

On the Art and Science of Tornado Chasing  
by Bob Ladendorf

Standing directly underneath the long, low blue rain-free cloud deck with the wind slamming at my back at 35 mph or more, I thought that I may indeed be present at a creation. The birth of a tornado, that is. My heart was pounding as I stood alone on a small country bridge in the country about 10 miles northwest of Springfield.

It was just past 5 p.m. on May 9, 1995, about a year to the day that Twister opened at the movie theaters, and I was about to see the first tornado in my life.

I wouldn't have been standing there as the first few white wisps of clouds lowered from the flat blue deck if I hadn't traveled to the National Severe Storms Laboratory (NSSL) in Norman, Oklahoma — the home of the University of Oklahoma — in 1981 to research the scientists' efforts there to study tornado formation for a free-lance article later published in the Madison, Wisconsin Capital Times daily newspaper. This was the same lab mentioned in Twister.

One of the main objectives of NSSL was to correlate field observations of severe storms, including tornadoes, with Doppler radar readings back in the lab. One of the results of the testing was the ability of Doppler radar to "see" the storm producing a tornado some 20 minutes before touchdown. More warning time could be given to the public with the application of this radar nationwide. That is indeed what happened; Doppler radars have been deployed around the country in the 1990s at weather stations, including the National Weather Service office in Lincoln, Illinois.

Although I wasn't able to ride with the NSSL storm chasers, I interviewed a number of top scientists at the lab and the university, including NSSL's Robert Davies-Jones and Erik Rasmussen, and Prof. Howard Bluestein, who helped direct the recent two-year project called VORTEX that involved surrounding severe storms with chase vehicles laden with measurement equipment, e.g. lightning detectors, radars, and video. According to a recent Time magazine cover story, Twister's main character played by actor Bill Paxton was based in part on Bluestein ("loosely," according to NSSL's Greg Stumpf). It was Bluestein, though, who had originally developed — more than 15 years ago — TOTO (Totally Totable Observatory), the real precursor to Twister's DOROTHY, a large canister filled with meteorological instruments to be dropped in the path of a tornado.

After my article was printed in the Capital Times, I tried to publish articles about the storm chasers and their scientific efforts to understand the storms in National Geographic and Weatherwise magazines. To no avail. However, years later, I noticed that they did publish articles the chasers.

I had been impressed with the skill, conscientiousness and excitement that Bluestein and the others brought to storm chasing. How wonderful to experience such unique, heart-pounding natural events (or disasters if you're in their paths) and be able at the same time to study the storms scientifically. What a terrific balance of art and science.

After that three-day trip to Oklahoma, I was hooked on storm watching and occasional chasing. However, I saw no tornadoes, except in the excellent films shown at NSSL. That experience had invoked a memory I had as a small boy in Roanoke, a small town east of Peoria, when I watched a gust front race at us.

Now, in 1996, storm chasing appears to be the rage. A number of movies (Twister, Tornado, and Night of the Twisters) have been shown and TV documentaries ("The Violent Skies," etc.) have been featured on stations such as the Weather Channel. Some say that it is fad and potentially dangerous for amateurs. I've heard co-workers mention that when a tornado warning siren sounds, people head outdoors looking for the tornado instead of inside in a safe place!

The danger of storm chasing is there, but perhaps the heightened awareness has also alerted the public that complacency is more of a danger to their health. The fruits of scientific investigations are certainly evident in the real world with this

increased awareness of severe storms, as well as a few more minutes warning time.

Illinois has experienced a number of outbreaks in 1996, probably more than usual. What I don't hear anyone saying, though, is that there is any supernatural cause for the apparent increase. Through the intense studies at NSSL and other research centers, there has been an impressive increase in the knowledge about how these storms work.

If I hadn't been aware of the classical structure of a single supercell thunderstorm from my research in 1981, I wouldn't have been in position to witness the formation of the Cantrall tornado of 1995.

MID-AFTERNOON, May 9, 1995 — A Tornado Watch is issued.

4:30 P.M. — I leave work and glance at the sky. I see an "anvil" top to a thunderstorm just west of Springfield. I am excited because I know that I'm on the best side of the storm from which to view any tornado.

4:40 P.M. — I arrive at home and tell my wife, Jean, who was making supper, that I was going to get our son off the tennis courts and that I would then go storm chasing after I got back.

4:45 P.M. — The tornado siren sounds.

4:46 P.M. — I turn down Washington Street at Sacred Heart-Griffin High School, heading west, when I see a funnel cloud in the distance. Stunned, I quickly ascertain the direction of the storm as away from Springfield, that Scott would be safe on the courts (and had another ride anyway), and speed off towards the funnel cloud.

4:50 P.M. — I'm traveling north on Veterans' Parkway, and the funnel cloud is gone. Disappointed, I decide to travel west on Rt. 125 past the Bradfordton elevators after hearing on the radio of a funnel cloud sighting near Pleasant Plains.

