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Georgia Skeptics is a non-profit local group which shares a common philosophy with the national organization CSICOP (Committee for the Scientific Investigation of Claims of the Paranormal), and seeks to promote critical thinking and scientific inquiry as the most reliable means to gather knowledge of the world and universe. Like CSICOP, Georgia Skeptics encourages the investigation of paranormal and fringe-science claims from a responsible, scientific point of view, and helps disseminate the results of such inquiries.

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Joining the Georgia Skeptics organization is encouraged because membership dues help us to disseminate the results of skeptical inquiries to the public and to hold educational events. Yearly dues are \$17.50 for individual memberships, \$21.00 for families, and \$12.50 for full time students.

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MEETING ANNOUNCEMENT

Sunday, May 15: VISIONS OF THE VIRGIN MARY

Dr. William Evans will discuss the Marian apparitions in Conyers, Georgia. Up to 100,000 people attend this event each month. The talk will include the history of Marian apparitions, reasons for their appeal, media coverage of apparitions and explanations of common miraculous claims.

Dr. Evans is an assistant professor in the Department of Literature, Communications, and Culture at the Georgia Institute of Technology. His research specialization includes media coverage of pseudo-science and paranormal claims. He is a Georgia Skeptics Technical Advisor, and Director of the Media Watch project.

Meetings of Georgia Skeptics are held at the Steak and Ale Restaurant on Northlake Parkway in NE Atlanta, beginning at 4:30 p.m. Dinner follows and is optional, but is encouraged to support the restaurant for providing meeting facilities.

CRASH OF THE COMET FORETOLD?

by Ron Butler

One of the most remarkable cases of either psychic precognition or coincidence involves an 1898 short novel titled *_Futility_*. In it, the well-known (at the time) sea-story writer Morgan Robertson told the tale of the 800-foot-long transatlantic liner Titan, which strikes an iceberg in fog one April night and sinks with great loss of life.

THE WRECK OF THE TITANIC FORETOLD?

Aside from the bare circumstances of the narrative, Robertson's fictional Titan matched the real Titanic's specifications remarkably well - in length, speed, passenger capacity, and number of lifeboats. Proponents of the paranormal have cited *_Futility_* as an example of foreknowledge of a great event.

Martin Gardner, in his book *The Wreck of the _Titanic Foretold?_*, considered Robertson's book and other "foreshadowings" of the Titanic disaster, and concluded that Titan matched the real Titanic so well simply because the writer knew the shipping business and how to tell a gripping story. As for the circumstances of the disaster - how else could a writer, for the purposes of his plot, quickly sink an "unsinkable" ocean liner than by negligently running it against an iceberg in the night?

THE CRASH OF THE COMET FORETOLD?

Though *_Futility_* stands as the most arresting case of literary "foreknowledge," I recently came across another example, this one involving aviation.

In 1948, novelist Nevil Shute (who would later write *_On the Beach_* and *_A Town Like Alice_*), published *_No Highway_*. The plot revolves around a new British airliner type, the Rutland Reindeer, the flagship of British transatlantic service. A scientist at the Royal Aircraft Establishment discovers that the

Reindeer is prone to metal fatigue (cracking of the airframe caused by repeated stress) and that fatigue has already caused one fatal crash. Flying to investigate the wreckage, he finds that the airplane he is crossing the Atlantic in - another Reindeer - is also on the point of failure. To prevent it from flying on from an intermediate stop, he pulls the landing gear out from under the airplane, disabling it.

The next year, 1949, Britain's de Havilland company introduced a new jet airliner, the Comet. After a period of highly successful service, in 1954 there were two fatal and mysterious Comet crashes and the type was grounded. Following lengthy investigation, engineers and scientists found that the Comet suffered from metal fatigue and that this had caused the crashes.

The incident is of some significance since, during the four years in which the Comet was first grounded and then undergoing redesign, the American Boeing and Douglas companies introduced their 707 and DC-8 jetliners, establishing an American Comet dominance of the world jetliner market that continues until today. If de Havilland's Mark I Comets had not been flawed, the equipment flown by today's airlines might be rather different.

HITS AND MISSES

If we look beyond the "Ripley's Believe It or Not" type summary above, how well does the coincidence between the Reindeer and the Comet hold up? Do the airplanes' specifications compare as well as Titan's do to Titanic's? How much of Shute's accident scenario is reasonable extrapolation and how much defies rational explanation?

Alas, the specifications for Shute's Reindeer are not quite so close to the Comet's as Robertson's Titan was to Titanic. A close reading of No Highway (and some judicious extrapolation) allows a comparison between the Reindeer and the Comet (See Table).

	Reindeer	Comet
Length	about 100 feet	93 feet
Max take-off Weight	144,000 lb	105,000 lb
Engines	6 piston engines	4 D.H. Ghost turbojets
Cruising speed	about 315 mph	490 mph

The Reindeer is a realistic if rather conservative extrapolation of what a near-future transatlantic airliner would look like from the vantage of 1946 or 1947, when the novel was written.

It should be: Nevil Shute's real name was Nevil S. Norway and he was, until the outbreak of the Second World War, a fairly prominent working aeronautical engineer in Britain. He had been deeply involved in the construction of the R-100 dirigible, and was a founder of Airspeed, Ltd., a middling-sized aircraft manufacturing company. If the details of the Reindeer ring true, it is because it was conceived by a man whose business was designing airplanes.

Shute settled on metal fatigue as the means of bringing down his ill-fated airliner in much the same way Robertson settled on an iceberg. Fatigue can cause sudden, catastrophic failure of an airplane's structure, but up to the moment of failure the signs of fatigue can be subtle and easily overlooked. It was perfect for Shute's plot requirements.

While metal fatigue has been known since the nineteenth century, it became a "hot" topic in aeronautical engineering circles only after the Second World War, due to the introduction in the 1930's of all-metal airframes and to the tremendous amount of experience the war provided in operating transport aircraft in just the sort of conditions that give rise to fatigue. The real surprise is that the designers of the Comet, in these circumstances, paid so little attention to the matter. Other manufacturers, designing less radical aircraft at the same time, paid judicious attention to fatigue and avoided de Havilland's problems.

It is worth noting the number of times characters in the novel start out speeches with a phrase similar to, "I've been in this business XX years, and--", then proceed to deliver an "expert opinion" that is dead wrong. Shute grasped that the Second World War had changed the sleepy, slow-moving airplane manufacturing business into an industrial giant notable for its constantly accelerating rate of technical innovation--innovation that could draw the unwary and complacent into disaster. He did not have to wait fourteen years to see that "prophecy" fulfilled. The quality that most struck me in comparing Shute's novel and the actual Comet affair was the way reality surpassed fiction in almost every way: There were two real-world Comet crashes instead of the single Reindeer crash. The Comets were destroyed almost instantaneously by the violent rupture of their fuselages under pressure, as opposed to the Reindeer's relatively innocuous loss of a tailplane. And the Comet debacle had far-reaching effects on the American and British aviation industries, in contrast to the "quick fix" for the Reindeer's flaws in the last pages of the novel. If Shute had a vision of the future, he must have toned it down considerably to make a believable fiction from it.

REMEMBERING IT BETTER

When I first noticed the coincidence of the fictional Reindeer and the real-world Comet, it had been many years since I had

read No Highway. In re-reading the novel, I found I had remembered the match as better than it actually was, a not uncommon phenomenon when dealing with striking coincidences.

The major difference was that I had "remembered" the Reindeer as having turboprop engines, that is, propellers driven by gas turbines. The turboprop is a halfway step between piston engines and turbojets, and was, according to the conventional wisdom of aeronautical engineers c. 1948, the powerplant of choice for future long-range airliners. Turbojets of the day were considered to have uneconomically high fuel consumption, so it was a startling innovation when de Havilland leaped straight from propellers to jets. Shute, in any event, had not even equipped his Reindeer with turboprops, though I had remembered it so.

Second, I had "remembered" two tailplane failures in No Highway, instead of the one actually to be found there. In thinking back, I realized that it was the Jimmy Stewart/Marlene Dietrich movie made from the novel that featured two failures. One was of a Reindeer tail set up to be tested to destruction, though, so not even the movies live up to garish reality in this case!

POINTS ON A GRAPH

No Highway is a useful datum point on the spectrum between everyday coincidences that no one remarks on and startling, complex coincidences like Futility that almost beg to be explained by paranormal means. Shute's novel falls somewhere in between. The author erred on the side of conservatism in designing his doomed vehicle, but did well in identifying metal fatigue as a looming problem for aircraft designers. Now, if only there was a startling similarity of names to cap off this case, like Titanic/Titan . . .

But of course! Didn't Santa Claus have a Reindeer named Comet?

