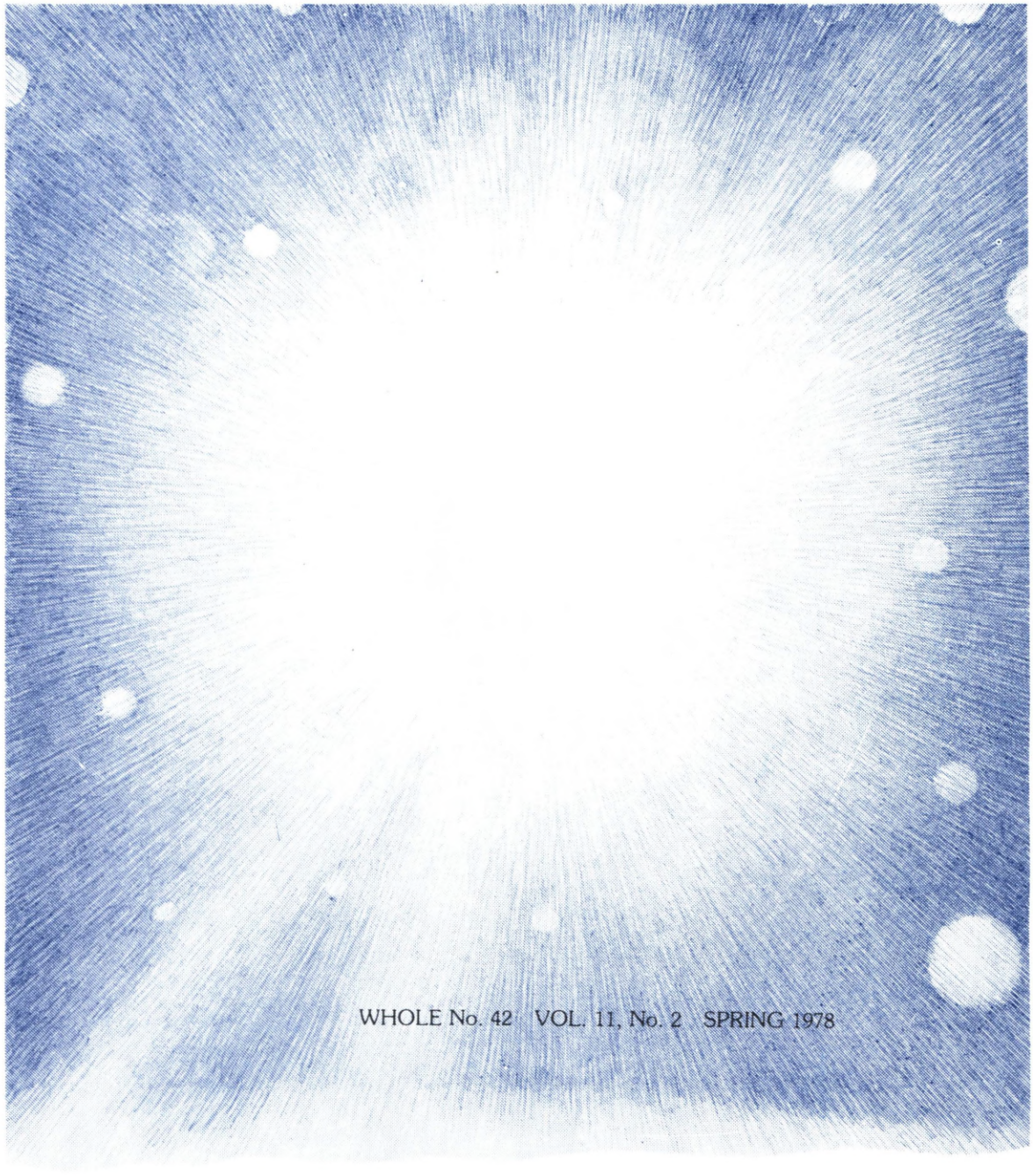
THE JOURNAL OF THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

# PURSUIT®



WHOLE No. 42 VOL. 11, No. 2 SPRING 1978

## SKY QUAKES

# THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

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Our publishing schedule is four (quarterly) issues of PURSUIT, dated Winter, Spring, Summer and Fall, and numbered as annual volumes — Vol. 1 being 1968 and before; Vol. 2, 1969, and so on. Membership and our quarterly journal PURSUIT is $10 per year. Subscription to PURSUIT, without membership benefits, for libraries only, is $8 for 4 issues. Order forms for back issues will be supplied on request.

PURSUIT is listed in Ulrich's International Periodicals Directory and in the Standard Guide to Periodicals; and is abstracted in Abstracts of Folklore Studies. It is also available from University Microfilms, 300 N. Zeeb Rd., Ann Arbor, Michigan 48106. The price is $4.10 per reel. An annual index appears in the Fall and Winter issues.

'SCIENCE IS THE PURSUIT OF THE UNEXPLAINED'

VOL. 11, No. 2
SPRING, 1978

# PURSUIT®

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Drawing by R. M. Wolf, lettering from *Exotic Alphabets and Ornaments*, by William Rowe (Dover Publications, Inc., New York).

**THE JOURNAL OF THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED**

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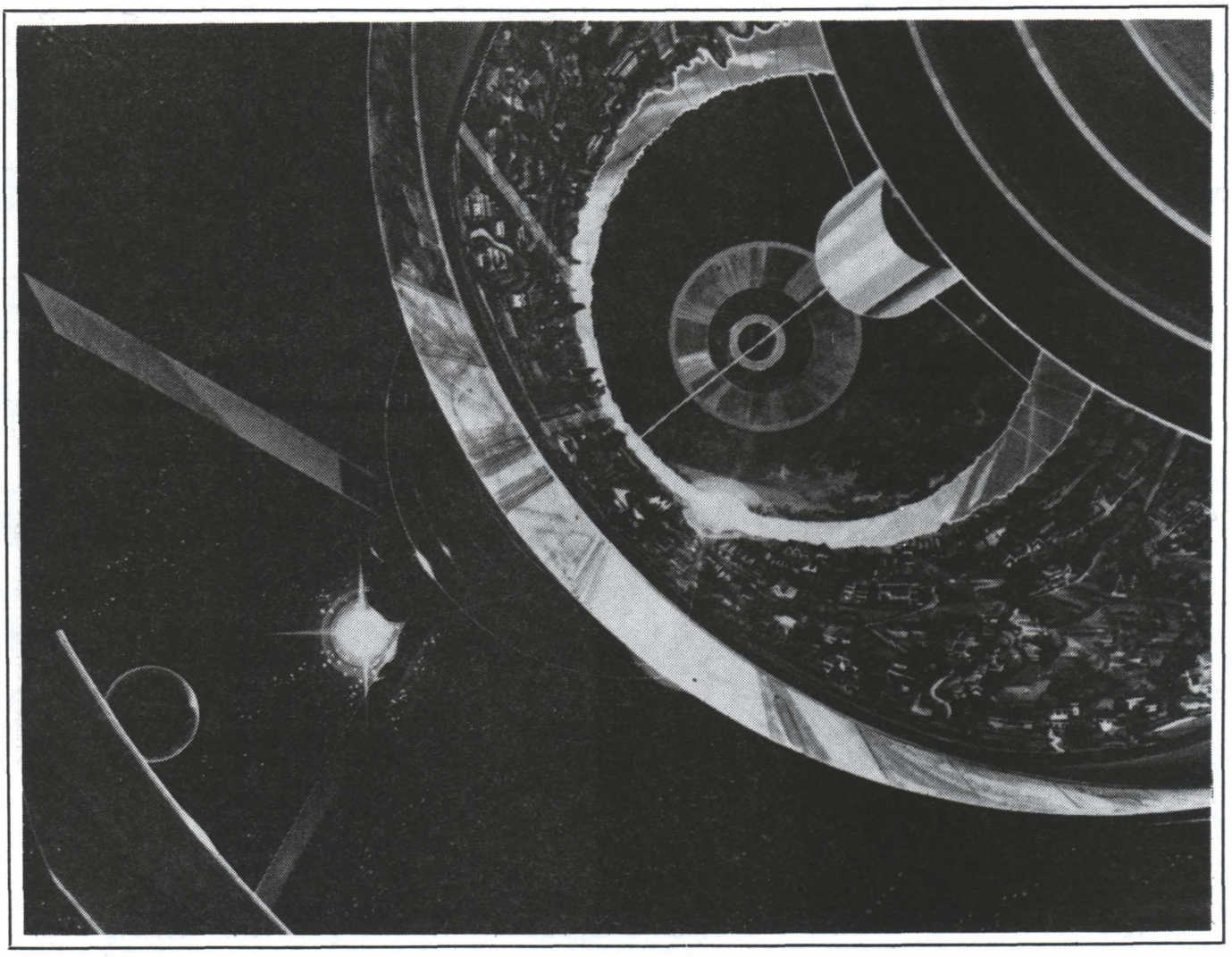
**Devoted to the Investigation of "Things" that are Customarily Discounted**

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

# L5: A SETTLEMENT IN SPACE

## By Curt Sutherly

*Eyes focussed upward, I suddenly sigh,*
*thinking of powerful wines*
*And of men reaching beyond the sky.*

**Preliminary note:** while a report on the proposal for a future settlement in space may seem, to many SITU members, to be rather non-Fortean in nature, one must keep in mind that many of our unexplained events seem to spring archetypically from man's yearning for the heavens. The UFO phenomenon, or perhaps more correctly — the spaceship-in-the-sky syndrome, is a sound example of this. Even man's ancient gods were, for the most part, an embodiment of an archetypal desire to fly upward, on and on into the void.

On still another tack, consider the words of many UFO entities when speaking to (or through) their contactees: "You are endangering the balance of the universe," are words made familiar to us by such writers as John Keel. Whether one believes in the existence of the entities projecting that concept—or believes in them not at all, the thought is sufficient to give pause. But how, you ask, does this relate to the proposal of a settlement in space? Quite simply: the settlement could well be a cure-all or an end-all to many of man's present socio-environmental problems. So, with these thoughts in mind, read on . . .

* * *

A few years ago, before the final lunar landings were made by members of the Apollo exploration teams, the notion of a huge, revolving establishment in space would have been considered mildly interesting to some, even amusing to others. After all, the concept was drawn from the early pages of science fiction — an anachronistic dream hardly worth mentioning in a day when the moon itself was being explored.

Around the same time, the so-called "energy crunch" reared its head, and the scientific community was suddenly forced to look anew for a technological means with which to escape that dreadnaught. Even the United

States, a nation among the bountiful, harbored many people who went to bed cold at night after being forced to turn the furnace down for lack of fuel or the money to pay for it. Ideas as seemingly out of place as the aforementioned space settlement resurfaced: solar energy, rekindled coal-burning techniques, even wind power, to name a few, became major issues of importance. But again there were the scoffers. Coal was a thing of the past, they said, at least in the wealthy countries. Wind power was only good for sail boats, and as for solar power — anyone with any sense knew solar power was barely adequate for running small electric cars.

But in any age there are always those who refuse to die laughing.