5 P.M. — I turn north on a country road for 2 1/2 miles and stop on a small bridge, having reached a point at the southeastern edge of the rain-free, blue cloud deck. The wind is at my back as I face northwest with my still camera. The wind is being rapidly sucked up into the storm.

In just a few minutes, the white wisps of clouds lower from the cloud deck. Soon, they expand downwards and increase in size and width. In a few more minutes, I detect circulation in the clouds. I am seeing a wall cloud—a precursor to a tornado—form in front of my eyes! Although tornadoes don't always appear out of a wall cloud, I couldn't keep my eyes off it.

The circulation of the wall cloud expands further to where it was over my head. A tornado could emerge right over me!

The loud sound of my heart beating begins to drown out the sound of the wind as I fully realize my predicament. I couldn't travel forward, because I would be in the path of the main storm; I could get out and get under the bridge, but I fear debris if it passed over me. I quickly decide to outrun it — backwards! I race as fast as I could as I back the '87 Honda Accord up the hill. I jump out for one last photo — the tornado appears at that moment!

I jump back in the car, turn it around and race back to the highway, where I see a storm spotter. As I excitedly tell him what I saw, we watch the tornado become fully formed, then move off to the northeast as it becomes wrapped in rain curtains.

There wasn't much of a chance to catch up with it from where I was at, so I head back to Springfield to tell Jean and follow it as soon as possible. At that point, I notice my gas tank flashing empty. After checking on Jean and Scott, I head north, following the trail of destruction, taking more photos and checking to see if people were OK. I see semitrailers overturned on Interstate 55 outside Elkhart, which also suffers a lot of damage, but few injuries.

My only regret? That I didn't bring the video camera when I first left the house.

When I was shooting photos of the tornado formation, I was saying to myself that I should record an event in nature that

could be of use to scientists studying storms. Although I was also very excited from this rather uncharacteristic, high-risk, thrill-seeking behavior, I also began to appreciate and admire the professional storm chasers who try to gather data in such chaotic conditions and observe such ephemeral, dangerous natural wonders. I did send copies of my sequence of photos to NWS and NSSL in case they might add to the knowledge of that particular storm.

Whoever says that science is a dull subject has not experienced the delight and terror of one of the most beautiful and destructive natural events of this world.

Sources - Tornadoes

Here are some sources for further reading about tornadoes:

- Davidson, Keay. *Twister: The Science of Tornadoes and the Making of an Adventure Movie*. Pocket Books, 1996.
- Whipple, A.B.C. and The Editors of Time-Life Books. *Planet Earth: Storm*. Time-Life Books, 1982.
- Nash, J. Madeline. "Unraveling the Mysteries of Twisters," *Time*, May 20, 1996.

Additional sources will be listed in an upcoming issue.

Close Encounters with Phil Klass  
by Bob Ladendorf

In June 1969, a number of airplane pilots in the St. Louis area reported seeing a squadron of strange, fast-moving unidentified craft. One pilot reported a near collision, others that the craft moved at angles, apparently avoiding collisions with the aircraft and thus showing signs of intelligent control.

The mystery was solved when Peoria Journal Star photographer Alan Harkrader shot a photo of the streaking "craft" some 200 miles away in Peoria, Illinois. The "craft" were later identified as chunks of meteors splitting apart — some 100,000 feet high in the sky.

The point to this occurrence, Philip J. Klass, co-founder of the Committee for the Scientific Investigation of Claims of the Paranormal and a UFO expert, told the audience at a Gateway Skeptics meeting in St. Louis is that the pilots have to know the object and its size before guessing the distance to it.

Klass, the editor of *Aviation Week and Space Technology*, spoke to several dozen members of the St. Louis skeptics group and members of the public on May 17 at the St. Louis County Library following interviews he conducted with aerospace officials at McDonnell Douglas.

"There has been no credible evidence ever," Klass said at one point, "for even one extraterrestrial visitor."

The elder statesman of UFO skeptics, Klass has written books on the subject — *UFOs: The Public Deceived* and *UFO Abductions: A Dangerous Game*.

Klass illustrated his talk with slides and detailed explanations of apparent UFO hoaxes, such as the Gulf Breeze, Florida sightings several years ago that included double exposures in a Polaroid camera and a model UFO subsequently discovered, as well as honest misperceptions, such as the St. Louis incident and one in Tucson, Arizona, by an astronomer who mistook a Titan missile launch 500 miles away for a nearby UFO with a halo.

As he ended his talk, he commented that "in spending 30 years investigating [UFOs], I haven't found one." He then added, "If anyone offered any evidence of a single extraterrestrial visit, I will refund the full purchase price of my books" to all who had bought them over the years.