SOURCES:

Gardner, Martin, ed., The Wreck of the Titanic Foretold?, Prometheus Books, 0-87975-144-4

Gunston, William, Plane Speaking, Patrick Stephens Limited, 1-85260-166-3

Shute, Nevil, No Highway, Queens House

Shute, Nevil, Slide Rule, Morrow/Ballantine, 345-02991-7-095

Aircraft Archive, Postwar Jets, Vol. 3, Argus Books, 0-85242-967-3

ACKNOWLEDGEMENT:

Thanks to James D. Young II for additional information on the de Havilland Comet

Ron Butler, a member of Georgia Skeptics, is a Structural Engineer for Delta Airlines. He is a Georgia Tech graduate, and writes radio theater as a hobby.

PRESIDENT'S CORNER

by Rebecca Long

I wish to apologize to our members for the lateness of the 1994 newsletter issues to date and hope to be caught up by early Fall. Anson Kennedy has volunteered to help out by preparing the Summer issue, which will feature proactive efforts by the Georgia Skeptics to achieve balanced media coverage of paranormal claims.

THE LOSS OF AN EXTRAORDINARY SKEPTIC

Elena Watson, editor of the National Capital Area Skeptics newsletter, "Skeptical Eye", died earlier this year in a fall in her home. She was an extraordinary individual, whose wit, reason, and uncommon way with words helped make the NCAS newsletter one of the very best in the country. I immediately became a fan of her writing when I read her first article in "Skeptical Eye", which is reprinted in this newsletter. Her suggestions on working with the news media have made a lasting contribution to the Georgia Skeptics.

This issue of the "Georgia Skeptic" is dedicated to the memory of Elena M. Watson, and to her many friends in the National Capital Area Skeptics.

RECENT ACTIVITIES

Several members of Georgia Skeptics appeared in the April premier of Channel 5's new "Minute by Minute" program, which addressed the topic of modern miracles. Dr. Joe Nickell, CSICOP Fellow and longtime supporter of Georgia Skeptics, was flown to Atlanta to be interviewed on the show, and suggested that Channel 5 include our group as well. In February, Joe Nickell and I spent two full days in Conyers with the Channel 5 film crew, and I returned with them in March. Bill Evans and Harry Taylor also helped out "on location".

After the February apparition, filming resumed at my home, where Anson Kennedy gave an impressive demonstration of the scientific explanations for the seemingly miraculous Polaroid photos common

at Marian apparition sites, previously documented in the Georgia Skeptic by Dale Heathertington. Anson had the foresight to enlarge a photograph of the Polaroid camera iris to show next to the "Golden Door", making a clear and effective presentation. He also demonstrated how feedback mechanisms within camcorders account for seemingly miraculous video footage of the sun pulsating and changing color.

The TV special also showed scenes of GS member and active amateur astronomer Harry Taylor using my 8" Meade telescope to project a solar image onto a screen. Although it wasn't really brought out on the show, Harry and I used the stationary position of a sunspot group to demonstrate to a sizeable crowd of interested onlookers that the sun did not spin or pulsate. Harry's behind-the-scenes contribution to the day's skeptical sidewalk astronomy also included heroically carrying the extremely heavy telescope at least half a mile from the farthest parking lot to the apparition area.

The show's producer, Catherine Williams, evidenced a marvelous skeptical and inquiring attitude, and an interest in balanced and accurate reporting. She told me that she received good feedback on the Georgia Skeptics portion of the program.

Dr. Nickell's new book Looking for a Miracle is available from Prometheus Press and references investigative work by several Georgia Skeptics.

A CSICOP WORKSHOP IN ATLANTA!

CSICOP will hold a workshop in Atlanta the last weekend in October. The topic of the workshop is skepticism and the news media. Sessions will be taught by CSICOP Fellows Robert Baker and Joe Nickell, science reporter Gene Emory, and GS Technical Advisor William Evans. More information will be provided to GS members. Mark your calendars now!

CONFESSIONS OF A LONE SKEPTIC

by Elena Watson

I live in Norfolk, Virginia, a four-hour drive from our nation's capital. So why do I belong to the National Capital Area Skeptics? For my sanity mostly. There are no Eastern Virginia Area Skeptics, so I find it comforting to know that within my own state there are other open-mindedly skeptical folks, even if they don't live next door.

Not that the Tidewater/Hampton Roads area is some rural backwater, mired in primitive superstition and sorcery. True, some refer to it as Backwater instead of Tidewater, but it's hardly the sticks. From Virginia Beach to Williamsburg, the

area known as Hampton Roads contains a population of nearly 1 million people. We also have a number of colleges, such as William and Mary; NASA-Langley; and the Eastern Virginia Medical School. With all of these educational and scientific institutions nearby, why am I the only person who writes critical letters to the editor when the local newspapers (the _Virginian-Pilot_ and _Ledger-Star_) print stories on the advantages of fire walking or local UFO reports? Is it just that I have too much time on my hands?

Perhaps the reason for this is the same as it would be anywhere else. The claims are seen as trivial ("So what if people think fire walking is going to improve their lives!"); harmless ("Hey, who does it hurt if someone thinks he's seen a flying saucer instead of Venus?") or not worth the effort to investigate. There is often a tendency to assume that people don't really believe that stuff anyway.

The latter attitude was expressed by Jim Raper, managing editor of the _Virginian-Pilot_ and _Ledger-Star_, in regard to astrology columns. Shortly after it was revealed that Nancy Reagan had consulted an astrologer while in the White House, Kerry Sipe, public editor of the _VP/LS_, devoted his weekly column to the issue of horoscopes. Sipe interviewed Paul Kurtz, chairman of CSICOP, and endorsed CSICOP's campaign to include a disclaimer above astrology columns, proclaiming them to have no basis in reliable fact, but to be presented merely for entertainment value. Raper had no disagreement with the disclaimer, but felt there was no need for the _VP/LS_ to run it because "I can't imagine that there are many people who take newspaper horoscopes seriously. It's clearly understood that they are there for entertainment." Sipe commented that he'd like to share Raper's confidence "that people can always distinguish between wisdom and whimsy. But I'm afraid I can't."

Considering that Sipe is the public editor, meaning that he is the person people deal with when they have a complaint or criticism about the content of the paper, this last statement would seem to carry a lot of weight. He has frequent direct communication with the readers, unlike Raper, and thus is a better judge of how well they can discriminate between the plausible and the fantastic. And if he is unsure about the public's ability to critically assess what they read, I'd believe him. And that is kind of scary.

It's not that I consider the public to be stupid. In my view, there are two aspects to the problem. One is that journalists have different criteria for different kinds of stories. Hard news and investigative pieces are expected to have a very high degree of accuracy. Feature stories and human interest pieces are treated more casually, as entertainment. But the difference is not always apparent to readers.

The second aspect of the problem is that often people aren't

sure what to think. They may see science as just something that confuses them. So by default they fall back on their beliefs. It can and does happen to all of us at times. And popular culture is full of assumptions about the paranormal, such as "Well, there must be something to it, or so many people wouldn't be seeing them" (fairies, UFOs, Yeti, etc.); and "Everyone is a little bit psychic."

So what can I, a mild-mannered but skeptically minded housewife with some extra time on my hands, do about any of this? Well, for starters, because I think uncritical articles endorsing wild claims, even in "soft" feature stories, just add to public misconceptions, I usually complain to the public editor - but (and this is the important part) not before doing my homework! This means that I try to research the particular claim first. Then I may call the public editor, but I usually always write him in a detailed, logical manner. I also write letters to the editor for publication, which I try to keep as succinct as possible. But since they have always been printed, I suspect that the Virginian-Pilot prints all letters to the editor that it receives.

Does it do any good? I'd like to think so. And I've managed to have my say and still maintain open lines of communication with the paper. I've even gotten some nice letters back from the public editor. Maybe someday we'll even have an active Backwa - sorry, Tidewater - skeptics group.

The above article was reprinted from Skeptical Eye, the newsletter of the National Capital Area Skeptics, Summer 1991.

THE BIRTH OF BIGFOOT FROM FICTION?

by Hugh Trotti

Despite many claimed sightings and various forms of evidence, it seems there is a possibility that "Bigfoot" appeared out of a book originally, and that the legend is founded in the works of Jonathan Swift, the English satirist. This surprising possibility springs from the fact that Gulliver's Travels was said to be the favorite book of no less a character than Daniel Boone. The significance of that will soon become apparent.

Swift's book has at least three mentions in the new biography of Boone by John Mack Feragher: Daniel Boone: The Life and Legend of an America Pioneer, New York: Henry Holt & Co., 1992. These references are not all listed in the Index, but occur where cited. On annual hunts, Boone

"frequently carried along a copy of the Bible, or a book of

history, which he loved, or *Gulliver's Travels*, his favorite book, to read by the light of the campfire" (pp. 55-56)."