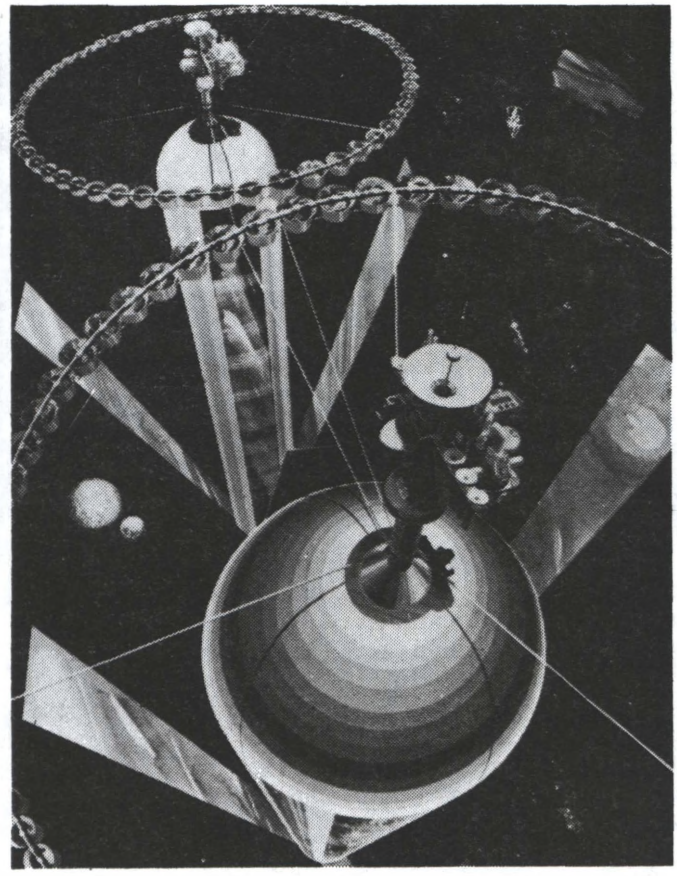
Two such persons are Princeton University's physicist Gerard K. O'Neill, and former astronaut-scientist, Dr. Brian O'Leary. When O'Neill first presented his notion of a space colony locked in orbit midway between the Earth and the moon, the skeptics were legion, frequently jumping up and down, rattling their teeth and screaming that such an idea was preposterous — and furthermore, financially unsound. For once the scoffers weren't laughing, exactly; they were complaining. Later, however, members of the United States National Aeronautics and Space Administration (NASA) came to the rescue, reasoning that, should the colony concept be handled as O'Neill envisioned, it could be a potential mode of escape from the omnipresent threat of insufficient energy reserves. Furthermore, such a program could perhaps boost the space administration's dwindling budget — a relentless problem since John Kennedy's assasination in 1963. Finally, after a good deal of crosstalk, it appeared the first step toward realization of O'Neill's interplanetary settlement had been taken . . .

* * *

Midway between Earth and the moon is a point referred to as F5, a pivotal area of space influenced by the gravity wells of the Earth, moon, sun, and to some degree the outer planets of the solar system. The position L5 honors the noted French mathematician Legrange, who calculated that anything locked in orbit at this spacial position would remain so fixed unless deliberately removed. It is at point L5 that O'Neill and O'Leary see the first of perhaps many space settlements taking shape.

Anyone who has ever viewed the American television series, *The Six Million Dollar Man,* which depicts the adventures of a man refitted with biochemical (bionic) artificial limbs, is familiar with the program's opening words: "We have the technology ..." So it is with the space settlement. The technology to go ahead and build a vast orbital platform is available. All that is lacking is to convince national and international governments that the project is not a waste of money and effort. This is the task which Dr. O'Neill has set for himself, knowing quite well the job of convincing hard-headed politicians will be anything but easy.

In order to complete the first orbital platform, a lunar mining base will first have to be established. From this station on the moon, ore and mineral elements vital to construction of the L5 platform will be mined. O'Neill has diagrammed a unique and rather non-complex method for getting this ore into orbit: the mineral will be hurled from the moon by means of a mass accelerator which will



NASA

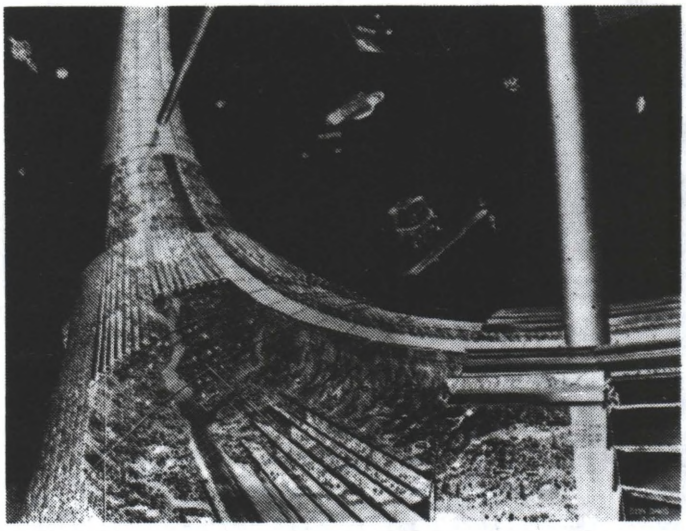
provide sufficient thrust to obtain escape velocity for the particles being launched. The technique, by all outward appearances, will provide no real engineering problem, owing to the moon's slight gravity field.

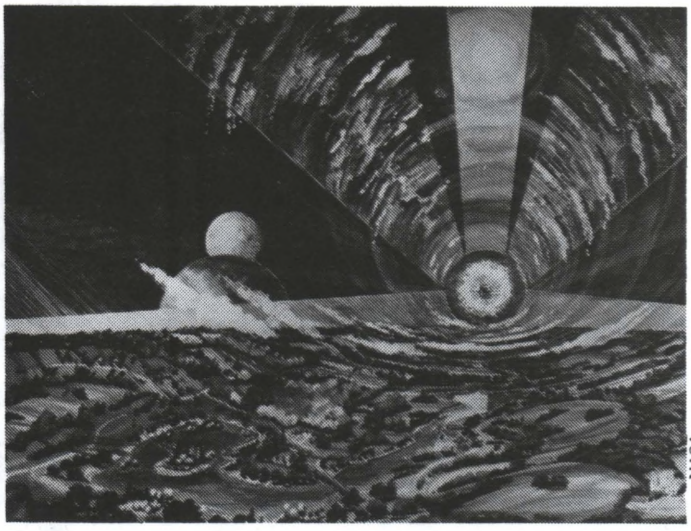
Once fired from the moon's surface, the needed elements will be guided along (possibly by smaller particle accelerators) and finally nudged into place at point L5. With the ore in final orbit, crews working from descendants of today's now-complete (but as yet untested) space shuttle will begin work on the space platform. According to O'Neill and O'Leary, the first orbital settlement could be ready for inhabitation within 25 years of the project's initiation, providing all problems are dealt with satisfactorily.

Which leads us to the settlement interior: will it be a drab, sterile environment in which humanity will eventually feel too confined for proper existence? Definitely not, say all associated with the program.

According to Dr. O'Leary: "Science fiction has taught us that living in space necessitates a sterile cabin environment. The spaceships and space stations of the twenty-first century and beyond are envisioned as ... antiseptic, quasi-military, white-walled, sliding-door, control panel, television-screen closed spaces." This, says O'Leary, is entirely the opposite of the current colony vision.

"Aesthetically pleasing" is the term being applied to the L5 project, which itself will be — tentatively — of a combined cylinder/spherical design. Earlier engineering proposals had described the settlement as a huge wheel-in-space much like those frequently seen in artist renderings. However, the latter abode would be too difficult to develop in space, experts now believe, and the alternate design has been proposed.





NASA

Dr. O'Leary estimates the space platform will be approximately 500 meters in diameter, which he says is equal to a walk along the circumference of roughly one mile. The station would revolve at a speed of about two complete spins per minute, thus giving inhabitants the near equivalent of one Earth gravity of weight. The number of actual settlement residents would be about 10,000 total, many of whom would be occupied with jobs necessary to maintaining the station's assorted life support systems.

Settlement life, however, would not be confined to the human variety. Animals of various species, including poultry, livestock, and family pets would be a part of the spacial scenario. NASA engineers are even seriously considering a man-made "river" for both aesthetic and practical value, and which might (in fact, probably would) be stocked with assorted fish and water-born plant life.

Spacial sporting events would take the place of Earth-side athletics and include such events as hang-gliding and human "free-fall" flight at the hub or central axis of the settlement where little or no gravity would be in effect.

Shrubs, trees, and plants of endless varieties would facilitate both the beauty of the settlement and help supplement the mechanized air recycling system sure to be in operation. Life within the L5 platform could, in short, be both interesting and exciting.

Over and beyond its purpose as a home in space, the L5 settlement would have other, vastly more important uses. The greatest of these is the likelihood of collecting solar energy from the sun, storing it, and transmitting it to receiving/distributing stations on Earth's surface.

According to Dr. O'Leary, the *entire* electrical needs of the mainland United States could be provided via space-born solar power transceivers within 20 years of the initiation of such an operation. Furthermore, he also points out that with continued expansion of solar power stations, *the needs of the entire planet could be supplied soon thereafter.*

In a nutshell, the solar power scheme reads like this: once firmly established, the space settlement residents would begin construction of giant solar power collectors. Using the space shuttle, these collectors would actually be manufactured in orbit, since the cost of building and launching them from Earth would be too immense. Energy stored within the collectors would then be focussed into a low-density microwave beam, and in this way be transmitted through the Earth's atmosphere to be picked up and redistributed by receiving stations on the planet's surface as electrical energy. Present conventional power conversion systems would be adequate to handle the necessary electrical generation.

Considered in this light, the entire scenario seems quite feasible. Perhaps *too* feasible, many lobbyists will no doubt declare, thus raising the ultimate issue of money.

However, Dr. O'Leary has pointed out that the entire project "would be just a fraction of the hundreds of billions of dollars earmarked for Project Independence (the American scheme to become 'energy independent' within the next 20 years)." Surely the colony concept is a viable alternative to such energy harnessing techniques as nuclear power (which actually increases the cost of electricity), or the millions of dollars being used to deplete the world's oil fields. Coal mining also has its drawbacks inasmuch as it causes extensive environmental damage through strip-mining — damage which years are needed to correct. And like oil, the planet's coal resources will be largely depleted before another century is finished should the population continue at its present rate of expansion (about two percent per year).

This leaves us with nuclear and solar power for the long-range future, and real efforts to advance the technology of the former have so far been largely without success.

All of which brings us back to the concept of the space settlement and its potential as a center for solar power collection and dissemination. If O'Neill, O'Leary, and the many scientists and engineers now championing this project are greeted with success, an entire new energy-sufficient world may awaken before and around us. Should this happen, humanity can then look with renewed interest at space and its distant points of light, and perhaps see the day when men will arise on spectacular new engines — on their way to the stars.



Additional information on O'Neill's space settlement may be obtained by writing: Dr. Brian O'Leary, Dept. of Physics, P.O. Box 708, Princeton University, Princeton, NJ 08540.

# SKYQUAKES—THINGS THAT GO BUMP IN THE NIGHT

*EDITOR'S NOTE*

Although we realize the military released a statement in early March of this year admitting that some of the unexplained sky blasts occurring along the East Coast were caused by experimental flights, we feel the explanation offered does not fully explain the recent phenomenon (let alone the historical cases), nor such related events as the light flashes which sometimes accompanied the blasts.

## By Jon Douglas Singer

*"The sky is falling! The sky is falling!" —Chicken Little*
*"Good Lord, preserve us from ghoulies and ghosties and things that go 'bump' in the night."*
*—Traditional Scottish prayer*

On December 2, 1977, the peaceful skies of the northeast were shattered by a series of tremendous blasts. The *New York Times* reported that the blasts occurred on 7 occasions up to December 15.[1]

The blasts were highly unusual in nature. When they were recorded by instruments at Columbia University's Lamont-Doherty Geological Observatory at Palisades, New York, it was found they gave off a force equalling 100 tons of dynamite. Specifically, two of the uncanny blasts occurred on December 2 and five more were reported on December 15. One of the observatory scientists, Dr. William Donn, found that the blasts were so powerful that they had been reported from Connecticut to South Carolina. Indeed, the *Times* noted, the blasts were so strong that employees at the Oyster Creek nuclear power plant in southern New Jersey had been evacuated for fear of a possible earthquake. Dr. Donn noted that while no anomalous wave patterns had been reported on the East Coast, the blasts were nevertheless more powerful than sonic booms. The Federal Aviation Agency, however, had ruled out the possibility that the booms had been caused by supersonic aircraft.

Another *New York Times* article reported that the blasts had not only occurred high in the atmosphere and many dozens of miles off shore.[2] The article added that the Federal Aviation Authority not only denied that sonic booms were the cause of the blasts but also stated that the explosions were not nuclear in origin. In fact, their assertion had been supported by microbarograph readings which showed definite indications that the blasts were *not* caused by aircraft passing the sound barrier.