Following his talk, he took questions from the attentive audience, including a few that were hostile to his conclusions. Questioned about the number of cases he actually investigated, Klass said, "I try to pick the tough cases," adding that he has intensely investigated more than 50 of them.

Klass later added criticism of TV coverage — and promotion of — the UFO subject. He said that on a Larry King Show, there were four UFO proponents and only one skeptic, and that he and Carl Sagan has been interviewed on tape, not live, so they could not respond to UFO claims by the proponents.

Many in the audience stayed around to talk with Klass. REALL Chairman David Bloomberg and I had attended the talk following an invitation from Steve Best of the Gateway Skeptics. We both admired Klass's spunk and long commitment to investigations of UFOs as he donned his aerospace cap and headed out the door with Gateway Skeptic members.

How did he get into these investigations? Earlier, Klass told the group that he had been bitten by the debunking bug in the 1970s, and the UFO subject was a prime area for investigating. "I had no idea that it would take up so much of my time," he said. "If I had known what it would take," he added, "I would not have gotten so involved."

The skeptic community certainly owes Phil Klass a debt of gratitude for his diligent work over all these years and not being able to foresee the future.

Sources - UFOs

"Kidnapped by U.F.O's?" PBS Nova video, 1996

Klass, Philip J. UFO Abductions: A Dangerous Game. Prometheus Books (PB).

Klass, Philip J. UFOs: The Public Deceived. PB.

Sagan, Carl. The Demon-Haunted World: Science as a Candle in the Dark. Random House.

Skeptics' Congress Report, Elections to Highlight REALL Meeting July 2

At the Tuesday, July 2 meeting of REALL, elections will be held for all officers and board members. Following elections, The REALL News editor, Bob Ladendorf, will report on the First World Skeptics Congress sponsored by the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) from June 20-23 at the State University of New York at Buffalo Amherst Campus and the organization's Center for Inquiry. CSICOP's 20th anniversary is this year.

The theme of the Congress is "Science in the Age of (Mis-)Information." The Conference Address will be given by Leon Lederman, Emeritus Director of Fermilab and Nobel Laureate in Physics, and the Keynote Address by Stephen Jay Gould, PhD, of the Museum of Comparative Zoology, Harvard University, who has written a number of books on natural science and writes a regular column for Natural History.

There will be panel discussions and concurrent sessions on subjects ranging from the role of mass media in "misinforming" the public to homeopathy. Other panel and session leaders and luncheon speakers include: Phil Klass, aviation magazine editor and UFO debunker; James Randi, author and conjuror; Eugenie C. Scott, executive director of the National Center for Science Education; Steve Allen, entertainer; John Paulos, author of Innumeracy and A Mathematician Reads the Newspaper; Chris Carter, creator of The X-Files; and many others.

The July meeting will be held at 7 p.m. at the Lincoln Library, Springfield. The public is invited.

10 Important Criteria for Determining What is Science

Science is logical and rational.

Science makes well-defined claims.

Scientific hypotheses are falsifiable.

Scientific experiments are repeatable.

Science requires that claims be examined by peers.

Science views unexplained gaps in theories with suspicion.

Science requires caution in examining evidence.

Science requires objectivity.

Science does not accept coincidence as proof.

Science does not accept anecdotal evidence as proof.

From the Editor

Bob Ladendorf

We hope you enjoy the new look of The REALL News. While modernizing its graphic design and including more photos and graphics, we still retain the in-depth coverage of a range of paranormal and pseudoscientific topics. We welcome any comments from our readers.

In this issue, we feature a report on a talk that UFO expert Phil Klass gave to the St. Louis skeptics group, as well as a personal story on a hot topic — tornado chasing. There are the thrill seekers, and there are the scientists. Maybe both groups share the intensity of each other's quest. Look for a follow-up article in a later issue on tornado lore now and then.

Last, but not least, Chairman David Bloomberg had to sit out this issue — just too busy! We will look forward to a long "REALLity Check" next issue!

Letter to the Editor

Presumably you saw the Nova abduction expose after getting the copy of the postcard Nova sent me. They sent it as a courtesy for my answering an inquiry last August. Thankfully they used almost nothing as you probably noticed. They only devoted a few seconds to my observations about the influence of The Outer Limits on the Hill Abduction case [as discussed in "The Eyes That Spoke," The REALL News, Vol. 2, #7].

Why thankful? The few seconds felt like they had run their fingernails over a chalkboard. By some amazing media technology they managed to compress no less than five errors into a single line of narration!

They show the Bifrost alien and follow it by the alien from The UFO Incident, the T.V. movie about the Hills and their abduction. We hear the Outer Limits entity is "an alien with telepathic powers very much like those Barney and Betty Hill described after this broadcast."

The Outer Limits alien was not telepathic. I quote the script:

Judith: Can you read my mind... even through your... shield?