It seems that he would read to his hunting companions from Swift's book, and that at least one place name in Kentucky is inspired by the book instead of being an Indian name:

"Lulbegrud Creek," said to be a distorted form of the fictional capital of Swift's Brobdingnag characters named "Lorbrulgrud" (p.83). On pp. 308-309 of the biography Boone tells what the author calls a "tall tale" of

" . . . killing a ten-foot, hairy giant he called a 'Yahoo.'
The Yahoos were giant beasts in human shape from Boone's favorite book, *Gulliver's Travels*. It was a tall tale that Boone repeated to a number of people during his last year, one such as he would have told in a winter camp."

A good place to check the source is Swift, Jonathan, *Gulliver's Travels: An Authoritative Text; The Correspondence of Swift, Pope's Verses on Gulliver's Travels, Critical Essays*; Second Ed., (Robert A. Greenberg, Ed.), New York; W. W. Norton & Co., 1970. (Based on a 1735 Dublin edition with Swift' revisions of earlier publications; but without an Index.) The place to look for the "Yahoo" is Part IV, pp. 191-260, entitled "A Voyage to the Country of the Houyhnhnms." Swift featured the Yahoos throughout this part of his book dealing with those talking and highly philosophical horse-creatures with the unpronounceable name. Human beings (and Gulliver) seem to have been considered a sort of Yahoo also, perhaps of a slightly more advanced type (see e.g. Swift, pp. 198, 202, 204, 220, 237, 248, 260).

"The hair of both Sexes was of several Colours, brown, red, black and yellow." (p. 193)."

Yahoos could sometimes be found in herds or groups. They were stronger and more agile than people (p. 222). Some were kept by the horse-creatures in stables or kennels, and were their servants (pp. 200, 202, 232). Yahoos climbed high trees, were hairy, and had sharp hooked and pointed claws (p. 193). Yahoo females could be sexually aggressive (pp. 232-233), and had an offensive odor (p. 230); but Gulliver once captures a 3-year-old male with a "smell very rank" (p. 232).

Yahoos don't seem to have been bigger or taller than people; if Boone said he'd killed one ten feet tall the height might have come from him rather than Swift's book.

How plausible is this origin for the more modern Bigfoot? While Daniel Boone (born 1734 - died 1820) may have not had much formal schooling, he apparently had opportunities for being tutored (Faragher pp. 16-17). Specimens of his writing survive. He could well have been able to read, and it is not surprising for him to have a copy of a well-known book of the period. The

portrayal of the hairy "Yahoo" in Gulliver's Travels would also have been known by more people of the time than Daniel Boone alone. And Swift's attacks upon the vices of civilization may have appealed to woodsmen and others on the American frontier, since while children might see Gulliver as a source of adventure, adults could read for amusement and disguised social criticism.

The "Mountain Men" of the far west, fur trappers of an era later than Boone's, were famous for tall tales. There is no real reason why "Bigfoot" cannot have come to life from the pages of Jonathan Swift's book, and made the rounds of the camps of deer hunters and trappers of the frontier. The creature tales based on a literary Yahoo would only have to last a few decades to reach the western furtrappers. It's a short step from the mid 1880's to our own time; such a legend could easily survive until today. Various pranks, hoaxes, and more tall tales would add to the legend, and such a potentially fearsome creature's existence could lend awe and romance to wild areas far from most people's daily lives.

Of course, Boone's biographer may be wrong. There is a slim chance that Boone and others of the early frontier may have encountered creatures long since driven deeper into the wilderness by the advance of settlers and civilization. In that way, Boone's tale could represent actual evidence of a Bigfoot-like animal. But the new biography by Faragher strongly indicates a literary origin, and must not be ignored theoretically since it casts doubt that such a creature even exists.

Hugh Trotti, a Board member of Georgia Skeptics, is a regular contributor to the newsletter. His writings have appeared in such diverse publications as Skeptical Inquirer and FATE magazine. He is the author of the book Beasts and Battles, which attempts to solve some ancient riddles. This book may be ordered from Hugh Trotti, 230 Wilton Dr., Decatur, GA, 30030. (Regularly \$18.95 plus \$2.00 shipping and handling/ \$8.00 for members, including shipping and handling.)

WHO IS JOHN MACK?

by Bufo Calvin

Okay, I've heard all this stuff about aliens abducting people. But how do I know any of it's valid? I wish somebody serious would take a look at it, somebody who knew what they were talking about."

"Like who?"

"Well, first off, I'd want it to be a psychiatrist. It seems like it could be a whole bunch of liars and kooks to me, so that's the first area I'd want covered. Look, I'm not going to take the evaluation of some UFO buff who works in a comic book shop as to whether someone is fantasizing or not."

"Haven't there been some psychiatrists who . . . "

"Yeah, but I don't know any of them. I want a big name, somebody from a known institution or something."

"Like Harvard?"

"Yeah, right . . . like anybody from Harvard'd get involved with UFOs."

"Anything else on the wish list?"

"Uh . . . national reputation. Secure position . . . so money's not a big deal. Um...and while were at it, why not throw in 'award-winning'?"

"How about a Pulitzer?"

"Sure . . . why not? I can dream, can't I?"

Enter Dr. John Mack, an abduction researcher who fits the criteria of the above UFOlogy wish list: He's a Pulitzer-prize winning psychiatrist at Harvard. Dr. Mack's new book, called _Abduction_, hit the bookstores in April amid a flood of publicity. Somewhat like Whitley Strieber, Dr. Mack suggests that UFO abductions are not taking place in what we consider reality.

Dr. Mack is in the top tier of supporters of the "abduction experience", along with Temple University's Dr. David Jacobs, author of _Secret Life_, and Budd Hopkins, author of _Intruders_ and _Missing Time_. But among these and other stars in the field, Dr. Mack clearly has the strongest credentials. As such, he may prove to be especially influential.

Despite his credentials, Dr. Mack's opinions will have difficulty convincing people who are currently skeptical. In what has become known as the Abduction Phenomenon, the question commonly (and properly) asked by skeptics is "What evidence is there?" Dr. Mack's work relies heavily on regressive hypnosis, which is quite controversial, and also on breath work, wherein a subject obtains an altered state through breathing techniques. This is not to say that the answers obtained this way cannot possibly be valid, but they are highly suspect absent objective corroborating evidence.

When John Mack appeared on the Oprah Winfrey show in April, Ms. Winfrey began the show with the following heavily-weighted statement:

"Normally, we would not even put people on television, on our show certainly, who make such bizarre claims..."

While not true about television generally (both Joan Rivers and Vicki Lawrence had done abduction-themed shows within the previous six months), this demonstrates the power of Dr. Mack's credentials to open doors. It was because they were "intrigued by this man" that the producers decided to do an abduction show at all. The show provided many people with the opportunity to see Dr. Mack and hear his views.

Also on the show was "designated Skeptic" Dr. Nicholas Spanos (one of the authors of the recent study on UFO experiencers which appeared in The Journal of Abnormal Psychology). Dr. Spanos stated an opinion which did not credit the physical reality of abductions, but considered a psychological (although not psychopathological) cause.

Oprah's own approach seemed somewhat calculated and reductionist. To Dr. Spanos, she said, "So you do not believe them. You do not believe anything you've heard here today." That was at best an overstatement. Being familiar with Oprah's reputation for empathy, I thought perhaps that the human-suffering side of abduction experiences might be brought out. After all, unless you believe that these people are calculated liars, you should see something sad in at least their belief in this intrusive experience. I didn't pick up on much empathy here.

What points did Dr. Mack make? The primary objective was obviously to legitimize his work. After all, if people consider the subject silly, they really won't care what is said. One tactic was to defend the experiencers: "The people who come to me don't want to believe this"; "This is not a club anybody would want to belong to"; etc. Another one was to counter the charges that it could be some sort of internal event, such as a delusion or fantasy: "The only thing that behaves like that is real experience"; "I've considered all the alternative explanations that Dr. Spanos is talking about, and they don't hold up." These assertions were easy to make, but difficult to justify or even elaborate on in the five-second replies allowed by the talk show format.

A second objective had to do with the implications of the phenomenon: not what it is, but what it means. Interestingly, this is where I sensed Dr. Mack being most impassioned ... particularly when he referred to ecological warnings given to abductees. It seemed as though that issue was more important than the abductions, as though they were a stepping stone to a greater truth. Dr. Mack commented, in response to a quote from

Carl Sagan, that "I think this phenomenon has a chance to break us out of this box that Carl Sagan would keep us in..."

