most climatologists agree that the Antarctic ice shelf is a stable feature that has been around for 14 million years, and the Vostok ice core from Antarctica was carefully dated back to at least 150,000 years ago by a variety of independent methods. Heston concluded the show by stating that “It's been said that man has made the climb from Stone Age to civilization more than once, and that our present time is just the latest in this cycle.”

Ironically, scientists are not the only ones fuming over “Origins.” Arch-creationist Ken Ham slammed the production in the Feb. ‘96 “Answers in Genesis” newsletter. In a review entitled “*Hollywood's ‘Moses’ Undermines Genesis,*” Ham attacked fellow creationist Carl

Baugh's ‘manprints,’ stating that “*According to leading creationist researchers, this evidence is open to much debate and needs much more intensive research. One wonders how much of the information in the program can really be trusted!*” Then Ham noted that the book Forbidden Archaeology “...*is dedicated to ‘His Divine Grace -- A. C. Bhaktivedanta Swami Prabhupada.’ It appears the authors are Hare Krishna adherents!...Everything cycling continuously over millions of years fits well with Krishna philosophy! That seems to be what this program is all about!*”

Ken Ham is right to note that the teachings of Hare Krishna are not a basis of good science. It seems quite unlikely that he will ever realize that his peculiar brand of fundamentalist Biblical inerrancy is similarly flawed. In the meantime, NBC has sunk to a new low in this latest promotion of pseudoscientific claptrap. I encourage anyone who doesn't appreciate NBC's latest assault on science to respond by calling the complaint number (212-664-2333), or by writing Bob Wright at Bob.Wright@nbc.com

NBC New York, 30 Rockefeller Plaza, New York, NY 10112, or by writing the NBC staffer who actually *purchased* the show: Todd Schwartz, 3000 W. Alameda, Burbank, CA 91523.

Prophecies III

By Mark Boslough

On Wednesday, Feb. 28, I wrote a letter to NBC bemoaning their recent broadcast of the anti-science show "The Mysterious Origins of Man." That very night, I turned on the TV set at eight o'clock hoping to find some news about the ongoing battle for the Republican nomination. A show was just starting--on NBC--that appeared to be about geophysics. "Great" I thought, "at least they still have SOME science on TV."

David McCallum ("The Man from U.N.C.L.E") was the narrator. When I first tuned in, he was saying in a dramatic style that only actors with English accents can muster: "It circles the Pacific Ocean... and when the time is right it may unleash earthquakes and volcanos such as the Earth has never seen. One man may hold the key as to when this ring may ignite. Gordon-Michael Scallion has a special interest in the ring of

fire."

I've come to expect this kind of hyperbole from even the best network programming, so I settled back to watch. As McCallum spoke, images of spectacular volcanic eruptions and excellent animations were shown.

But it wasn't long before my "B.S. alarm" went off. "Scallion is considered by many to be one of the world's leading futurists," continued the narrator. It turns out that NBC's definition of a futurist is someone who has E.S.P.--someone who is capable of precognition. But NBC didn't want to use such mundane terms, so for this show the predictive capabilities were called "visions" and "prophecies."

Scallion claims to have predicted the Kobe earthquake six months in advance (the guilt of having neglected to warn all those people must weigh heavily on him, but was not addressed by the program). He says that after recovering from some health crisis, he began to see auras around people, and he started having visions about the ring of fire. First he made a pretty safe forecast: "The ring of fire is highly

active now, and I predict that it will continue throughout the '90's."

At that point I would normally quit watching such a program, but there was a switch from pseudoscience back to science. McCallum introduced UCLA geologist John Davidson by explaining, "both futurists and scientists believe tremendous heat is accumulating beneath the ring." Davidson continued the thought, in an almost seamless transition: "the heat needs to leave the earth and as a result the interior of the earth is actually convecting..."

This was when I realized how insidious the process of taping pseudodocumentaries has become. The producers of the program "New Visions of the Future: Prophecies III," clearly went out of their way to give this show the look and feel of a serious science documentary. As the narrator continued to explain how the heat within the earth causes earthquakes, more nice graphics were shown, along with images of field geologists at work, helicorders (round drums) recording earthquakes, and dramatic footage of the 1989

Loma Prieta event. John Davidson's shock of gray hair, his English accent, and careful lighting certainly gave him an air of authority. The producers took full advantage of that authority and bestowed it onto the futurist Scallion.

"Earthquakes have just turned out to be--by and large--unpredictable," continued Davidson. Unless, of course, you are a futurist! Cut to Scallion, who explains that magma has been displaced and is bulging because of the weight of ice at the poles, and is causing the Earth's spin to be out of balance. We're a washing machine that is shaking and shaking, and that loud buzzer is about to go off!

When it does, according to Scallion, California will break at its weakest point, and part of it will slide off into the ocean. The rest will settle down, but it will set off a "worldwide domino effect" that will resonate around the globe, "all the way to New England."