If the blasts were neither supersonic nor nuclear in nature, what were they? The *Times* reported that the same scientist, Dr. William Donn, an expert in acoustical science, had put forward a hypothesis which suggested the blasts were caused by bubbles of methane gas which escaped from cracks in the continental shelf. The gas bubbles would rise into the atmosphere where they would then be ignited by static electricity. This explanation seems unconvincing when one considers the fact that so many uncanny explosions occurred at so many different places. Are we to accept the notion that a giant crack or series of cracks suddenly opened all along the East Coast?

Nevertheless, a similar theory was reported by the *Denver Post*.[3] The *Post* cited an anonymous AP dispatch which mentioned the theory of Dr. Stanley Klemetson, an environmental engineering scientist and also an associate professor of civil engineering at Colorado State University. Dr. Klemetson also suggested that methane or hydrogen gases had caused the explosions. Klemetson's theory differed from Donn's in that the former suggested that the gases originated in submerged deposits of sludge such as garbage and treated waste deposits. The gases accumulated, rose to the surface, and then into the air. The gas, if warmer than the surface air, would then rise high into the sky, where natural static electricity would ignite it. Klemetson supported his hypothesis by noting that the blasts occurred near major coastal cities such as New York, where garbage is dumped offshore.

An alternate theory was posed by Dr. Donn. According to the *San Antonio Express*,[4] Donn suggested the enigmatic explosions were the result of secret military tests. Donn added that the causes of the blasts were probably so secret that various branches of the government didn't know that other government departments were working on new equipment, such as weaponry, which would initiate the blasts. However, the *Express* was told by the Pentagon that the defense agency had no knowledge of the skyquakes and that it knew of no military tests which were responsible for them.

Another theory concerning the blasts' origin was suggested to me by Mr. Bob Warth, president of SITU.[5] He speculated that some of the blasts may have been caused by preliminary soundings prior to planned offshore drilling. These tests would have been conducted in areas where oil had recently been discovered (as off the New Jersey coast), and where oil drilling leases had been sought by the major companies from the states concerned as well as the federal government.

That hypothesis was dismissed by Dr. Donn, who said in an article in the *San Antonio Express* that the blasts were too powerful to have been caused by offshore drilling tests.[6]

Mr. Warth himself didn't fully accept the idea of the blasts as the direct result of tests, but added that perhaps the tests might account for gas leaks into the atmosphere from below the ocean floor. He noted that light flashes in the sky had been reportedly seen to accompany the blasts on several occasions, and these flashes did not correspond in time with any recorded seismic activity in that area according to conversations Mr. Warth had with Dr. Donn. The flashes of light have given rise to a number of intriguing theories, some of which will be discussed below.

For example, the *New York Times* reported that light flashes were seen in the sky above the East Coast on December 21, one day after blasts had shaken central New Jersey. When the light flashes occurred on the 21 of December, windows in New Jersey were rattled. Two blasts had occurred there on the twentieth of December. Five blasts were heard in Charleston, South Carolina, on December 15. Two other airquakes occurred there on December 20.

In January, 1978, the blasts persisted and the *New York Times* again mentioned the methane gas theory.[6] The *Times* brought up the theory of Dr. Thomas Gold, of Cornell University, who stated that methane gas could easily account for the explosions. Gold thought that methane gas could easily escape not only from volcanoes, as had been previously thought, but also from fissures in the earth. The rising gas would then be ignited by static electricity in the air.

The January 19, 1978 *New York Times* article added that the skyquakes continued in late December and into January. Blasts were heard in New Jersey on December 30 and in Charleston, South Carolina, on January 5 while yet another airquake occurred in the latter city on January 12.

Earlier, another *New York Times* article by Walter Sullivan reported on blasts heard in the Charleston, South Carolina, area.[9] The weird blasts in the Charleston region were so powerful that not only did windows fall out, but entire buildings shook as if an earthquake had struck. The idea of an east coast earthquake is not as absurd as it may at first sound; similar mystery sounds had been heard before. This southern city was startled by strange noises in the air just prior to the earthquake of 1887. Sounds in the air had also been heard in southwestern West Virginia on May 31, 1897, in Giles County, just before an earthquake struck that area. Indeed, two very slight quakes were recorded when air shocks hit Charleston in 1977 on December 15, between 8:37 and 10:24 a.m.

At that time (December 15) the federal government began an investigation of the uncanny phenomena. First, the White House Office of Science and Technology Policy asked the Defense Department to investigate the skyquakes. Then, after failing to solve the mystery surrounding the sounds, the investigation was handed over to the Naval Research Laboratory, headed by Rear Admiral Robert K. Geiger, Chief of Naval Research. Geiger's investigators launched a research program which lasted 60 days. Another governmental study carried out by the Congressional Research Service of the Library of Congress also failed to come up with an explanation for the sounds. They did, however, note that while wave activity was normal at Charleston during the time of the explosions, wave activity at Bethany Beach in Delaware was rather erratic.

Incidentally, the January 24, 1978 issue of the *National Enquirer* (page 37) reported that the following agencies of the federal government had investigated, and had failed to furnish an explanation for, the phenomenal explosions: the Defense Department, the Coast Guard, the Interior Department, the Geological Survey, the National Oceanic and Atmospheric Administration, and NASA.

As the theories about exploding methane gas failed to gain support in light of the evidence, a new and even more bizarre explanation was promulgated by Bob Pratt, a reporter on the staff of the *National Enquirer*.[10] Pratt's article suggested UFOs were the cause of the skyquake phenomena, a theory probably inspired by reports of eerie light flashes that occurred along the East Coast, especially in New Jersey, prior to or during the enigmatic blasts. Pratt's article did not include pertinent data such as the flash seen in New Canaan, Connecticut. According to an article in the *Dallas Times Herald*, the New Canaan explosions, three in number, occurred at 11:43 p.m. on Tuesday, December 20. New Canaan residents reportedly saw a ball of fire in the night sky at the same time as the explosions.[11] Pratt's story does, however, note that a mysterious bang rocked the skies of Plymouth in northwestern New York. At the same time, on November 23, 1977, residents were startled by the sightings of several UFOs which streaked overhead and then came close to ground level.

The first Plymouth sighting was reported by farmer Tom Colledge, rudely awakened by a great roar at 12:45 a.m. Rushing to the window, he was amazed by the sight of a huge UFO, which reportedly made a crackling noise. Described as being about 75 feet in diameter and 75-80 feet long, the UFO appeared to be about 150 feet above the barn. Blinking lights could be clearly distinguished; Colledge and his wife observed four to six red lights and several bright white lights. The roaring apparition was shaped like an "arrowhead" and had four rockets in the back. The farm family watched the fascinating spectacle until the unearthly craft moved away across a valley 200 yards from the house, then vanished behind a hill.

A second sighting was made by Bob Travers and his family, who live 3 miles from Colledge. Travers, his wife, and their 16-year-old son Tom saw another arrow-shaped object at about 1:00 a.m. It too had announced its presence with a loud roaring. Travers and his family, also awakened from sleep, were amazed by the sight of an arrowhead-shaped object; this UFO, however, reportedly had two or three rows of square windows in the front and red and green lights as well as white ones.

Pratt added that a spokesman for Hancock Air Force Base, 50 miles northwest of Plymouth, had stated that neither military nor commercial aircraft had been in the area at the time of the UFO sightings.

Pratt cites other cases of UFO sightings which allegedly accompanied the great bangs. For example, on December 2, 1977, when the great blasts were heard from New Jersey to Charleston, South Carolina, a resident of the latter locality named William James Herrmann was awakened by a catastrophic roar at 9:30 a.m. Herrmann, a 25-year-old mechanic, saw a large silvery object hovering over an electric power tower about 500 feet away. Herrmann claimed the object was shimmering as it hovered directly over the tower.

On the same day, 9 hours later, according to Pratt, another UFO appeared in Elysburg, Pennsylvania. Mrs. Phyllis Crowl and her daughter were driving in their car when they were startled by the appearance of a UFO with white lights in front and blue lights behind. The object, 200 feet from their car, astounded them by abruptly splitting in half! The separate halves then blithely zoomed off in different directions.

Two days later, UFOs buzzed along in the night skies over the farm of George Richard. Pratt writes that on December 4, 1977, the 59-year-old farmer and his wife were

awakened at 5:30 a.m. by a bright object which consisted of three windows in a cabin. Each window was square and each was atop the other, as in the Travers' object. The Richards observed two red lights in front, one atop the other. The UFO hovered for a while before rushing off beyond a hill.

Later in December, on the 13th, two teenagers reported a UFO to the police of Long Beach, New Jersey. The nighttime sighting was also witnessed by the two policemen, Patrolman Scott and Sgt. Robert Snyder, who answered the call.

Snyder and Scott allegedly saw peculiar yellowish lights that flew around in the night sky. Interestingly enough, these lights had the habit of suddenly vanishing; then, just as abruptly, they would reappear. Scott was a pilot as well as a policeman, so he was familiar with nocturnal airplane lights. He insisted that these lights were not from known aircraft. Another odd aspect of this particular case is that both Scott and Snyder reported a lot of shooting stars that behaved in an unusual manner. Pratt did not give any more details about the shooting stars but did note that the shooting star sightings lasted about 4 or 5 seconds.

Lastly, a link between UFOs, and the eerie airquakes was reported to Pratt by William Hayes, Civil Defense coordinator for Ocean County, New Jersey. He said that between December 2 and December 21 nine blasts were recorded along the New Jersey coast, and at that time many reports of UFOs were made by citizens to the Civil Defense. The UFO reports coincided with the blasts, but Pratt gave no details concerning the Ocean County sightings.

UFOs may not be the only explanation for the eerie lights in the sky during the occurrence of the blasts, however. According to the *Paris News* (of Paris, Texas), lights in the sky such as luminous glows had accompanied many of the blasts heard along the East Coast.[12]

The light flashes may be similar to what is known as pre-earthquake phenomena, when uncanny glows are seen prior to powerful earthquakes. For example, *Geotimes* reports that the Idu Peninsula earthquake in Japan on November 26, 1930, at 4:30 a.m., was accompanied by reports of luminous glows in the air.[13] Similarly, the series of earthquakes at Matsushiro, Japan, in 1965-7 was also accompanied by reports of light flahes — some of which were photographed (see accompanying photos). Also in the Orient, white and red lights were seen during the T'angshan earthquake at T'angshan, in mainland China, on July 28, 1976.

Reports of earthquake light flashes also have come from the United States. In January, 1922, for example, a northern California quake was accompanied by light flashes over the Pacific. The glows were so bright that observers thought a ship had caught fire. Another California quake rocked Monterey in October, 1926. At that time a flash of brilliant light was also reportedly seen at sea; more recently, Californians at Santa Rosa were startled not only by the October 1, 1969 earthquake, but also by a bewildering variety of luminescent phenomena which accompanied it: lightning, electric sparks, St. Elmo's fire, *fireballs*, *meteors*, and sounds like *explosions* (italics mine—Author).

*Geotimes* reported that several scientific studies of earthquake lights had been made by both Japanese and American researchers. In the 1930s Japanese seismologists Torohiko Terada and Inkkiti Musya gathered not less than 1,500 reports of odd lights from the Idu area. Sheet lightning was reported as well as flashes, auroral-like streamers, beams and columns, or red glows, all of which occurred in areas 80 and 112 kilometers from the epicenter.

Another report on earthquakes and lights was made by Yutaka Yasui, who found that the phenomena of the Matsushiro quake could not be explained by meteors, twilight, zodiacal light, arcing power lines, or lightning. Thus, 18 of the 35 cases he had studied could not be explained.

> ". . . reports of eerie skyquakes have been recorded all over the world for hundreds of years."