That box is, at least in part, the scientific method. This is an important point, and it is going to largely influence people's evaluations. The way to convince skeptics and traditional scientists is by closely adhering to scientific methodology...offer reproducible experiments and hard physical evidence. According to the "materialist/dualist" viewpoint, things can be clearly delineated: they have a specific state of existence. Tests can be devised to determine the nature of something, and those tests can be repeated by other people with the same results. Dr. Mack suggests that reality may be more fluid than that: "We want to have it one way or the other. It's not that simple."

Dr. Mack was joined on the show by several "experiencers", and their commentary was often revealing. Despite what Dr. Mack had said about people not wanting to belong to this "club", several comments implying a sense of community were made: "I think we've all experienced..."; "Every one of us, what you've heard is, we've all said the same thing."

That last comment was from "Joe", who was particularly expressive in discussing the phenomenon as a whole. He observed, correctly, that "Science is never gonna be happy until they can be there with cameras, with recorders, etc." That sums up one side of the argument. Much of the argument in favor of the reality of the abductions, at least the argument which we heard on the show (they mentioned that they were going to discuss physical evidence, but it only got a line or two) was based on the depth of the emotions and the intuitive sense that the experiencers had. As Joe put it, "The box is in the mind: we're talking about the heart." Indeed.

Whether you think UFOs and abductions are: unproven; unprovable; extraterrestrial; extradimensional; psychological; sociological; mythological; spiritual; or belonging to some other class, you will need to note the publication of Abduction by someone who has gotten where he is by trading within traditional science...and who goes outside of it here. Expect to see publicity on the book and the abduction phenomenon, and don't be surprised if the local angle includes abductees near you!

Bufo Calvin is an author and lecturer on weird events. His writings have appeared in Strange Magazine, Elsewhen, and The Contra Costa Times. He runs TAP (The Address Project) and NEARU (National Events by Area Registry of the Unexplained), and is an organizer of UFOCUS and OPUS (Organization for Paranormal Understanding and Support). He can be reached at P O Box 443, Concord, CA 94522.

KENNETH ARNOLD, FLYING SAUCER MAN

by Bufo Calvin

(sung to the tune of SGT. PEPPER'S LONELY HEART'S CLUB BAND)

Forty-seven years ago today
Kenneth Arnold taught the world to say
"There's a flying saucer in the air"
And it gave the people quite a scare
Now here's another term you know
Today we just say U.F.O.

Kenneth Arnold, Flying Saucer Ma-an!

What's in the sky,
Lighted up, flying by?
Could it be a real alien craft?
Perhaps it's a star, or the lights from a car
Or maybe I'm just going daft...

Oh, it's giving me the ontological bends
Oh, I hate it when a paradigm ends

Could it beeee a delusion?
I just know there's something there
Or an optical illusion?
I'm getting to the point I don't care

Oh, this is one of those long-lasting trends
Mm, I don't know just what message it sends
Message it sennnnnnds!

LOCAL PARAPSYCHOLOGIST TESTIFIES AGAINST PSYCHIC SCAM

United States of America and U.S. Postal Service, Plaintiffs,
vs. Helen Archer and Harold Weingold, Defendant

Imagine you get a letter from Uri Giller. You may recall a Uri Geller, but think you got the spelling wrong when Uri reminds you he is "The Amazing Giller," the psychic who had led "business leaders, movie stars, politicians, and everyday people . . . to accumulate greater wealth." Why is Uri writing you? "Some weeks ago a friend gave me your name. I knew immediately you must be a very special individual. Because just at that moment a crystal-clear psychic vision came to me: (Your name) is in great need of money and without my intervention will pass up 3 once-in-a-lifetime opportunities. In a handwritten note Uri adds, "You have at least \$14,701.00 waiting for you! No tricks. This is for real!" [Editors note: Someone had an

ironic sense of humor to use the appellation "The Amazing" in association with impersonating Uri Geller!]

Uri says he wants to help you find these golden opportunities and is already now doing a "Psychic Future Reading" for you. All he needs is a strand of your hair for a "psychic bridge" and \$20.00 to show you are sincerely interested in his guidance. \$20.00 is a small price for a certain winning that large and you send it along with the hair.

What you probably don't know is that Uri Giller is one of the business names of Helen Archer, a self-proclaimed psychic; that similar letters had been sent to thousands of others; and that your strand of hair ended up in a garbage dump in New Jersey and your \$20.00 in the bank accounts of Ms. Archer and her collaborator, Dr. Harold Weingold.

When the promised winnings did not appear, most people cut their losses but a few complained to the authorities. The letters had been mailed across state borders, so the U.S. Postal Service joined the Department of Justice in a civil suit against Ms. Archer and Dr. Weingold. This was heard in the District Court in Newark, New Jersey, in February 1994.

Because of his work with psychics, Parapsychological Service Institute's Dr. William Roll was called in as an expert witness and was on the stand February 15 and 16. He was asked if in his opinion a psychic could receive accurate visions of thousands of individuals getting specific sums of money when the psychic's only contact with the people were their names on a computer printout. Roll replied that psychics usually require some kind of link with the person the reading is for, such as a personal belonging or a strand of hair. Even with such a link, Roll said, it is only rarely that a psychic obtains a correct impression of a sequence of numbers. He had never heard of anyone receiving thousands of such visions, let alone in the short periods of time Ms. Archer said she received hers.

On March 4, U.S. Judge William Bassler, District of New Jersey, ordered the seizure of all monies and mail in response to solicitations by self-styled psychic Helen Archer and Dr. Harold Weingold. Bassler found Roll's testimony "credible" and Archer's "incredible." He ruled that the "solicitations . . . are designed to create false impressions, mislead the recipients and manipulate the general public."

The above article was adapted from articles in the March and April 1994 issues of The InPsider, the newsletter of the Parapsychological Services Institute (PSI). Founded in 1986, PSI is a nonprofit organization dedicated to providing educational opportunities for those wishing to explore the meaning of psychic and spiritual experiences. For those wishing

further information, PSI can be contacted at (404) 391-0991.

ARTICLES OF INTEREST

compiled by Anson Kennedy

Brown, Stuart F. "Searching for the Secrets of Groom Lake."
Popular Science, March, 1994.

Where does the United States government test its super-secret aircraft, such as the SR-71 "Blackbird," the F-117A Stealth Fighter, the B-2 Stealth Bomber, or the much-rumored next-generation reconnaissance aircraft the press calls "Aurora?" At a super-secret test facility whose existence the Air Force denies, but which is featured prominently in UFO proponent's literature. Variouslly dubbed "Dreamland," "Area 51," "The Ranch," among others, the base is most commonly referred to by the name of the dry lake bed upon which it is located -- Groom Lake in Nevada. Popularized by such luminaries in the UFO field as Bob Lazar, who claims to have worked on captured alien spacecraft at the base, Groom Lake has become a tourist mecca of sorts for UFO groupies, who take buses as close as the government allows in the hopes of catching a glimpse of one of the "American UFOs." This issue of _Popular Science_ gives a tantalizing glimpse at Groom Lake, one which is sure to feed the conspiracy hungers of those who believe in an ongoing government cover-up of the "truth about UFOs." Provides little new information, but is a good overview.

Mitchell, William J. "When Is Seeing Believing?" _Scientific American_, February, 1994.

If a picture's worth a thousand words, computer technology may now make them lies. Excellent review of the state of the art -- which is becoming accessible to more and more people as time passes -- of computer image processing. As if skeptics didn't have enough to worry about with double exposures, models, and other common means of faking pictures, now hoaxers may have technology which allows them to create pictures (with negatives) virtually indistinguishable from authentic ones. Featured in this article is computer wizardry which can change a photograph of George Bush and Margaret Thatcher conversing on a pleasant stroll through a garden to the two of them stalking angrily through the weeds, and that can put Abraham Lincoln arm in arm with Marilyn Monroe.

Nickell, Joe. "'Ivan' Revisited: Was John Demjanjuk 'Innocent?'" _Free Inquiry_, Winter, 1994.

Yes and no. Evidence produced before the Israeli Supreme Court indicated he was not the "Ivan the Terrible" he was accused of being, which led to his ultimate release and return to the

United States. But, as Nickell points out, compelling evidence exists which places Demjanjuk, not at the Treblinka concentration camp, but as a guard ("Ivan the Bloody") at the equally-infamous Sobibor. Nickell concludes, "...the best that could be said in his defense is that he is innocent of killing Jews at one death camp because he was killing Jews at another."

Niemark, Jill. "The Harvard Professor and the UFOs." *Psychology Today*, March/April, 1994.