Creature: No. I cannot read your mind. I cannot even understand your language. I analyze your eyes.

Betty Hill's alien also was not telepathic. It spoke English.

Only Barney Hill described his alien after the broadcast. Betty did not.

One falsely gets the impression Betty and Barney described their aliens together and identically when, in fact, they described them differently. Worse, we hear Betty giving the description giving the implication the resemblance to the Outer Limits alien involves her descriptions, when in fact it is Barney's.

The use of the clip from The UFO Incident is strategically wrong because the aliens are not accurate representations of what Barney drew. They are only loosely based on his drawing in The Uninterrupted Journey and the drawing done in collaboration with David Baker. In a 1978 interview Betty criticized the movie's depiction of the physical appearance of the aliens. "They did not look like that. The real ones looked more human than their television counterparts." Their size and slenderness were also inaccurate.

Though I can grant I am likely over-focused on this and maybe nobody else will ever notice the screw-up, my imagination easily spun out potential consequences. Betty Hill will legitimately use points 2 and 5 to prove how skeptics distort the truth. Points 1 and 2 are so simple to understand and prove that any ufologist could use it to put down anyone parroting the Nova version of the resemblance claim. Telepathy is such a cliché in both ufology and science fiction it is also easy to dismiss as coincidence the Hill and Bifrost alien sharing this characteristic. Part of the virtue of the original argument was that speaking eyes is such an exotic mode of communication that it can't be dismissed in this way. Even should any skeptic try to bring up the correct form of the claim, a believer will still gleefully throw the mistakes of the

Nova version at him to show how skeptics have exaggerated the resemblance. Say bye-bye to "The Eyes That Spoke" as a useful argument about the cultural nature of abduction lore.

I tremble contemplating what more damage they would have done had more of my work been used. I don't think it was a fluke, but a pattern of carelessness. Doubtless they don't take the subject seriously and, as Nova really should be about science and not modern mythology, who can blame them?

For the record though, it was the first time I ever saw anything based on my work on T.V. Guys, the experience really sucks.

### Blurbs - Short Takes on Fringe Topics

The Cincinnati area skeptics group (The Association for Rational Thought) has a project of having its members write "skeptical blurbs" - short pieces with bibliographies that quickly give a skeptical view of a fringe topic, often useful as something quick to send to the media when they cover one of these topics. Below is one written by Andrew Lutes. If any REALL members are interested in writing a "blurb" about a subject they are knowledgeable in, please feel free to send it in!

#### Biorhythms

The term "biorhythms" refers to a system of cycles in human behavior developed by one Wilhelm Fliess, a contemporary of Sigmund Freud. The idea is that human behavior is strongly influenced by inflexible 23-day (physical), 28-day (emotional), and 33-day (intellectual) cycles that begin at birth, regardless of your health and other circumstances. There are supposedly high and low points in these cycles. Graphs can be developed to chart these cycles and indicate when supposedly one's best and worst days will be.

Unfortunately, the whole system does not work. There is no evidence to suggest that human behavior runs on inflexible 23, 28, and 33 day cycles. In tests, people do just as well with fake biorhythm charts as real ones. Either the supposed critical days on their real charts were ordinary physical and mental ones for them, or believing that days on fake charts were critical ones made people act like they were. Graphs based on the birth dates of athletes show no correlation with their actual performance -- they do as well on supposedly bad days as supposedly peak ones. Biorhythms bear a strong resemblance to numerology and astrology.

#### Bibliography:

Fix, A. James. "Biorhythms and Sport Performance." *The Zetetic* (now *Skeptical Inquirer*) 1 (1) (Fall/Winter 1976) 53-57.

Randi, James. *Flim-Flam: Psychics, ESP, Unicorns, and other Delusions*. Buffalo, New York: Prometheus Books, 1982, pp. 161-172.

Thommen, George. *Is This Your Day?* New York: Crown Publishers, 1964.

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#### Purpose

The Rational Examination Association of Lincoln Land (REALL) is a non-profit educational and scientific organization. It is dedicated to the development of rational thinking and the application of the scientific method toward claims of the paranormal and fringe-science phenomena.

REALL shall conduct research, convene meetings, publish a newsletter, and disseminate information to its members and the general public. Its primary geographic region of coverage is central Illinois.

REALL subscribes to the premise that the scientific method is the most reliable and self-correcting system for obtaining

knowledge about the world and universe. REALL not not reject paranormal claims on a priori grounds, but rather is committed to objective, though critical, inquiry.

The REALL News is its official newsletter.

Membership information is provided elsewhere in this newsletter.

Board of Directors: Chairman, David Bloomberg; Assistant Chairman, Prof. Ron Larkin; Secretary-Treasurer, Kevin Brown; Newsletter Editor, Bob Ladendorf; At-Large Members, Prof. Steve Egger, Wally Hartshorn, and Frank Mazo.

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