"We're not prepared on the east coast for what I see coming," says Scallion. What degree of damage could an east coast

earthquake cause? On queue, bearded, spectacled, archetypal scientist Prof. John Ebel of Boston College, who “has spent countless hours searching for an answer to this difficult question” comes on-screen with a statement that sounds as if it directly supports the prescient futurist: “a study in 1990 for the Massachusetts civil defense agency suggested that if a magnitude 6.2 earthquake were to occur off Cape Ann, Massachusetts today, it would cause between \$2 and 10 billion worth of damage in the greater Boston area.”

The segment of the show wraps up with Scallion telling viewers that his visions have shown that ice ages were caused by a shift in magnetic fields. The Bible, he says, predicts three days of darkness, which his visions tell him will result from volcanism. The resurrection of the lost land of Atlantis will rise from an area around Virginia and the Bahamas, and it will be a better, reborn world with renewal for all. Apparently, Scallion was unaware of research presented three nights earlier on NBC's “Mysterious Origins of Man” showing that

Atlantis is underneath Antarctica!

After the show, the biggest question on my mind was: how do the producers of such crap get real, legitimate scientists to agree to be interviewed? I sent e-mail to Ebel (with whom I had attended grad. school) and Davidson to find out.

Here are John Ebel's comments:

“All I knew was the name of the show ‘Ancient Prophecies’ when I did the interview. As I had never seen the show, I didn't know the content, style or emphasis. However, just from the title I guessed that it must be something of a potboiler sort of thing.

The interview was fairly straightforward. They asked all the usual questions and I have all my usual answers. They indicated that I was the ‘expert’ for this segment of the show. I do not recall any mention of Scallion, although it is possible that they asked me about him. Naturally, I would have told them his theories were crap if they had explained to me what he would say.

I did my interview about a year ago. They thought they would run the show in the fall. In fact, they ran it in Feb., which is

ratings month for the network. They want their ratings as high as possible during Feb. because those ratings are used to set their advertising rates for the year. They ran the show opposite the Grammy awards, so I expect they felt they had to make their show 'attractive' to steal viewers from whatever network was running the Grammy awards.

I agree with you about the damage a show like this does. I am used to dealing with reporters and the deceptions some engage in, so I am always very careful with what I say on camera to minimize the chance that they can take something out of context and make me appear like I was saying something I really did not intend to say. I succeeded in that their quote from me (as usual, one sentence from about 1 hour of taping) was accurate and the sentence itself was not distorted by editorial cuts.

You are correct that the big problem was the material surrounding mine and the implications it clearly tried to leave. It does appear to give Scallion credibility. I don't know if they taped me before or after

Scallion, but I would guess they did Scallion after me so that they could be sure his words fit mine.

I'm not sure how to deal with these situations. From my experience, though, I do think there is one thing we scientists *MUST* do. We need to keep our science open, visible and *UNDERSTANDABLE* to the average person. Too many of us consider the types of books that Bruce Bolt writes to be a waste of time. We think it is much more important to write *JGR* and *BSSA* articles. While that is great our scientific reputation, it doesn't help us one iota to get our work into the mind of the *John Q. Public*. We earth scientists really need to produce a greater quantity of highly accurate general literature to educate the public at large. NBC would not be able to get away with shows like that if the average person were educated as to what the truth was. This is a problem that I think we earth scientists have to face."

And from John Davidson:

"I haven't actually seen the show, so am unable to comment on how 'out of context' it was. I

wasn't really filled in too much on what the show was about, but knowing the sort of thing it was likely to be (as you say "awful") my main reason for agreeing to an interview was to try and provide balance.

I am always worried that such shows try to suggest links between earthquakes and weather, or volcanoes in Japan vs. earthquakes in Los Angeles, or predictions that Los Angeles is going to fall into the sea!

We are also being told in strong terms to 'get out into the public and make our case' on the basis that taxpayer money (State, NSF) is going to be harder and harder to get. So I guess my approach echoes what you stated in your letter to NBC. It seemed that I had an opportunity to provide a realistic insight on the sort of garbage they were likely to be showing, but of course one always risks the twisting of editors and the dangers of proper context.

Other than demanding to approve of the final show format and the way we are presented (which they will not agree to) I'm not sure what we can do. The alternative is to boycott them

which leaves us equally open to criticism."

I'm not sure a boycott of NBC by scientists is such a bad idea. When a network goes out of its way to manipulate us, present our words out of context, and drag us through the mud, why should we grant interviews, send press releases or let them make money by broadcasting our videos? I'm beginning to think we should not, and we should tell them why.