Excellent profile of Dr. John Mack on the imminent publication of his book on alien abductions, *Abduction: Human Encounters With Aliens*. Provides a brief biography which places Mack's current interest in alien abductions (and the cautionary message he believes they carry for mankind) in perspective. The highly skeptical description of the author's interview with abduction guru Budd Hopkins and criticism of Mack's reliance on hypnosis (which echoes criticisms by skeptics in various publications) vividly illustrates the incredibly shakey ground upon which the entire "abduction phenomenon" rests. Highly recommended.

Rae, Stephen. "John Mack." *The New York Times Magazine*, March 20, 1994.

As in the *Psychology Today* piece, this shorter article focuses on Mack's personal odyssey to believing in alien abductions. In what was probably the reporter's attempt at balance, this profile features a sharp skeptical perspective, devoting several paragraphs to Philip Klass and Carl Sagan, juxtaposed with uncritical repeating of proponent's claims, such as the results of the now-infamous Roper survey of 1991 (which proponents like Mack claim suggests some 4 million Americans may be abductees) -- a poll which was a better indicator of sleep disorders than of alien abductions. [Thanks to Charles Shapiro for supplying a copy of this article to us.]

Spanos, Nicholas P., et al. "Close Encounters: An Examination of UFO Experiences." *Journal of Abnormal Psychology*, 1993, Vol. 102, No. 4.

The study whose publication received mainstream media attention in late 1993 as proving "people who see UFOs aren't nuts!" [Skeptics never said they are.] The researchers compared subjects in two groups (those who experienced "intense" UFO encounters, i.e. claimed alien abduction, etc., and those who had "nonintense" experiences, i.e. seeing lights in the sky, etc.) with comparison groups. On standard tests, the subjects did not score any more psychopathological, less intelligent, or more fantasy prone or hypnotizable than the control groups. However, the intensity of the UFO experiences "correlated significantly with inventories that assessed proneness toward fantasy and unusual sensory experience," i.e. of the subjects, those who reported "close encounters" were more likely to score highly on tests which assessed fantasy proneness and "imaginal

propensities." Highly recommended.

"Faith Healing: Miracle or Mirage?" _Free Inquiry_, Winter, 1994.

Special featuring new articles by Paul Kurtz, James Randi, and others on the latest so-called faith healers. Includes a very good expose on faith healer Morris Cerullo. "We conclude we are dealing with more mirage than miracle." Don't miss.

The Georgia Skeptics newsletter staff reads a lot, but we can't read everything! We ask our readers to forward copies of articles they come across for inclusion in this new regular section!

Send them to:

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SKEPTICAL RECAP OF JURASSIC SUMMER

by Dr. Keith M. Parsons

(Based on a Talk to Georgia Skeptics in July 1993)

I just finished seeing _Jurassic Park_ for the fourth time, and frankly I think it's the greatest thing I've ever seen in the movies. Now that I've thoroughly discredited myself as a movie critic, and gratuitously offended all the _Star Wars_ fans, I nevertheless commit to saying that _Jurassic Park_ is one terrific movie. I still get tears in my eyes when I look at that incredible scene with all the brachiosaurs and hadrosaurs out there in the water underneath the cycad trees. It's such a wonderful feeling that I get. Ahhhh, there they are. Ahhhhh, they were really there, just like that. (I realize, of course, that brachiosaurs were Jurassic and hadrosaurs Cretaceous!)

Like most Spielberg movies, _Jurassic Park_ took the country by storm. But, as with anything like this, we have a tremendous tendency to be carried away by the hype. Sure it is a great movie. It has a great idea and some absolutely convincing pictures of dinosaurs. But in science, we must base our opinions on evidence and not on how something makes us feel or what we would like to believe. One of the functions of skepticism is to promote the value of scientific thinking and one of the rules of science is that even if something is titillating, even if it's fun, even if it gives us a warm and fuzzy feeling, we still have to go with the objective evidence.

Claims made in the movie *Jurassic Park* about dinosaurs and the way they behaved are likely to be snapped up by the public without question. But many of these things are still matters of rather heated scientific debate. I would therefore like to discuss some of the current scientific controversies about dinosaurs and the latest evidence pro and con.

Many of the current controversies about dinosaurs began with Dr. Robert Bakker, one of the main people responsible for the tremendous renewal of interest in dinosaurs. Many of the ideas presented in *Jurassic Park* are clearly based upon the theories of Robert Bakker.

Like most kids, I grew up with a fascination with dinosaurs. I loved dinosaurs, but I was taught that dinosaurs were a dead end. The dinosaurs of my childhood were slow, and they were stupid. There were huge dinosaurs with brains the size of a walnut. Dinosaurs lived in the swamp, because they were so big and fat that the only way they could keep from crushing themselves was to be buoyed up by the water. They would have been crushed like beached whales if they ever got out onto the land. Or so I was told. But that was a hefty time ago, and explosions in dinosaur knowledge have occurred within the last twenty years.

Robert Bakker's wonderful book *Dinosaur Heresies* presents a completely different picture of dinosaurs. The cover depicts, in beautiful graphic form, the new theory of dinosaurs which he put forth. Here we have a Tyrannosaurus rearing up on one leg, striking out with the other leg to attack a ceratopsian dinosaur, itself very well armed. The tyrannosaurus is presented as an extremely active, vicious, aggressive predator - much like the T. rex in *Jurassic Park*. The T. rex in *Jurassic Park* was said to have been clocked at 32 miles per hour. Imagine a six-ton creature moving at 32 miles an hour! That is an impressive sort of thing, and this is the picture presented by Robert Bakker. Instead of slow and stupid and in the swamp, dinosaurs were smart and fast and on the land!

Robert Bakker is the "enfant terrible" of paleontologists, and as with many great scientists, he has a remarkable talent for offending the hell out of his more conservative colleagues. Other paleontologists have referred to Bakker's book as "Dinosaur Hearsays" as an apparent reflection of their judgement of the level of evidence presented therein.

The basic idea that dinosaurs were agile and intelligent, instead of slow and dimwitted, was promoted by a great discovery in 1964 by Yale paleontologist John Ostrom. Ostrom discovered the bones of *Deinonychus*, a name which means "terrible claw". This was a remarkable discovery, as here you have a creature obviously built for speed. *Deinonychus* was designed to be an incredibly aggressive, very fast, and very agile predatory

creature. The posture of Deinonychus was probably much like that of a roadrunner, allowing it to move quite quickly. It had prehensile hands, which could grab and hold prey and were tipped with sharp, formidable claws. It had powerful teeth, and a large, strong neckbone capable of exerting enormous biting force. It could probably bite with the force of a good-sized shark.

But the most remarkable thing of all about Deinonychus was the business end: an enormous six to nine inch retractable claw on its back foot. That's just the bony inner part - it was covered by a horny outer part which made it even larger. Everything about this dinosaur speaks of an active hunter which could run swiftly on slim legs, like the ostrich-mimic dinosaurs, then leap up and bring forward this "terrible claw" to disembowel its prey with one blow.

These creatures had large brains and were probably highly intelligent. Possibly, they were also packhunters, attacking in groups to bring down dinosaurs much larger than themselves.

So here we have something that's got a big brain, is obviously built for speed, and is incredibly fast and agile. This is not something which moped around in the swamp waiting for some slow-moving slug to bushwhack. The concept of a formidably clawed, intelligent pack hunter is reflected in the Velociraptor in Jurassic Park and the movie presents a fairly accurate description. You would not want to meet a Velociraptor.

Was Deinonychus an ectotherm like lizards, turtles, or snakes, or was this a classic endotherm more like modern birds? Because warm bloodedness goes with a high metabolism and extremely active lifestyle, we have good reason to think that dinosaurs like Deinonychus and Velociraptor were warm-blooded creatures. In Jurassic Park, it was simply taken for granted that dinosaurs were warm blooded. But what is the scientific evidence?

One of the most ingenious arguments that Bob Bakker made for endothermy among the meat-eating predators was based on the price of warm-bloodedness in terms of food consumption. Because of their greater activity and increased energy consumption, warm-blooded animals require much more food than cold-blooded creatures. In one year, a typical warm-blooded predator such as a lion consumes about 50 times its body weight in food, whereas a cold-blooded predator such as a crocodile eats only about five times its own weight. So Bakker checked the relative proportions of predators to prey among dinosaur fossils and found that from 1 to 3 percent of the biomass was predators. This is a warm blooded number. These ecological considerations lead us to believe that meat-eating dinosaurs were indeed warm-blooded creatures.

But in Jurassic Park, even the huge plant-eating brachiosaur,

which reared up on its hind legs early in the movie, was described by the movie's paleontologist as obviously warm-blooded. Could the sauropod dinosaurs, such as the brachiosaur, have also been warm-blooded? Some interesting reasons have been given for thinking so.