One American scientist, Dr. J. E. McDonald of the University of Tucson, Arizona, had reported that light flashes accompanying the Hegben Lake, Montana, earthquake of 1956 may have been caused by electrical imbalances resulting from the aerodynamic drag of a landslide. The imbalance would be highly charged, with luminosity the result. McDonald admitted that the phenomena could not be explained in cases which had taken place in areas where landslides had not occurred.

An alternate theory for the glows was posed by David Finkelstein of Yeshiva University and J. R. Powell of Brookhaven National Laboratory. They suggested that piezoelectric effects in quartz-bearing rocks resulted from stress changes. A charge built up over the years would be relieved during an earthquake. The stress may be triggered off just prior to an earthquake as well, resulting in discharges that might be seen as much as several days prior to the quake.

Thus, Pratt's UFO explanation may not fully account for the lights seen at the time of the blasts. He lists, in his article, a number of scientists and researchers who support his contention: Prof. Robert Creegan, professor of philosophy at the State University of New York at Albany, Dr. James Harder, professor of engineering at the University of California at Berkeley, and Dr. George Agogino, chairman of the department of anthropology at Eastern New Mexico University (and member of SITU's Scientific Advisory Board).

I myself am somewhat skeptical of the UFO theory, as reports of eerie skyquakes have been recorded all over the world for hundreds of years. Phenomenologists such as Charles Fort and William Corliss have reported several areas where the noises have recurred quite frequently, such as at Moodus, Connecticut, where the Moodus Noises were scientifically studied as recently as 1975.[14] There, Prof. Edward Chiburis of the University of Connecticut was employed by the Nuclear Regulatory Commission to study the possibility that the Moodus Noises had been caused by an earthquake fault that might damage a nuclear power plant near Moodus and East Haddam. Chiburis found that the noises were inexplicable and were *not* caused by an earthquake fault.

*(Continued on page 50)*

# EARTHQUAKE

*[The following article is reprinted in its entirety, by permission, from* Geotimes, *Vol. 22, No. 12, December, 1977.]*



Earthquake lights — luminous phenomena observed during some earthquakes — are worth more investigation, according to John S. Derr of the U.S. Geological Survey's Denver field center. Derr said that few scientists have worked on the question because most reports of these lights come from untrained observers. 'Nevertheless, observations have been made for years,' he added, 'and the existence of earthquake lights is well established.'

Derr noted that the first known investigations of earthquake lights were carried out in the early 1930s by 2 Japanese seismologists, Torahiko Terada and Inkkiti Musya. Musya collected some 1,500 reports of lights from the Idu Peninsula quake, which occurred at 4:30 a.m. Nov. 26, 1930. Most accounts describe the sky lit up as if by sheet lightning, with most of the observers agreeing that the duration of a single flash was much longer than a lightning flash. Others described the lights as resembling auroral streamers, beams and columns, or as a ruddy glow in the sky. The lights were estimated to be 80 km east of the quake's epicenter, nearly 112 km northeast, and more than 64 km to the west. They were seen both before and for some time after the quake, but were most conspicuous during the middle of the shock.

There have been a few reports of earthquake lights at sea. In January 1922, when an earthquake occurred off the coast of northern California, an observer noted a glow at sea that was first thought to be a ship on fire. In October 1926, a flash of light at sea, described as like a transformer exploding, was observed at the time of an earthquake centered in Monterey Bay.

More recently, Yutaka Yasui, a physics professor at Dokkyo Medical College, Japan, collected photos of lights seen during the Matsushiro earthquake swarm in Japan from 1965 to 1967. At least 18 of the 35 sightings are not explained by meteors, twilight, zodiacal light, arcing power lines, or distant lightning.

During the Santa Rosa (Calif.) earthquake of Oct. 1, 1969, there were extensive sightings of lights in the area, which were described in terms of lightning, electric sparks, St. Elmo's Fire, fireballs, or meteors. Some people heard sounds like explosions.

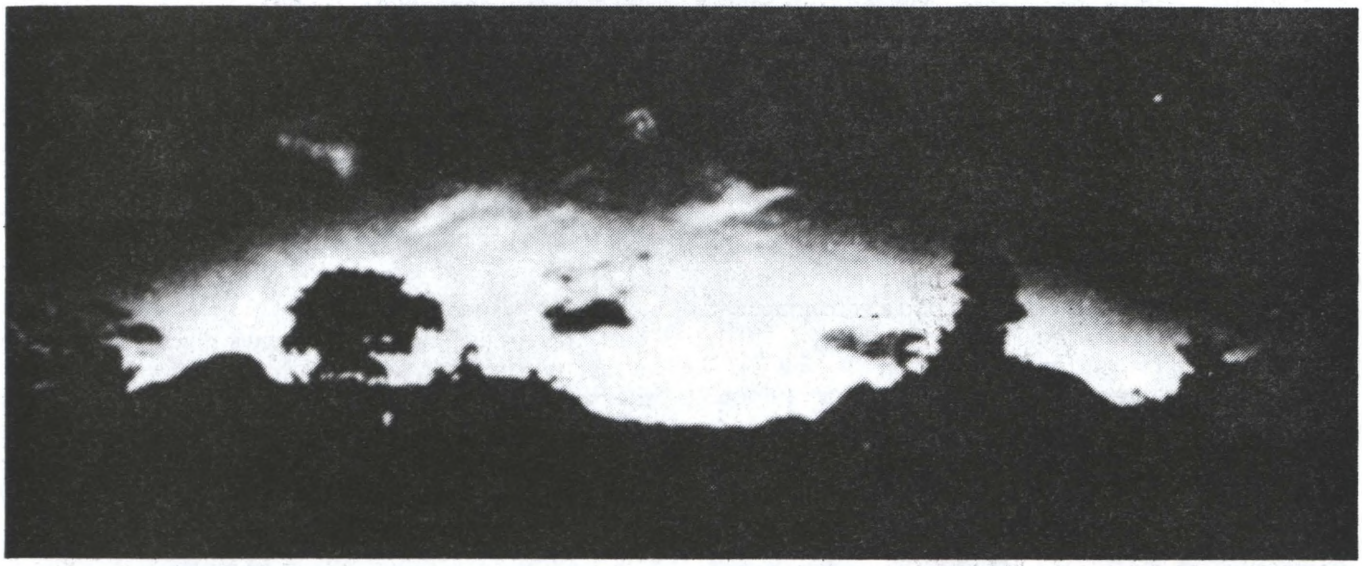
The most spectacular sightings on record occurred in China during the disastrous T'angshan earthquake of July 28, 1976. Observers reported seeing the sky lit up like daylight in the epicentral area. Lights were also seen as far as 325 km away from the epicenter. They were mainly white and red, and bright enough to wake people, who thought that their room lights had been turned on.

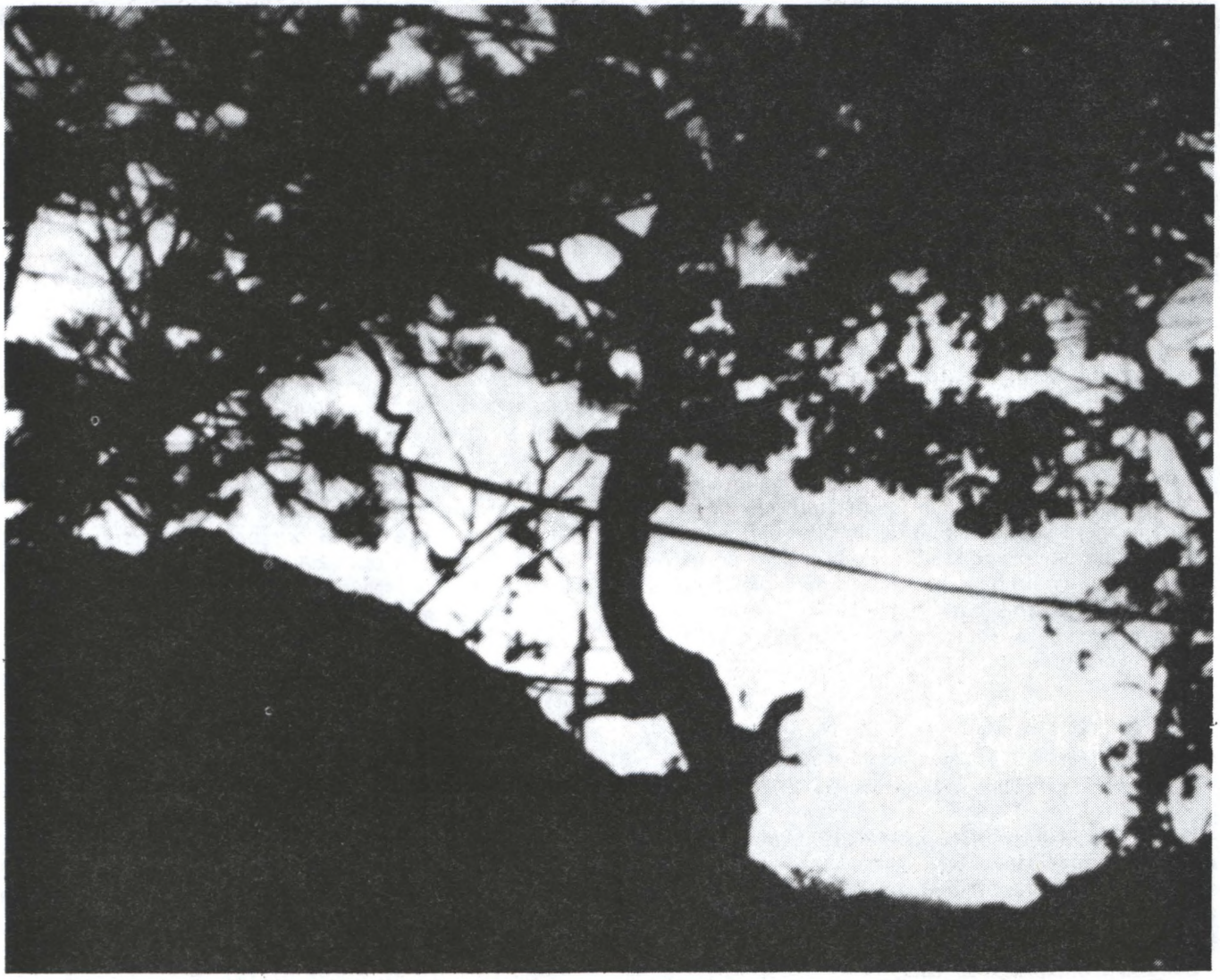
One theory that might explain the lights involves violent low-level air oscillation. In the case of the Hebgen Lake earthquake in 1956 in Montana, J. E. McDonald of the University of Arizona, Tucson, considered the possibility that space charge might be transported through a vertical distance of 300 m by aerodynamic drag from a landslide triggered by the quake. This could set up temporary electrical imbalances that would lead to luminosity. However, McDonald said, this mechanism would not explain most of the sightings that do not include landslides.

Another theory is linked to the piezoelectric effect in quartz-bearing rock (the setting up of an electrical potential in certain rocks — particularly quartz — as the result of stress changes). David Finkelstein of Yeshiva University and J. R. Powell of Brookhaven National Laboratory reported that some evidence exists that the stress accumulated in rocks over a period of years may begin to be released very slowly several days before a large earthquake. This straining could lead to generation of a high seismoelectric potential, generated by stress on piezoelectric quartz in the rocks, and the resultant discharges might be seen several hours before the actual fault break of a major earthquake. If this theory is correct, it may be possible to develop electrical monitoring methods for earthquake prediction.

# LIGHTS

**Earthquake lights photographed during the Matsushiro earthquake swarm (1965-1967) by T. Kuribayashi, Matsushiro, Japan.**





## BUMPS IN THE NIGHT *(Continued from page 47)*

Indeed, reports of the Moodus Noises go back 200 years, as do reports of similar noises at Barisal, India, and at the Seneca Indian Reservation in New York State, where such noises are called "the Guns of the Senecas." At another time, I hope to deal with the historical cases, but it appears from a brief survey of the evidence at hand that there is no simple explanation for their cause. The idea that UFOs are to blame may be too simplistic; perhaps the UFOs themselves are studying the weird skyquakes!