DEEPAK CHOPRA

By John Geohegan

Sad to say, two of the top ten non-fiction books in a recent Sunday paper are by Deepak Chopra. He's the one who tells us there is no objective world independent of the observer. If that were true, it would mean that our last speaker, Alan Hale, didn't discover Comet Hale-Bopp, he created it! Our local PBS station serves the public poorly by playing hour after hour of Chopra's anti-science.

CREATIONIST LESSON AT APS: NOT!

By Mark Boslough

An Albuquerque Public

Schools (APS) elementary school science teacher is teaching a unit on the origins of life. He teaches evolution and the scientifically-accepted geologic time scale. He decides that, to be fair, he should also show a videotape showing the creationist version of the origin of life. He recognizes that this is a controversial subject, so he sends out permission slips for parents of his 125 fifth-grade students to sign. One of the students' parents tells a friend who tells a local scientist, who strongly objects and calls the school on the morning the videotape is to be shown. The principal refuses to put a stop to the creationism lesson. She cites the school district's approval of comparative religion classes in high school as evidence that religious discussions are acceptable.

The scientist calls the ACLU and the local newspaper and television stations. The videotape is shown to the children and the district is hit with a lawsuit. The science teacher and the principal both get into hot water, and the district spends precious time and resources on the resulting legal problems. Angry parents on both

sides of the issue are quoted on TV and in a front-page newspaper story. The scientist and his friends celebrate their victory with beer, high-fives, and "in-your-face" testosterone-inspired statements to the press.

Question: Who is the winner? Are the teacher and principal going to be predisposed to good science education or merely to staying out of trouble? Are parents who dislike the ACLU going to have a high opinion of scientists? Is the school district going to consider scientists to be allies or adversaries? Will the students be rewarded with better science lessons in the classroom?

The first paragraph describes what happened last month, but (fortunately) the events of the second paragraph never transpired. After I (the scientist) spoke to the principal, I called the National Center for Science Education (NCSE) hotline at 1-800-290-6006. I faxed to the school a page of NCSE information, an Albuquerque Tribune article about a Santa Fe teacher who got in trouble for showing creationist films last year, and Dave Thomas' "the Trouble with Creationism"

op. ed. piece. Eugenie Scott and Molleen Matsumura of NCSE responded by e-mailing me information on court cases and the legal foundation for banning creationism in public schools. I promptly forwarded these messages to the school. Later that afternoon, I received the following fax from the school principal on APS letterhead:

“Dear Mr. Boslough:

As per our conversation this morning, we postponed the viewing of the creationist film. After reviewing your fax regarding the Supreme Court decision Edwards v. Aguillard, we have canceled showing the film. I appreciate your information on this subject.”

On receiving the letter I felt as if we had just won a small battle. After some reflection I realized that from the teacher's and principal's perspective I might be seen as nothing more than a meddlesome anti-religion civil liberties activist. If true, my small victory might do absolutely nothing to help win the war against anti-science creationism.

That thought prompted me to write a letter to the principal

explaining that my purpose was to preserve excellence in science education, not to keep religion out of school. I offered to sit down with the science teacher to help him understand the issues, and to come to the school and talk about the comet impact on Jupiter, or the killer asteroid impact on Earth, or some other subject related to my research that the kids would like.

A couple weeks later I was invited to the school, where I spent the day explaining to the children how scientists go about figuring things out, what it is like to be a scientist, and that you don't have to be a scientist to think scientifically. It was obvious that the teacher cares about science education; the kids are enthusiastically raising a pair of hedgehogs, hamsters, a boa constrictor, an iguana, a ferret, a tarantula, and gerbils (which they feed to the snake). They are even growing tomato plants from seeds that have been in orbit aboard the space shuttle.

I made friends with the teacher. He graciously accepted a copies of the current *Skeptical Inquirer* and the book Voices for Evolution, which has dozens of

position statements supporting evolution from scientific, educational, and religious organizations, as well as legal references.

That evening I got a call from a parent who said that her child really enjoyed the lesson. The mother put her girl on the line so that she could thank me herself. That was much better than being on the front page of the newspaper.

I believe that there were a lot

of winners in this case: the school district, the principal, the teacher, the students, and science education. The only losers were the anti-science "creation scientists." To them I don't mind saying "In your face!"

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Thanks to: Mark Boslough, John Geohegan, and Harry Murphy for articles and commentary.

NMSR REPORTS

**March Meeting:
A Forum on
"Creationism in New
Mexico"
Wednesday, Mar. 13
7:00 PM**

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P.O. Box 1017, Peralta, NM 87042-1017**

- February Meeting - Alan Hale
- "Greatest Energy Show" -
- Special Report by Harry Murphy
- "Magnetic Water Treatment" -
- John Geohegan
- "Mysterious Origins of Man" -
- Dave Thomas
- "Prophecies III" - Mark Boslough
- "Deepak Chopra" - John
- Geohegan
- "Creationism Lesson - Not" -
- Mark Boslough