The first reason is the sauropod's walking posture and gait. If, as once suggested by some German paleontologists, sauropods walked like monitor lizards with their legs sprawled out to the side, then their abdomens would have dragged on the ground. This is clearly absurd. When the sauropods were correctly reconstructed at the Carnegie Museum of Natural History in Pittsburgh, their legs were positioned straight underneath for mammalian-style walking. The walking speed of sauropod dinosaurs was estimated from the spacing between fossilized footprints. They didn't mope sluggishly along like lizards, they walked quickly and upright.

Another thing to consider about warm-bloodedness is the sauropod dinosaurs' sheer size. Just think about creatures with appropriate names like supersaurus, ultrasaurus, and seismosaurus. A grown man would come to ankle of one of these animals. So how did blood get from the heart of a sauropod, 35-40 feet up to its head? The typical reptilian heart, in which all the blood is intermixed in a single chamber, is fine for sluggish life in the swamp, but clearly it would not suffice here. To engage in a bit of mammalian chauvinism, mammals have a vastly superior four-chambered heart which is capable of much more prodigious acts of pumping. So the argument is that the dinosaur would need something equivalent to the mammalian heart to avoid passing out each time it raised its head. And if dinosaurs had a mammalian-style heart, why not mammalian endothermy?

Other factors have to be considered as well. Something you often hear about dinosaurs is that they had very small brains and were stupid. If you have ever had a turtle for a pet, and watched it walk off the shelf onto the floor, you know it's about the stupidest thing next to venus fly trap. People have assumed that dinosaurs, as reptiles, were remarkably stupid. I have held in my hand a cast of the brain of a tyrannosaurus in my hand, and can personally tell you that the animal had a pretty good sized brain. It was not as big as ours, of course, but clearly the creature was no dim-bulb. Its sensory areas were well developed, and it was highly coordinated. It could very well have had a mammal-like physiology, including endothermy.

Another possible indication of dinosaur endothermy is their apparent growth rates. We have reason to believe that dinosaurs, like mammals and birds, grew very rapidly. In Montana, paleontologist Jack Horner stuck his thumb in a Maiasaur nest and not only pulled out an egg but fossilized young of various sizes from hatchling to about a meter in length. The name "Maiasaurus" means good mother lizard, because

she apparently took care of her young. To Horner, these fossils indicated that the hatchlings grew rapidly enough during a single nesting season to be able to keep up with the herd on vast migratory treks that same year. People like Bob Bakker say that such rapid growth rates are an indication of warm-bloodedness. Crocodiles, on the other hand, grow extremely slowly.

Still another argument for dinosaur endothermy is the presence of haversian bone, which is a highly vascularized type of bone typical of birds and mammals. However, more conservative paleontologists have pointed out that there are many reptiles, such as crocodiles and turtles, which have haversian bone, and many mammals which do not. Also, close studies of some dinosaur bones have identified zonal patterns like tree rings, indicating that the animals grew rapidly during the warm season and stopped in cooler seasons. This is more typical of cold-bloodedness.

If dinosaurs were cold-blooded, how can we account for their activity levels and their incredibly long migrations, some of them from the arctic to the Great Plains within a year's time. Well, we do in fact have cold-blooded creatures today which make extremely long migrations. Consider the migration of the monarch butterfly from the northeastern U.S. to Mexico. The leatherback turtle lives in the sub-arctic waters off Alaska, then migrates to Costa Rica to lay its eggs. How does it do this? How does it maintain a decent body temperature in the Alaskan waters?

The answer is a phenomenon called gigantothermy. Once warmed up, creatures that are very big tend to retain body heat better than smaller animals because their ratio of surface area to volume is smaller. Larger creatures, called mass homeotherms, can therefore withstand cold temperatures over long periods of time simply because they are so large. A shrew on the other hand, must consume huge quantities of food and generate body heat like crazy. Although humans use the expression "eating like a bird" to denote a dainty appetite, certain small birds eat three times their body weight every day. It is certainly feasible that dinosaurs could have maintained their body temperatures through gigantothermy without recourse to metabolic endothermy.

In creatures as big as dinosaurs, their muscle movements will produce considerable amounts of heat. Imagine how much heat is produced by moving the enormous muscles of some of the super-sauropods. With the addition of endothermy, the dinosaurs could very well overheat. Paleontologists have also pointed out that the problem of the vast quantities of food a giant sauropod would have to consume to maintain endothermy. A creature the size of an ultrasaurus with a head the size of a horse's would have had enough problems as it is. Why spend all the effort to evolve warm-bloodedness when you could eat less food and maintain body heat through sheer bulk. To most paleontologists,

mass homeothermy seems to be more of an evolutionary advantage.

When we look at the gigantotherms of today, we see that because they maintain a high level of activity, and produce considerable heat through muscle action, they can thrive even in sub-arctic waters. Chris McGowan tells a nice story about his stay on Galapagos island to study the giant tortoises. On top of the mountain, the people were all freezing and there was a big tortoise happily walking along and munching on plants. And the tortoise is considerably less active than the usual dinosaur.

But why assume that dinosaurs were either all endotherms or all ectotherms? Jack Horner proposes that dinosaurs diverse lot, with a variety of metabolic strategies unique to their particular circumstances. Or perhaps some dinosaurs, such as T. rex, were endotherms when young and active but as as they grew older and bigger and bulkier they resorted to gigantothermy. Surely, though, fast and agile dinosaurs such as Deinonychous were endotherms.

I would like to now briefly mention some other controversies about dinosaurs. One of the interesting points about Tyrannosaurus is whether this dinosaur was an active predator or a scavenger. Of course in Jurassic Park we have a splendid presentation of T. rex as a very aggressive, fast predator.

Of course, I personally prefer this kind of interpretation. I want it to be that way. Yes, by golly, I want the science to turn out that way. I don't want Tyrannosaurus sluggishly pulling flesh from some already dead creature, like some huge cretaceous turkey buzzard. I want this: a T. rex that lies in ambush until some hapless hadrosaur comes along then bursts forth at 30 m.p.h., with jaws agape, six tons slamming into its prey, and a bone-crushing bite with six-inch teeth. That's what I want!

Unfortunately, as I've already said, in science we have to decide these things based on the evidence. Jack Horner, who delights in irritating people like me, raises an interesting argument in his wonderful book *The Complete T. Rex*. In his opinion, Tyrannosaurus was mostly a scavenger. At its size, the dinosaur was probably a bit too slow to be primarily a predator. So why not take advantage of a vast supply of readily available meat by following herds of Triceratops around and waiting for them to drop dead of natural causes. Why risk becoming a shish-ka-bob in a fight with a live triceratops when dead ones are so plentiful. Furthermore, at 20 feet tall with well-developed olfactory organs, T. rex was marvelously adapted to scavenge and could probably have detected the delicious aroma of rotting hadrosaur from several miles away and gone right to it.

We humans have an unfortunate prejudice against scavengers which makes us prefer to think of Tyrannosaurus rex as an active predator. But as Jack Horner points out in his book, we don't

think picking over dead bones is a very nice thing to do but make a feast out of it every Thanksgiving.

There are fossils of hadrosaurs with tyrannosaur tooth-marks, with indications that the marks were made after the hadrosaur was already dead. But whether the T. rex killed the hadrosaurs we do not know. Perhaps Tyrannosaurus really was that cretaceous turkey buzzard after all.

Another great dinosaur controversy is the question of what caused the dinosaurs' extinction. The prevailing theory seems to be a cosmic catastrophe, and Velokovsky would have loved this scenario. Unfortunately, he died just a few years before scientists came up with something that would have warmed the cockles of his heart.

World-famous, Nobel-prize-winning physicist Luis Alvarez postulated that dinosaurs were killed off by an impact from outer space: either an asteroid or a comet colliding with Earth about 65 million years ago. The main evidence is a high-concentration of iridium at the k-t boundary layer, which is the stratum separating the cretaceous and tertiary eras, before and after the dinosaurs. The element iridium is rare on earth, but common in certain kinds of meteorites. Aha! Solid evidence that dinosaurs met their demise at the hands of a colliding asteroid! In reality, the iridium does give good evidence of bolide impacts, coincident with the extinction of the dinosaurs, but the question remains whether the collision caused the dinosaur's demise.

One problem is the definition of the word "instantaneously." Instantaneously in geological terms just ain't instantaneously for the rest of us. We still have a very hard time narrowing the dinosaur extinction down to less than half a million years. Other phenomena occurred at the same time which could have contributed to dinosaurs dying out. For example, there were vast eruptions of volcanoes in India, which could have produced many of the geophysical characteristics attributed to the cometary or asteroid impact. None of the extinction theories, no matter how sexy and appealing, has yet been completely nailed down.