* * * *

It might be only coincidence, but just prior to the series of uncanny airquakes a series of odd electromagnetic phenomena was reported. On November 21, 1977, CBS's "Evening News" (on Channel 2 in the New York metropolitan area) reported at 7:15 p.m. that mysterious radio signals picked up by a computer on board a European weather satellite-bearing rocket, which was about to be launched by NASA, interfered with the launching to such an extent that the craft could not take off and the mission was temporarily aborted. The origin of the signals was not discovered. Would it be only a coincidence that on November 23 there occurred the first flash-and-blast case described above?

Another possible coincidence involves a very weird case that was reported in the *New York Times*.[15] In Southampton, England, the Southern Television channel was blocked out by odd bleeps which were replaced by a man's voice. The man claimed to be Asteron, a representative of the intergalactic mission. He read a message for earth, urging the peoples of earth to learn peace. Weapons must be destroyed because humanity is entering the Age of Aquarius. Failure to do so would result in Earth's being banished from the Galaxy. Officials of the Southern Television company were unable to explain the event and noted that the equipment necessary for such a hoax would have to be extraordinarily sophisticated and expensive. Thus, it seems unlikely that a hoax would be the cause of such a weird interruption of normal programming, although the name "Asteron" seems phony — *Aster* is Greek for *star* and the Age of Aquarius is derived from astrology and from the musical *Hair*. The whole incident sounds like a bad 1950s sci-fi movie but people such as college students who might perpetrate such a hoax would have to be extremely well funded.

Nevertheless, this case reminds SITU members of another, similar case in which English television transmission was interrupted by uncanny broadcasts. I'm of course referring to the famous KLEE-TV case of several years ago when the call letters of a then-out-of-business TV station in Texas blotted out a show on British TV for a few seconds. Thousands reported that they had seen the phenomenon, which some dismissed as a hoax while other experts felt it would take very expensive equipment to produce such an effect. Indeed, such a secretive broadcaster would have to be a billionaire like Howard Hughes in order to avoid detection and prosecution; and so far as I know, nobody has yet been caught and prosecuted for sending the weird message.

* * * *

As this article goes to print news reports such as an article by correspondent John Noble Wilford on p. A9 of the Friday, March 3, 1978 edition of the *New York Times* told of findings of the United States Naval Research Laboratory concerning the nature of the mysterious skyquakes. Wilford reports that two scientists attached to the Langley Research Center of NASA in Hampton, Virginia, concluded that military aircraft engaged in combat maneuvers were responsible for the blasts.

The scientists said that the booms occurred when supersonic blasts bounced off warmer high altitude air which deflected the sound to areas 100-200 miles away. Usually, such sonic booms occur only within a path 15-30 miles wide. The unusual magnification of the sounds was caused by a combination of the extremely cold weather conditions with the warmer air at the 20-30,000 foot level, where supersonic jets fly. The researchers noted that the blasts did indeed occur at times when jets were conducting practice runs.

The military had at first denied the possibility that supersonic blasts from jet aircraft were to blame because they had failed to take the freak weather patterns and air currents into consideration. In other years, the weather at the time of year during which the blasts had occurred (December-January) had not been as inclement as it was this year.

While it seems that the current series of skyquakes may have been explained, at least to the satisfaction of the press, the government, and the scientific community as a whole, I'd like to point out that no supersonic aircraft were in the skies over East Haddam, Connecticut, in December of 1813, when similar blasts were reported. That is, in so far as we know....

The End (?)



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[2] *New York Times,* Sunday, December 25, 1977, Section 4, p. 5.

[3] *Denver Post,* Saturday, December 24, 1977, "Mystery Booms in Atlantic Bring Spate of Speculation."

[4] *San Antonio Express,* Tuesday, December 20, 1977, "Mystery blasts secret U.S. test."

[5] Personal communication.

[6] *San Antonio Express,* op. cit.

[7] *New York Times,* Thursday, January 19, 1978, p. 17 sec. A.

[8] Ibid.

[9] *New York Times,* January 13th or 14th.

[10] *National Enquirer,* January 24, 1978, p. 37, "UFOs Linked to Blasts That Rocked East Coast," by Bob Pratt.

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[13] *Geotimes,* December, 1977, p. 31, "Earthquake Lights."

[14] *New York Times,* August 9, 1975.

[15] *New York Times,* November 28, 1977, p. 2.

# "SKYQUAKES"—AND SEPARATE REALITIES

**By Dr. David Rind**
(Lamont-Doherty Geological Observatory)

Beginning December 2, 1977, residents on the east coast of the United States have been sporadically shaken by unexplained shock waves. We have recorded some of these waves with a network of microphones adjusted to monitor in the infrasound range, from 0.1 to 10 Hz (audible sound begins at 20 Hz). Our network is located near Palisades, N. Y., to the north of the area of maximum effect; nevertheless, the amplitude of the pressure wave recorded was 40 microbars peak-to-peak, equivalent to about 108 decibels, or about the noise level of the Concorde supersonic plane flying over the airport monitors at Kennedy airport. This was not the effect of the Concorde, however, which flew at different hours and which we have also recorded — it presents a completely different pattern. The signal recorded by the microphones is traced out on visible charts, and a picture of the shock wave passage is presented in Fig. 1. The following points can be made about the phenomena:

1) It has been felt as the shaking of houses, rattling of windows, etc., in South Carolina as well as along the New Jersey-New York coastline as far north as Connecticut.

2) It has not been reported from any area in between South Carolina and New Jersey, nor has it been reported more than about 50 miles inland.

3) It has occurred at all hours of the day and night, although it is felt especially during daylight hours.

4) The occurrences on December 2, both in the morning (between 9:30-10:00 a.m.) and in the afternoon (between 3:30-4:00 p.m.) were practically simultaneous in South Carolina and New Jersey; in general, though, the effects have been felt in one area for a series of days, then in the other area during another series of days.

5) In addition, dome-like bursts of light have been seen in the areas off the East Coast, sometimes coinciding with this phenomenon, sometimes independently. This has been verified by both ground-based and pilot observers.

6) Our records indicate the signal is coming from offshore to our south, apparently near the coast and in an area in plain view of many observers, yet nothing has been seen which would indicate a probably source.

7) While these pressure waves have been recorded on seismographs capable of responding to atmospheric fluctuations, they have not produced any effect on the more insulated systems, indicating that they are not associated with earth tremors.

These occurrences have received wide-spread publicity; my colleague William Donn was on all the news programs reporting our observations and, essentially, expressing his mystification. The White House ordered the Department of Defense to investigate, and they in turn contacted us looking for an explanation. I would first like to deal with the most obvious possible causes, then investigate the nature of the questioning process.

One hypothesis is that these "airquakes" result from supersonic planes flying over the specific areas. The originators of these flights may be either our own military or an enemy. While we do have military aircraft of the supersonic variety at bases in position to fly such flights, it is hard to believe that these aircraft are responsible. No one saw such flights, and the areas in question are not remote from habitation. Once public interest was aroused, it is logical to assume that any agency the least bit sensitive to public scrutiny would stop — at least until the previous incidents had been forgotten; yet the events have continued. The military denies any participation, which might be expected, but the phone calls from upper-echelon military men asking for information, as well as the seeming willingness of the military to allocate funds to investigate, tend to make them appear less culpable. Some people, I suppose, will never believe it is not the military, but their gratuitous phone calls to us were not truly necessary.

Maybe an enemy is causing these shocks. Again, no planes have been reported; and our armed forces are on continual radar guard for just such an event. Why no shockwaves between South Carolina and New Jersey? What about the bursts of light?

Another hypothesis is that the sounds resulted from explosions which were either man-made or naturally conceived. The objections to our military involvement are the same as for supersonic planes. If the sounds represent natural phenomena, why do they occur only at two places off the coast? And why did they occur practically simultaneously not once but twice on December 2 at the two locations? To produce a shockwave that rattles houses from the southern tip of New Jersey to the Connecticut coastline requires a source with significant energy, so it is not small-scale aberrations that are concerning us.

As of this moment, no explanation that has been offered can stand even the most minimal scrutiny or satisfy points 1-7. Thus the phenomenon fits into the same category as most other Forteana, the most outstanding characteristic being that the unexplained event never does get explained. In a previous article in *Pursuit* (Vol. 7, No. 4, Oct. 1974), I argued that such occurrences might never fit into our view of reality which is, after all, only a description of the world which we have formulated in a cumulative manner for the past several thousand years. As noted in that article, other realities apparently abound, intermingled with our own, in which apparently impossible events are accepted and "understood" in the same manner that we "understand" what happens in the everyday world. Perhaps these mysterious "skyquakes" are a common feature of the reality which Carlos Castaneda has described in his five books. If so, it is then the height of irrationality to try to rope into our preconceived view of the world something which will not fit; it becomes as ridiculous as it would be for savages to attempt to explain electric lights, or even for psychologists to attempt to explain abstract geometric patterns. This is

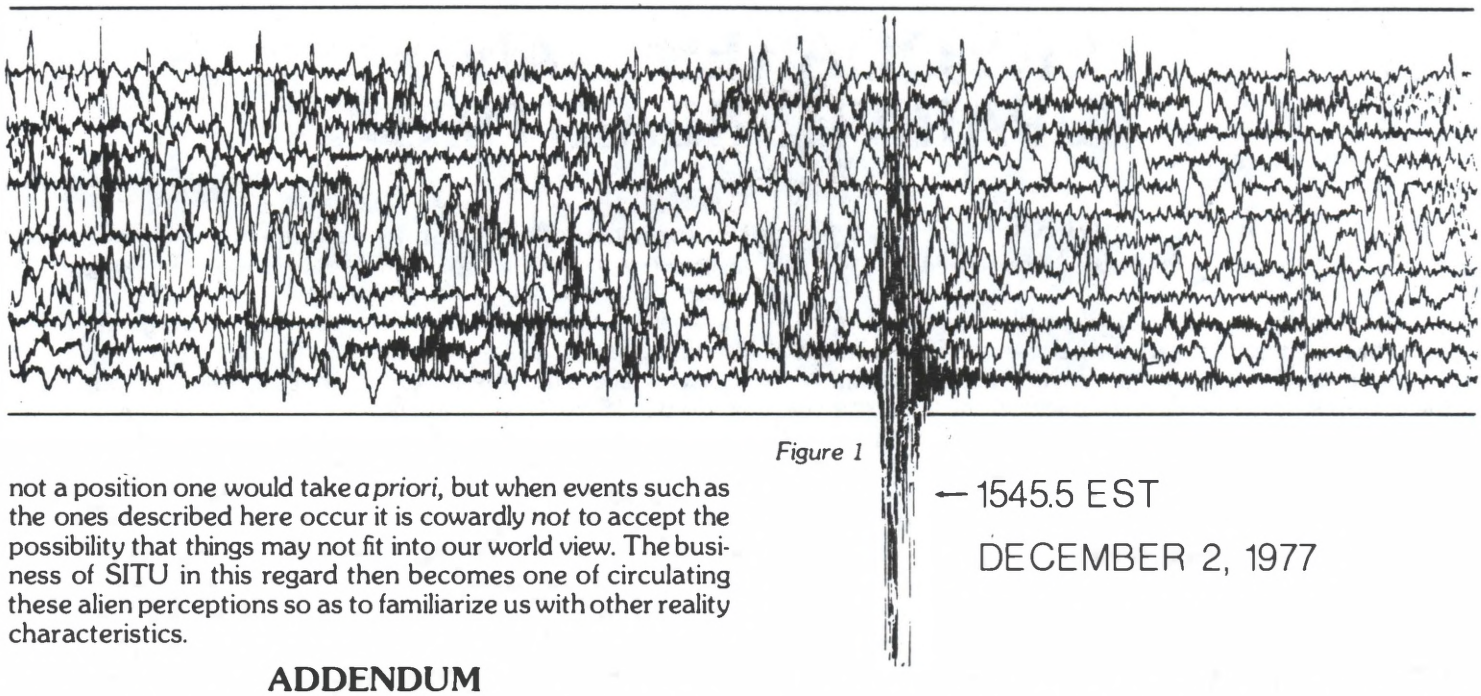



*Figure 1*

not a position one would take *a priori*, but when events such as the ones described here occur it is cowardly *not* to accept the possibility that things may not fit into our world view. The business of SITU in this regard then becomes one of circulating these alien perceptions so as to familiarize us with other reality characteristics.