Perhaps the very warm-bloodedness that Bakker champions would have been a drawback in the cold and dark during something like a nuclear winter. Why didn't nuclear winter kill off all the frogs, which are more sensitive to temperature changes than dinosaurs might have been? Crocodiles sailed right through the K-T extinction and are here to this day. In the nuclear winter scenario, other things which would seem more likely to be killed off than the dinosaurs weren't.

But whether or not a bolide impact actually killed off the dinosaurs, if you were swimming in Yucutan some 65 million years ago you would not have enjoyed the weather. A 180 km wide

structure in the Yucutan has been interpreted as an impact crater dating from the K-T boundary. Some claim to have found deposits of catastrophic K-T boundary Tsunamis in Texas. As Walter Alvarez has said, every now and then you have a really bad day when something falls from the sky.

The following are good sources for information on dinosaurs:

Dinosaurs Rediscovered, by Don Lessem

The Illustrated Encyclopedia of Dinosaurs, by David Norman

In conclusion, there is still plenty of room for skepticism concerning how much we really know about dinosaurs. Before being swept away by the hype from movies such _Jurassic Park_, let us always pause to reflect on the actual nature of the evidence at hand. In the age of Barney, we stand in dire need of scientific correctness!

QUESTIONS AND ANSWERS

QUESTION: How reliable are the data used by Robert Bakker to calculate the ratio of predatory dinosaurs to prey? Perhaps fewer of the more active dinosaurs got fossilized.

These are hot times over warm blood, and here you have the first blow back from the more conservative camp to Bakker's theories. They point out that fossilization is one of the chanciest of processes. What possible right do we have to think that the animals who just happened to be preserved are a representative sample of the animals alive at time. The chances of being fossilized are about one in a million, and it doesn't occur in a regular, predictable way such that each individual has an equal chance of being preserved. There were almost certainly many creatures in the mesozoic which we now have no record of. Fossilization is not a truly random, or stochastic process, but favors animals in certain environments such as low-lying areas near stream beds. This would include a large variety of creatures. But whether fossilization specifically favors sluggish animals, I do not know.

In interpreting data from dinosaur fossils, we need to keep in mind the limited sample size. For example, there are only 11 partial skeletons of T. rex in the world today, and in all the museums only 2100 articulated skeletons of dinosaurs. There were almost certainly many creatures in the mesozoic which we now have no record of. Given the paucity of fossils, statistical noise can throw off the data much more than for a larger sample.

QUESTION: Could problems with the health of the eco-system caused the extinction of the dinosaurs?

The fossil record indicates to some paleontologists that before

the end of the dinosaur era, the eco-system was in peril with a number of genera in decline. Others dispute this conclusion. This goes to show how iffy some of the evidence is and how experts can differ in their interpretations of the same data. Bob Bakker has proposed that dinosaurs were killed off by disease.

QUESTION: Is there any evidence of iridium associated with the extinction of the trilobites?

The greatest extinction of all was that at the end of the Permian, just before time of dinosaurs. According to David Raup, up to 96 percent of all species living at that time were destroyed, yet there is no indication of an associated iridium spike. Some mass extinctions seem closely associated with impacts, others seem to have no such association. On the other hand, there are carbonaceous bolides without high levels of iridium. This all contributes to the dinosaur debate. Whether the iridium association, when found, allows us to conclude cause and effect is still speculation.

QUESTION: What did the dinosaurs do during the long winters. Wasn't there a barrier that kept them from migrating?

Another reason Bob Bakker says that dinosaurs must have been endotherms is because they were in places like Australia and the North Slope of Alaska. However, the climate was almost certainly not as cold as today. Even in Australia, which was then part of Antarctica, they say that the temperature probably averaged around fifty degrees Fahrenheit year round, and probably was not much below freezing even in the middle of winter. A variety of strategies, perhaps even hibernation, could have gotten the dinosaurs through those winters. It is conceivable that they used a variety of strategies.

Some paleontologists use this to argue against a bolide impact as the cause of dinosaur extinction. If dinosaurs routinely survived a four to five-month winter, why not a nuclear winter?

QUESTION: What about the idea that dinosaurs died out because predators became too many and there was nothing for them to live on?

Some people say there seems to be evidence in the fossil record that there were still massive numbers and herds right to the end, with diverse species of both predators and prey. Has there been a case where predators have eaten themselves out of house and home, and died out? Does this ecologically make sense? Normally some sort of equilibrium is reached, with ecological checks and balances.

QUESTION: If a nuclear winter killed the dinosaurs, wouldn't a large number of sea creatures, who depended on photosynthesis, also have died out at the same time?

One of real mysteries about these mass extinctions is how selective they seem to be. For instance, the ammonites, cousins to the beautiful chambered nautilus, also disappeared and they were among the most successful and prolific of creatures. But the chambered nautilus survives to this day. Why? Why didn't the leatherback turtle go extinct? We don't have a good answer for this.

QUESTION: Even though this may sound species-ist, what does any of this tell us about the prospects for survival of our species. Is there a death-star companion to the Sun, bringing in comets every 65 million years or so?

There are billions of comets in the Oort cloud. Although some astronomers have claimed to detect a periodicity of about 23 million years, we are right now about 11 million years into the cycle. What a relief! We have come unfortunately close to collisions with asteroids crossing the Earth's orbit, with one recently coming within something like twice the distance from the Earth to the Moon. If it had hit, we would have had a pretty spectacular disaster. FEMA would definitely been called out. There are scientists starting to study the paths of these asteroids.

QUESTION: Why were dinosaurs originally thought to be cold-blooded?

Martin Rudwick, in *The Meaning of Fossils*, describes how Sir Richard Owen and other paleontologists first analyzing dinosaurs in the early part of the 19th century were impressed by their anatomical similarity to reptiles. The very word saurus means lizard. Scientists extrapolated their view of dinosaurs as large-scale reptiles to include other similarities, such as cold-bloodedness. This was reinforced by the discovery of tropical and sub-tropical plants, leading scientists to envision a rain-forest world full of ectotherms deriving heat from the environment. Later, as dinosaurs were seen as more similar to birds, scientists began to think in terms of endothermy. This goes to show how powerful analogies can be in shaping scientific reasoning, as well as in everyday life.

QUESTION: What is the feasibility of a dinosaur ever really being reconstructed from DNA?

The feasibility has been compared to recreating the Bible from a single letter of the alphabet. Even the movie *Jurassic Park* emphasized how complex the complete genome is. Realistically, we are not going to be chased by velociraptors.

QUESTION: What is the basis for the colors and skin textures in illustrations of dinosaurs?

Drawings in various books represent the creatures differently.

Greg Paul draws a lot of predatory dinosaurs with feathers to emphasize their similarity to birds. But we don't really know their colors. We know that in general large land animals seem to have colors that blend in well with their environment. Since dinosaurs lived in a green and brown environment, that is how they are normally depicted. But they could have been colored purple like Barney. And soft and furry. That would be horrible! We do know they didn't have teeth like Barney.

Perhaps our own social standards affect the way dinosaurs are depicted. Compare the drawings of T. rex from 40 years ago to the ones of today. Back then you had this big porker, whereas today's tyrannosaur is lean and mean. I can just imagine that with the fitness revolution of the 1970s, with everybody jogging and pumping iron, we wanted a tyrannosaur that is lean and fit - like us.

QUESTION: What is your advice to us on sorting out all these various arguments?

Maintain a healthy skepticism and realize that there is still a plurality of opinion and plenty of debate. We must make a conscious effort not to let ideological ulterior motives corrupt our science too badly. With that in mind, get yourself a stack of books and dig in!

I also recommend that you read *Scenes from Deep Time*, by Rudwick, the noted historian of paleontology. He charts how images of dinosaurs have changed drastically since the 19th century, and how we now laugh at previous ideas. As you study dinosaurs, maintain a bit of humility by imagining Captain Picard laughing some day at our 20th century constructions!

Dr. Keith M. Parsons holds a Ph.D. in philosophy from Queens University. He is currently finishing a second Ph.D. in the History and Philosophy of Science at the University of Pittsburgh, specializing in the history and philosophy of paleontology. He is a Research Associate of the Carnegie Museum of Natural History.

The above article was transcribed by Rebecca Long from a videotape of the talk, which is available from the Georgia Skeptics videotape library.

SOCIETY OF AMATEUR SCIENTISTS

Press Release from Shawn Carlson

PROFESSIONAL SCIENTISTS, MOVE OVER. HERE COME THE AMATEURS.