## ADDENDUM

In this addition to my article, I would like to respond to the explanations for the "booms" suggested by (1), the Naval Research Lab, which indicated that the booms were caused by military planes flying offshore, and (2), the Federation of American Scientists (FAS), which felt the sounds heard resulted from the flights of the Concorde SST.

Before investigating these theories, a short discussion of sound propagation in the atmosphere would seem appropriate. Due to the curvature of the earth, sound will propagate only as far as the line-of-sight by direct travel — a very short distance for a source near, say about ½ mile above the surface. With a source at a greater altitude, say one at 8½ miles (the height at which the Concorde travels), the distance lengthens, and will approximate 30 miles. The applicable formula may be written:

$$\text{distance } x = 2(T_o h/\gamma)^{1/2}$$

where $T_O$ is the surface temperature in °K, $h$ is the elevation of the source, and $\gamma$ the vertical temperature gradient. Beyond this distance sound will not be heard (or felt) unless it has been reflected from some level in the upper atmosphere.

Reflection of sound (really *refraction)* occurs when sound rays are bent back to the ground due to an increase in sound velocity with height. Sound waves follow Snell's Law of Refraction which can be written:

$$\frac{V_o}{\text{Sin } i_o} = \frac{V_1}{\text{Sin } i_1} = \frac{V_n}{\text{Sin } i_n} = \text{constant}$$

(see Fig. 2), where $V$ is the sound velocity at each level and $i$ is the angle of incidence. As the sound velocity in the atmosphere increases, the angle with the vertical decreases, and the ray bends. To get the ray to bend back to the surface, the sound velocity at the reflection level must be at least as great as that at the surface. (This can be seen by: constructing a profile in which it is not as great, picking a ray, and constructing its path — you will see it bends back up before it can get down to the ground.)

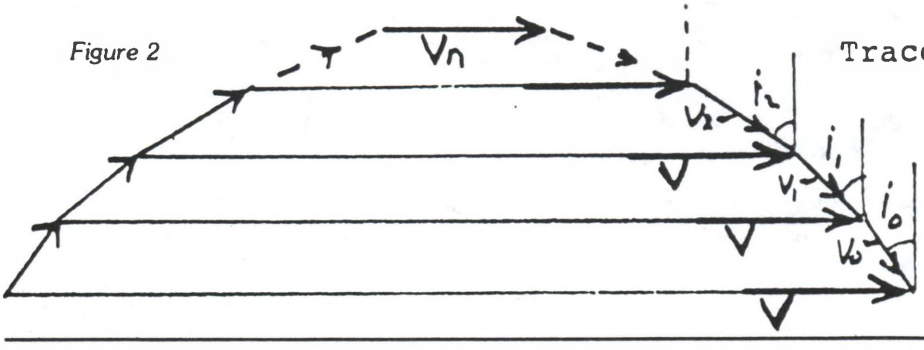
For long-distance sound propagation a suitable reflection level is a necessity, so one must find a level in the upper atmosphere in which the sound velocity is equal to or greater than the ground level sound velocity. The sound velocity, in m/s, is:

$$V = \sqrt{\gamma RT} + \vec{k} \cdot \vec{w}$$

where $R$ is the universal gas constant, $\gamma$ the ratio of specific heats (CpCv), $T$ the temperature in °K, $\vec{k}$ a vector in the direction of wave propagation and $\vec{w}$ the wind vector. If the wind is in the direction of wave propagation it *adds* to the ambient sound velocity; if it is in the opposite direction it *subtracts* from it. For signal propagating from east to west, an east wind aloft will *increase* the sound velocity and thus make reflection back to the ground more likely (depending on the temperature and thus the total sound velocity). A west wind will *lower* the sound velocity aloft and make reflection of signal from the east more difficult.

Fig. 3 shows the variation with height of sound velocity from the east in the atmosphere as a function of temperature alone, and also temperature-plus-wind for mean summer and winter conditions. The winter conditions are properly representative of this past winter. Remember that for sound to be reflected back to the ground *the sound velocity at the reflection level must at least equal that at the ground.* For signal from the east in winter this is not possible until

*Figure 2*




Trace Velocity: $V = V_o/\text{Sin } i_o$

$= V_1/\text{Sin } i_1$

$= V_2/\text{Sin } i_2$

$= V_n/\text{Sin } 90^o = V_n$

approximately 110 km. *Any sound that is thought to have propagated from a long distance offshore in an east-to-west direction will thus have to have been reflected from this height or higher.*

Now, sound amplitude *decreases* with distance from the source for several reasons. As the energy spreads out cylindrically from a plane, the amplitude will vary as $\sqrt{\text{distance}}$ due to this geometric spreading alone. Furthermore, sound dissipates due to viscosity and heat-conductivity effects in the atmosphere (as well as for other reasons), which in turn vary as a function of sound frequency *squared*. Due to dissipation alone, in the lower atmosphere this means that propagation of audible sound is limited to about 50 miles for 1000 Hz frequency (near the peak range of human audibility), increasing to 100,000 miles at 20 Hz (the lowest audible frequency). The dissipation grows in the upper atmosphere, however, *inversely proportional to*

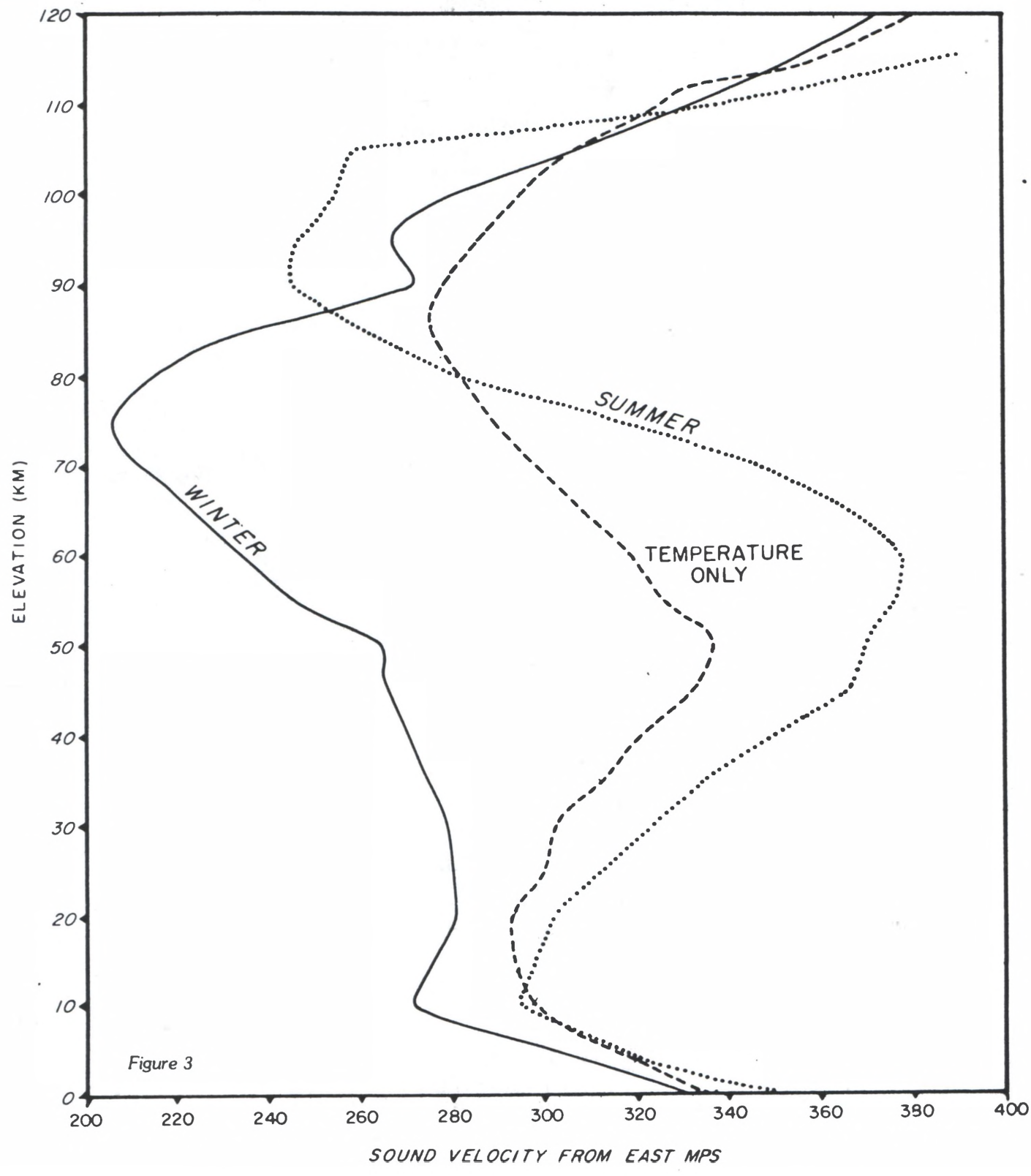



*Figure 3*

*the density* (which decreases exponentially with increasing height). For reflection at 50 km, the 20 Hz signal will have only a small percentage of its energy left; by 110km, the 20 Hz signal would be totally dissipated in about 3 feet, while infrasound, too low a frequency to be heard (but not to be *felt*), of .2 Hz would be able to be reflected with almost ½ its amplitude intact. One must then calculate the energy lost due to the geometric spreading. As the amplitude $A$ is proportional to $\sqrt{\text{distance}}$, if near the plane (say 1 km away) the pressure amplitude is 1 millibar (mb), at 100 km away it will be .1 mb or 100 microbars ($\mu$b).

After sound has propagated up to 110 km, come back down, and traveled about 250 km in all directions horizontally, one can see that only small amplitudes would remain. The sonic boom generated by the Concorde, which follows this path, comes down in our vicinity with a few $\mu$b pressure, having been reduced by both geometric spreading and dissipation. Furthermore, the sound wave stretches as it propagates to these high levels, and thus the frequency drops — sound which initially started out at 3 Hz near the plane returns with a frequency near .1 Hz. This fact *alone* prevents audible sound from returning to the ground after such a trip; of course, the dissipation factors mentioned above indicate it is quite impossible anyway. In order to shake windows in a house a pressure perturbation of a few millibars would be necessary — an impossibility for signal reflecting from 100+ km unless the source was *1000 times* more powerful than the Concorde sonic boom.

## EVALUATION

With this discussion in mind, we can evaluate the proposed explanations. The Naval Research Lab concluded that the booms were caused by their planes, with the potential to fly supersonically, flying 100-200 miles offshore, combined with anomolous sound propagation conditions. There was, they explained, a level of warm air above the cold surface air, which allowed the sound to propagate further than it ordinarily would have. This condition apparently lasted for several months, which on the surface appears to be an improbability. But let us look more closely.

December was a relatively warm month along the East Coast, with temperatures in South Carolina in the mid-60's. While January and February both were colder, there were no unusual inversions (layers of warm air aloft), as was evidenced by the major snowstorms throughout the period (with warm air aloft it would have rained). More importantly, the winds at the supposed reflection levels (20,000 feet) were very strong from the west-southwest, on the order of 50 m/s (100 knots). Inspection of the sound velocity formula indicates this would reduce the sound velocity from the east sufficiently so that no reasonable temperature increase, even if it were to have been present, would have allowed sound from the east to have been reflected. Without low level reflection, the sound would have to travel into the upper atmosphere, come back from 100+km — with the result, as we have seen, of no boom.