Nestled between the San Diego Zoo and the Museums of Balboa Park, a new nonprofit group has appeared that is challenging the Ivory Tower monopoly on scientific research. The Society for Amateur Scientists (SAS) is an unprecedented collaboration between professional and amateur scientists, and if they get their way they will forever change how science gets done.

SAS is founded on the premise that it doesn't take a Ph.D. to do research. With the right support, they claim, even ordinary people can make important scientific discoveries.

The fact that this idea makes some scientists bristle doesn't bother Shawn Carlson, the 33 year old physicist who founded SAS. Carlson is a professional scientist with a mission. "Scientific talent is not limited to the Ivory Towers" he says. "There are thousands of people out there who could do good science if only they were supported, networked and informed. Our mission is to empower ordinary people to make real contributions to science." Carlson claims that SAS can help almost anyone make discoveries. "If you have the interest, we can put you right on the scientific frontier," he says.

When pressed to support his belief in the scientific ingenuity of the common citizen, Carlson fires off an impressive list of discoveries. Animal tracks in New Mexico from before the age of dinosaurs, supernovae in distant galaxies, prime numbers with more than 10,000 digits, and a calibration error in an important NASA satellite, are only a few of the discoveries he says were made recently by amateurs. "Two amateurs recently developed a treatment for a fatal disease. When Nagusto and Kayla Oddone's young son was diagnosed with ALD their doctors gave them no hope. So, with no support whatsoever they set out on their own to find a treatment. Through brilliant scientific detective work they developed a drug which has already saved hundreds of children's lives. Now that's high-caliber scientific talent!" Carlson says.

Carlson concedes that important amateur discoveries are rare, but he insists that's because amateurs have no support. "The fact that they happen at all proves that amateurs can make discoveries. Think of what may be possible if all this talent was supported, sharpened and directed at important problems" he says.

In fact, Carlson maintains that amateurs have only scratched the surface of their potential. "Technology has brought extremely powerful investigative tools within everyone's reach. Today's amateurs can do things that only professionals could do just five years ago. We're putting these tools in people's hands and turning them loose on the world."

The Society for Amateur Scientists is launching a number of

national research programs specially designed for amateur participation. "We're developing programs in biology, astronomy, botany, geology, seismology, atmospheric, mathematics, computer science, even genetics," says Carlson. They made an expedition to Baja California to observe the solar eclipse on May 10. "We'll be part of a national collaboration monitoring ozone levels in the stratosphere as the ozone-producing sunlight is blocked out. This is very important work and it will be our privilege to get the very first data," he says.

SAS volunteers include housewives, engineers, teachers, journalists, entrepreneurs, and university professors including two Nobel Prize winners. Their strategy is to bring professionals and amateurs together for the benefit of both. The professionals design research programs that amateurs can carry out and then help the amateurs gain the skills needed to develop projects of their own.

"We are preparing to support amateur projects with grants, awards, equipment and expert advice. Our philosophy is to focus on people and let the science largely take care of itself," Carlson says. John Lighton is an assistant professor of biology at the University of Utah and an SAS volunteer. "SAS is absolutely heretical," he says. "I love it!" Lighton agrees that science has a lot to gain from amateur participation. "The more science that gets done by amateurs, the more professionals are free to do those experiments that only professionals can do," he says. Lighton is writing a column for SAS's quarterly journal and is looking forward to mentoring amateurs in biology. "There is nothing more exciting than helping to unlock someone's potential for discovery," he says.

Forrest Mims III is an amateur scientist in Texas. Even though he has no formal scientific training Mims has become one of the world's leading ozone scientists. His \$500 home-made instrument lets him measure stratospheric ozone from his backyard with precision which rivals NASA satellites. "It's a lot of work, but the rewards are incredible," he says. Mims is a contributing editor to SAS's journal and a strong supporter. "I think SAS is doing an fantastic job. It's great that some professionals are finally seeing the amateur community as a vital resource."

When asked what amateurs can contribute Mims is emphatic. "A lot! For one thing having no budget forces amateurs to be clever. We know how to get things done on a shoestring." Mims says that NASA once flew him to Washington to share his expertise on high-quality low-budget science.

"The Society for Amateur Scientists gives the entire amateur community support that it has never had before. I know firsthand how much talent is out there. By freeing people to contribute according to their talents SAS is helping to make

discoveries that otherwise might be long in coming. It's very exciting," he says.

But not everyone is enthusiastic. According to Carlson, some scientists think helping amateurs is a waste of time. "It takes most scientists a decade to earn their Ph.D.s. Some people don't easily warm to the idea that a guy with no formal training can do a job almost as well as they can." But Carlson is undaunted. "Sure, there are some things that amateurs just can't do. A formal education means a lot. But there are many of places where amateurs can make real contributions. The Society for Amateur Scientists is totally dedicated to helping them get there."

When asked who should join, Carlson smiles. "It doesn't matter how little experience you have. If you dream of making discoveries, this is the place you should be." The toll-free number is (800) 873-8767.

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FROM THE MEDIA WATCH

by William Evans

Media Watch is a media monitoring project conducted by members of Georgia Skeptics. Media Watch volunteers monitor Georgia media for news of the paranormal. Media Watch encourages responsible reporting of paranormal claims by assessing stories for balance and accuracy. In addition, Media Watch attempts to provide journalists with the resources required for responsible reporting of paranormal claims.

Recent press releases are as follows:

JOURNAL-CONSTITUTION COVERS LOCH NESS PHOTO HOAX

For immediate release: March 21, 1994

The Georgia Skeptics Media Watch applauds the Atlanta Journal-Constitution for covering recent revelations that the most famous photograph of the Loch Ness Monster is in fact a

hoax. Headlined "Famed Loch Ness monster photo called hoax" (March 16, page C2), the Journal-Constitution story recounts how the 1934 photo of "Nessie" was staged by hoaxers who used wood-filler compound to fabricate a sea-serpent head and neck which was then attached to a toy submarine.

Since 1934 this photo has been frequently reprinted in popular media, most often accompanying credulous stories about Nessie and other fantastic creatures such as Bigfoot and Yeti. Indeed, this photograph has become one of our culture's most common images of the fantastic. The revelation that this photograph is a hoax should remind journalists and news audiences alike that photographs are easily faked. Like all fantastic claims, fantastic photographs demand careful, critical scrutiny. Despite a cliché that suggests otherwise, pictures DO lie, as the Journal-Constitution story duly notes.

Too often popular media report only the initial claims of those who would have us believe that they have photographed UFOs, ghosts, monsters, and so forth. Although many photographs of this sort are quickly and easily exposed as being either hoaxes or photographs of decidedly prosaic objects (e.g. airplanes), the media seldom follow-up initial reports with details of skeptical, scientific investigations. It is heartening to see the Journal-Constitution find space to tell its readers when one long-standing piece of evidence for a fantastic claim is discovered to be a hoax.

SYMPATHY OR CREDULITY? JOURNAL-CONSTITUTION FINDS LITTLE ROOM FOR SKEPTICISM IN SERIES ON THE AFTERLIFE

For immediate release, March 15, 1994

The Atlanta Journal-Constitution's three-part series, "Adventures in the Afterlife," recounts dozens of fantastic claims of life after death, but does little to critically examine these claims. In this series, which appears in the March 10-12 editions of the newspaper, readers are told of people who allegedly returned from near-death "with knowledge they did not have before - from an understanding of quantum physics to the names of long-dead relatives." One believer recounts returning from near-death with unspecified "prophecies." This believer recommends unorthodox therapy such as aromatherapy or color therapy - treatments that are completely without scientific merit. Another believer recommends "crystal gazing," and reports on "experiments" in which 35 of 49 attempts to contact the dead were successful.

The "Adventures in the Afterlife" series is remarkably lengthy by newspaper standards, running 118 paragraphs over three days. Believers are given ample space to make fantastic claims, but scientific explanations are mentioned in a single sentence: "Some skeptics theorize that the [near-death] experiences are merely neurological responses to drugs, oxygen deprivation or

endorphins." And even this minimal skepticism is dismissed in the next sentence: "But [near-death] researchers . . . say none of these explanations can account for all facets of the experience."

_Journal-Constitution staff writer Gayle White lends an appropriately sympathetic ear to those who find their lives have changed dramatically as a result of a near-death experience. Unfortunately, White's sympathy too often shades into credulity. The near-death movement is certainly newsworthy, and the _Journal-Constitution_ is to be commended for covering it. However, the _Journal-Constitution_ has squandered an all-too-rare opportunity to provide readers with sound scientific information with which to assess fantastic claims.

APPLICATION FOR MEMBERSHIP

Yearly membership includes a subscription to the newsletter, the Georgia Skeptic. Please send checks made payable to Georgia Skeptics c/o Becky Long, 2277 Winding Woods Drive, Tucker, GA 30084

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THE END