Both seismic and acoustic arrays indicated that the sound traveled from due south, not from the east offshore. In this case the planes would have had to be right near the coast — if they were further south, say south of Florida, the signal would once again have to go to 100+km before the majority of its energy was reflected — and, again, no boom would be possible. But the Navy, the FAA and everybody else deny that there were planes flying supersonically right along the coast. For this to have occurred so frequently over a three month period does seem unlikely. Furthermore, the areas in question are well traveled, and no one saw such planes. The only hope remaining for military planes was the long-distance propagation theory from offshore, and, as we have seen, this was not possible under the prevailing conditions.

As noted by Jeremy Stone, the head of FAS, although the armed forces have had planes capable of flying supersonically in these same training areas for the past 15 years, it is only suddenly — for the past few months, that they created booms. Dismissing this as implausible, he instead suggested that the Concorde SST, which began flying into New York at the end of November, was causing the booms. But the Concorde flies supersonically from England to New York *east* and *north* of the areas affected. To get the sonic boom to propagate from offshore it would once again have to reflect from the 100+km atmospheric levels, and it would therefore return with an amplitude much too small to produce a boom. The distances of propagation Stone imagines are 400 km for the New Jersey booms and 1000 km for the Charleston booms, so it is not as if the Concorde were flying nearby at the time it supposedly produced the booms. Furthermore, the sound appeared to come from the south, not from the Concorde's direction.

Neither explanation fits even the facts it attempts to explain, let alone the ones it has ignored (the flashes, which were observed, the ionization counters which activated, etc.). Uttered with the air of officialdom by those who are in a position to know, either can pass as the scientific explanation for the general public. But an inspection of the details of those arguments indicate they are mostly *conclusions* with very little *science*, probably because conclusions were what was being demanded. Yet it is this type of attitude (not an uncommon one), which maintains the illusion that everything we see is scientifically explainable, an illusion which prohibits us from opening up to other aspects of reality.




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# WITCHCRAFT AND WEATHER MODIFICATION

## PART I



Medieval witches raising a hailstorm. Ulrich Molitor, *De laniis* (1489)

**By George M. Eberhart**

When you can use the lightning, it is better than cannon. —Napoleon
Everybody talks about the weather, but nobody does anything about it. —Mark Twain

Mark Twain would be surprised to learn that weather modification is a big business in America today. Ever since 1946 when General Electric Research Laboratories discovered that silver iodide and dry ice particles will encourage rainfall in certain types of cloud, meteorologists and farmers have used the services of professional "cloud-seeding" companies to dampen drought-stricken areas. Other seeding methods aimed at hail

suppression, hurricane diversion, and lightning suppression have also been moderately successful. Recent Congressional legislation establishing a national program to develop new weather modification techniques will hopefully find a way to minimize the effect of bad weather on the American economy without disrupting our ecology.[1]

But weather changers in the past have not always encountered the same level of popular acceptance. Magical attempts to control the weather, while deeply rooted in the folklore of many agricultural societies, began to be regarded as pure superstition in classical antiquity and by the Middle Ages were seen exclusively as the work of magicians and witches. Even in modern times such rainmakers as Charles Hatfield and Wilhelm Reich (see below) were treated as quacks and con-men.

Silver iodide seeding is not the ultimate in weather modification — there is still controversy about its capabilities and side-effects. With this in mind it might be helpful to review the prehistory of weather control as a legal, sociological, parapsychological and, of course, meteorological exercise. For if one man can cause a storm by dancing, praying, psi-ing, or pointing metal tubes at the sky — why use chemicals?

## FOLKLORE

Non-western agricultural societies often used various forms of imitative magic to control the weather. Usually tribal shamans ("medicine men") took on this responsibility. When the cornfields of the Omaha Indians were withering from drought, members of the sacred Buffalo Society would fill a pot with water and dance around it four times. One of the men then drank some of the water and spat it into the air to imitate the desired rainfall. After this the pot was overturned and the dancers drank the water off the ground, squirting it into the air again.

The Zuñi Indians of New Mexico still perform a rain dance every summer solstice. The dancers paint themselves with yellow mud from a sacred lake and dress up in spruce twigs, eagle feathers, and live tortoises. They dance four times in the morning and four times in the afternoon at a different place each time. Every summer the Tesuque Indians at Santa Clara Pueblo hold a similar rainbow dance which is expected to produce rain. Certain Sioux shamans had a natural talent for weather modification: around 1900 there was a duel between two of them, Bull Shield and He Crow, to test each other's meteorological magic. Bull Shield's ability to disperse clouds allegedly triumphed over He Crow's power to produce them.[2]

Greenland Eskimo women were said to have the power to turn back storms, but only when they were in labor or shortly after childbirth. The woman would go outdoors, fill her mouth with air, and blow it out again after coming back inside.[3]

Most other peoples of the world have developed methods for producing or subduing winds and rain. Some rituals imitated the desired conditions, while others were designed to appease whatever god was in charge of the atmosphere. The Wotjobaluk Aborigines of Victoria, Australia, wetted bunches of hair and twirled them around, making a rain-like spray. In Central Australia the Dieri staged a blood ceremony to appease their ancestral spirits (Mura-muras) who had the power to cause rain. Two especially gifted wizards drew blood from their forearms, and this blood was sprinkled on the assembled tribesmen while the wizards threw handfuls of down in the air to symbolize clouds. Then everyone knocked down the hut where the ceremony took place by butting their heads against it: "the piercing of the hut with their heads symbolises the piercing of the clouds; the fall of the hut, the fall of the rain."[4]

In China the gods were formerly blamed for bad weather, but sometimes they could be supplicated successfully. If a rain god did not respond promptly, however, his images were desecrated. In April, 1888, when the god Lung-wong failed to stop a downpour, his statue was locked up and ignored for five days; this measure soon brought clear skies. The next year there was a drought throughout China and when the inhabitants prayed for rain they were answered by a flood which killed sixteen in Hongkong and destroyed a large sector of Canton.[5]

Prayer is a common rain-compelling ceremony in India and Nepal, and a variety of other rituals designed to control the weather are still in use there today. Specialist raindoctors (*basitondo*) of the Barotse in Zambia can ward off undesired storms and direct either lightning or rain to a particular place. They use special incantations and wave around flysticks or horns to flick away the storm. The *basitondo* possess powers for both good and evil and can also treat burns or wounds caused by lightning. As a contrast, the Kgatla tribe in Botswana believed that their chief had sole rainmaking powers — any enterprising shamans who tried to conjure up a storm were banished as traitors.[6]

The weather modification lore of European countries was directly ancestral to many of the practices attributed to witches in the Middle Ages and after. Demonic powers were frequently blamed for storms, and the inherent power of objects and places to change the weather was stressed more than in non-western cultures.

In Pomerania, for example, contrary winds could be reversed by throwing an old broom without a handle in the direction from which a wind was desired. But this practice was said to cause unmanageable tempests because the strength of the wind could never be predicted. Mariners of Normandy believed that favorable winds could be produced by reciting an irreverent prayer and immersing a statue of St. Anthony in the sea. The inhabitants of Grenoble believed they could stop storms by pouring a flask of oil into a stream that ran into the sea. Many sacred springs throughout France had a reputation for influencing rain and storms, and in times of drought the peasants would make pilgrimages to them. This originally pagan practice was later incorporated by Christianity which hastened to rename the springs after appropriate saints.[7]

Sacred wells in Scotland and Wales were also credited with the ability to attract or allay storms. A lake called Dulyn on Snowdon in North Wales could be relied on to produce rain if someone threw water on the furthest stepping-stone that extended into it. On the isle of Inishmurray off County Sligo, Ireland, there was a well called Tobernacoragh that could calm a tempest if its waters were drained into the sea.[8]

Magic stones also had weather-working powers. A rock known as the Kempock Stane on the Firth of Clyde

was the haunt of a certain saint who sold favorable winds to faithful sailors, but unfavorable winds to those who doubted his powers.[9]

In the 19th century Swiss peasants would try to quell storms by placing a scythe on the ground, cutting-edge up, to wound whatever witch was causing the tempest. Romanians stuck a knife into a loaf of bread while a storm was raging and spun it around on the floor of the loft of their house to protect themselves from lightning. The gipsies of Transylvania believed there was a devil school, called the *Scholomance*, deep in the Carpathians where "the secrets of nature, the language of animals, and all magic spells are taught by the devil in person." Graduates of the *Scholomance* were able to prepare thunderbolts and generate storms and tempests with the devil's help.[10]

During Transylvanian droughts young girls would strip naked, steal a farmer's harrow, and set it afloat in a brook. Then, following the directions of an old woman, they would sit on the harrow and keep a small flame burning on each corner of it for an hour. Presumably rain would follow automatically. Romanian rainmakers were called *Paparuda*, very scantily clad gipsy girls who went from door to door singing for rain. The inhabitants then doused them with buckets of water to encourage a downpour. In Macedonia an orphan boy would parade the streets dressed in ferns and flowers, and the townsfolk would shower him with water and money to encourage cloud formation.[11]

The great majority of weather lore deals with white magic. Agricultural and seafaring communities depended on favorable weather for their livelihood, and consequently weather-modifying ceremonies usually were performed to regulate the amount of rainfall and the direction and intensity of the wind. Most of the ceremonies involved imitative magic, supplication to beneficent or neutral gods, or other "natural" processes that would automatically lead to the intended effect.[12] The idea of witch-produced weather for harmful purposes lurked ominously in the background, especially in Europe and Africa, but it never really surfaced to any extent until the introduction of Christianity. Prior to this it was usually assumed that if anybody caused bad weather at all it was whimsical gods or spirits rather than sorcerers, whether acting alone or in league with some sinister power.

## CLASSICAL ANTIQUITY

Many Greek and Roman authors commented on contemporary folk beliefs regarding weather magic. Homer made the first literary allusion to wind knots in the *Odyssey*, wherein Aeolus, god of the winds, gives Odysseus a bag containing all the winds (except the west wind) tied up with a silver cord. The scheme was to use the west wind to get back to Ithaca, but it was foiled when the crew opened the bag to look for treasure; the contrary winds escaped and blew the ship to Circe's island.[13]

Diodorus Siculus mentioned the Telchines of Rhodes, who were said to be magicians capable of shape-shifting and cloud, rain, and snow production. The *Geoponica* provided a list of various methods for warding off hail, and Seneca wrote that at Cleonae (near modern Kondóstavlos) "hail guards" were appointed by the state to watch for approaching hailstorms:

> ... when they had given the signal that the hail was close at hand, what do you think? that people ran off to get their overcoats or cloaks? Nay, they each offered sacrifice as fast as they could, one a lamb, another a chicken. Forthwith, these clouds after getting a little taste of blood drew off in another direction.

The hail could also be avoided merely by pricking one's finger with a "well-sharpened style."[14]

Pliny, somewhat more skeptical than usual, recorded several meteorological rumors: that burning the head and throat of a chameleon will cause thunderstorms; 2) that lightning bolts can be attracted by prayer and ritual; 3) that hailstorms and whirlwinds can be driven away if menstrual blood is exposed to the lightning flashes; and 4) that burying a toad in a jar in the middle of a cornfield will avert storms.

The emperor Augustus used to carry a sealskin around with him as a protection against thunder and lightning. Moreover, Pausanias related that at Methana the southwest wind could be quelled by having two men chop a rooster in half, run around a vineyard in opposite directions, and then bury the pieces at their starting place.[15]

Not until the codification of law known as the Theodosian Code was there any injunction against storm-raising, and here a distinction was made between superstitions like those Pliny referred to and the maleficia (injury to person or property) of sorcerers. Since no one was injured by the simple practices "innocently employed in rural districts in order that rains may not be feared for the ripe grape harvests," no crime was thus committed. On the other hand:

> Magicians [*malefici*], enchanters [*incantatores*], conjurers [*immissores*] of storms, or those persons who through invocation of demons throw into confusion the minds of men shall be punished with every kind of penalty.[16]

This law had been on the books since 321 A.D., only a few years after Constantine became the first Christian Roman emperor. It was apparently enforced, because a man named Sopater was put to death at Constantinople for "binding the wind" by magical means; Egyptian and Syrian ships carrying corn had been delayed by contrary winds, and the populace felt that he was responsible.[17]

## THE MIDDLE AGES TO 1435

Laws against storm-raisers soon multiplied. The Arian Visigoths punished *malefici* who conjured up hailstorms or demons by shaving their heads and publicly giving them 200 lashes. A Bavarian synod of 799 recommended to Charlemagne that anyone found raising tempests or committing other maleficia "should not be killed, but rather imprisoned so that they may be inspired by God to atone for their sins." French bishops presented a similar plan to King Louis the Pious in August, 829, dealing with male and female sorcerers who disturbed the air,

provoked hailstorms, predicted the future, and instigated other confusion, all presumably with the help of the devil.[18]

Agobard, Archbishop of Lyons (d. 840), wrote an epistle, now famous among ufologists, which criticized the credulity of people who believed in *tempestarii*, Mafia-style wizards who charged the peasants a fee for keeping storms away:

> We have, however, seen and heard many men plunged in such great stupidity, sunk in such depths of folly, as to believe that there is a certain region, which they call Magonia, whence ships sail in the clouds, in order to carry back to that region those fruits of the earth which are destroyed by hail and tempests; the sailors paying rewards to the *tempestarii* and themselves receiving corn and other produce.[19]

As early as the 7th century, ecclesiastical law specified five years of penance, "one of which he shall fast on bread and water," for anyone confessing to storm production. Other penitential books set periods of repentance at 1-7 years, both in England and on the Continent.[20] By 1025 the penalty for merely *believing* that witches could raise storms with demonic help was a year's penance. Presumably such beliefs perpetuated pagan superstitions which the Church was trying to eradicate or amalgamate.[21]

The extent of the problem is reflected in a letter of April 19, 1080, from Pope Gregory VII to King Harald of Denmark. The Pope was upset because storms and plagues were being blamed on priests and women who were subsequently executed, and he urged the Danes not to blame hard times on innocent people.[22] Elsewhere famine and flood were attributed to demons themselves: St. Godric claimed to have seen a *spiritus terribilis* who belched smoky storm clouds and caused rain and disastrous floods. A similar magical smoke aided the Mongol invasion of Poland in 1241 at the battle of Liegnitz: the image of a black Mongol had vomited a dense, fetid gas which overcame the Poles and prefigured the battle of Ypres by some 670 years.[23]

Pliny and paganism lingered on in certain works attributed to Albertus Magnus which claimed, among other things, that coral-stone could pacify tempests, and that the sage plant when "purified" under a dungheap for several days "bringeth forth a certaine worme or bird" which should be burned to produce a rainbow and horrible thunder.[24]

One of the earliest known trials for weather magic took place in 1326 at Agen in southern France. Pope John XXII appointed a cardinal to judge the case of a canon and two accomplices who were accused of invoking evil spirits to produce hail, thunderstorms, and mayhem. When arrested the accomplices were in the process of stealing corpses from the town gallows, and the canon was later found to have owned books of ritual magic.[25]

Another trial involving a *tempestarius* was held at Boltigen, Switzerland, about 75 years later. A man named Stedelen confessed under torture to several different types of maleficia, including hailstorm production and lightning control. The presiding judge, Peter of Gruyères, managed to extract from him the method by which storms were raised: a group of sorcerers would meet in a field and beg the prince of devils to send them a certain minor demon apparently in charge of thunder and lightning. Then they would sacrifice a black cock at a crossroads and throw its flesh high in the air where the demon could catch it and proceed to make hail and lightning, although not always in the places requested.[26]

As Cohn has pointed out, these two trials indicate that books of ritual magic were frequently used to work maleficia — even though the classic form of witchcraft had not yet appeared.[27] These books were usually attributed to King Solomon and contained various spells and rites of demonic conjuration. The idea of *commanding* the demon to do one's bidding was always emphasized, and there was no hint of anything ominous the sorcerer must do to reciprocate, other than sacrificing a black cock perhaps. But even this was a holdover from the "natural process" superstitions of antiquity. The new concept of ritual magic introduced in the Middle Ages implied that a sorcerer had no direct control over the elements — he only had power to compel demons to change the weather.

The grimoire called the *Key of Solomon* gave instructions for the preparation of a Saturnian talisman that would cause earthquakes "through the force of the angels which it commands." The *Lemegeton, or Lesser Key of Solomon,* enumerated a hierarchy of demonic spirits and indicated their magical specialties. Agares was invoked when an earthquake was needed, Furfur caused thunder and lightning, Procel could give the impression that a tempest was raging, and Vepar was in charge of storms at sea. The much earlier *Testament of Solomon* presented a similar catalogue of demons, mentioning Tephros, who appeared as a violent wind that fired fields, and Kunospaston, who destroyed ships at sea.[28]

By 1402 the Prince of Wales Owen Glendower was called "that great magician, damn'd Glendower," and he was accused of sending hailstorms against the army of King Henry IV. Whatever the cause they certainly had bad weather, and John Hardyng in 1436 blamed it on witches rather than the Prince's ritual magic:

> The king had neuer, but tempest foule & raine
> As longe as he was ay in Wales grounde
> Rockes & mystes, windes & stormes euer certaine
> All men trowed, yt witches it made that stounde.[29]

The Dominican Prior of Basel, Johannes Nider, represented a transition from the ritual magic theory of the Middle Ages to the witch-craze of the 15th century. In his *Formicarius* (ca. 1435) he hinted that an organized sect of witches or sorcerers actually existed and that storm-raising with the aid of demons was only one of a whole bag of tricks which could be had by renouncing Christianity and consorting with the devil.[30]

## THE FIFTEENTH CENTURY

Pope Eugene IV issued a reminder to all European inquisitors in 1437 that they should keep an eye out for sects of heretics (probably Cathars or Waldensians) who worshiped demons and compelled them to generate unseasonable weather. Monter mentions a trial for storm-raising in Lausanne as early as 1438, and the same year there was a trial at la Tour du Pin in the Dauphiné. There



Scandinavian witches causing a storm at sea. Olaus Magnus, *Historia de gentibus septentrionalibus* (1555).

Pierre Vallin confessed to the Franciscan inquisitors that he had given himself to Belzebet sixty-three years earlier in return for maleficia-by-request, including tempest production *(ea causante perverse tempestates exierunt et processerunt)*. He was condemned to death for heresy and witchcraft.[31]

Witchcraft soon became a widespread paranoia. People forgot the old church laws forbidding them to believe in such things as witch-originated weather. When Henry VI passed through London on his way to Kensington in 1441 he was beset by a violent hailstorm:

> . . . And so it was spoken emonges the peple, that ther were som wikked fendes and spirites arered out of helle by coniuracion, forto noy the peple in the Reame, and to put theym to trouble, discencion and vnrest.[32]

One of the charges against Else von Meersburg in a Lucern trial around 1450 was that she had caused a hailstorm with the devil's help seven years earlier. In 1452 a woman accused of being a "Vauldois" or heretic was arraigned in Provins for plotting with demons to blast the surrounding country with lightning. And at Metz in 1456 several men and women were burned for destroying the local grape crop with an unseasonably cold drizzle.[33]

A number of early writers on witchcraft encouraged belief in occult weather modification. The author of the *Errores Gazariorum,* an inquisitor in Savoy, was afraid that the seasonal breakup of Alpine glaciers was wrought by witches who were taken to the mountains by the devil in stormy weather. Johann Hartlieb included a chapter on hailmaking in his book written around 1456 and mentioned cases in Heidelberg and München. The inquisitor at Lyons, following Agobard's lead, also complained about hail and lightning caused by witches. Weather modification was generally a lesser problem in sunny Italy, but the *strigae* there could conjure up gales.[34]

Matters came to a head in 1484 when Pope Innocent VIII issued a bull which was later used as a preface to the infamous demonological treatise, the *Malleus Maleficarum.* The Pope hereby gave the Inquisition an official mandate to ferret out witches, including those who destroyed crops (presumably by tempest control).[35]

The inquisitorial authors of the *Malleus,* Sprenger and Kramer, borrowed freely from Nider's *Formicarius* to show that witches were quite capable of obtaining demonic assistance for storm-raising, and they added another case which they had investigated near Regensburg. They also quoted Aquinas' *Commentary on Job* to justify their view that God permitted demons to stir up bad weather as a punishment for man's sin. This attitude became official Church dogma for the next 200 years.[36] Many other demonologists, including Ulrich Molitor

(1489), Geiler von Kaysersberg (1517), the Abbot Trithemius (1508?), and Paulus Grillandus (1525), also condemned demonic weather modification.[37]

Trials and burnings for storm-raising continued throughout the 15th century. A number of female hail and storm-makers were burned in Metz in the summer of 1488. Elena Dalok, a *skandilizatrix* and *incantatrix,* was arraigned before the London Commissary in 1493, and she boasted of her rainmaking prowess. The first witch ever to be burned in Zürich (1493) claimed to be able to cause hail and hoarfrost with the devil's aid. And witches in Cavalese, Italy, were burned in 1501-1505 for instigating tempests, freezing weather, drought, and floods.[38]

END PART I (PART II IN NEXT ISSUE)

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*(References continued on page 80)*

# THE CONCEPT OF SIMULTANEITY

**By Harry E. Mongold**

It has been generally accepted among physicists of this century that simultaneity is relative to the observer, only. There are two concepts used of the word, however, both used in explication of the special theory of relativity and both stemming from versions of operationalism.* In this paper I should like to examine them and demonstrate that neither is tenable in a strict sense.

## PART I
## TWO OPERATIONALIST CONCEPTS OF SIMULTANEITY

1. *The Significance Attached to Physical Observables.* Operationism deals with words or statements about the physical world. A word or phrase (referring to the external world) has meaning, according to this school, only in physical operations symbolized by it.

It follows from this proposition that we should reject concepts (of objective reference) of what may not be observed by any known principles of science. However, there are concepts of things found unobservable that we may accept. Concepts of unobservables are conveniently described by Dingle as: practical, physical, and logical.[2]

Until the flight of Lunik III a convenient example of the first type was the unseen side of the moon. Although it was not practical until 1959 for us to arrange to see it, we reasonably assumed that the moon has another side than that turned toward Earth. Practical unobservables must be accepted by science.

Operationalism rejects, however, conceived physical situations that are among the "physical" unobservables. In this class go certain aspects of the electron's nature, for example. While the electron must be postulated, its shape is not directly observable by any conceivable method. Insistence on an operational description requires rejection of the notion that the electron has a definite shape, since there will apparently never be any operation by which we may discover it, and since the indirect evidences we have are contradictory. Likewise, the position and velocity of an electron must be calculated at different times, leaving the assumption that it has both at the same time unwarranted, in the eyes of the operationists.

The third class of unobservable, the logical, is also rejected by operationalism. It appears to be in the realm of mysticism.

Dingle summarizes: "The practice of modern physics is found on examination to imply that nothing must be included in our description of the universe that would not be observable if we had full control of our known means of observation."[3]

* "The profitableness of ... operational awareness was perhaps first forced on the attention of physicists by the special theory of relativity of Einstein and later by quantum mechanics."[1]

2. *The Concept of Simultaneity Referring to Motions.* Although Einstein furnished an important impetus for operationalism by seeking an operational definition of "simultaneity," he never felt that this procedure should be demanded in all cases of verbalization about the physical world. He reserved a place for constructs that may be described as invented because of their usefulness and not empirically established.[4] Nevertheless he saw no reason to consider absolute simultaneity an acceptable construct. He assumed that a comparison of distances from signal sources to an assumed "midpoint" is a physical unobservable in the case of moving sources.

When Einstein set forth his special theory of relativity he concluded that simultaneity is not a phase of "time" in the ordinary sense, but one of a myriad similar situations in a particular location in space-time, from which any observer chooses one (if the purview extends far enough to reach any events, at least) as the "true" simultaneity, labeling the other relationships sequences. Observers who are stationary relative to each other and close together will observe the same events as simultaneous; those who are moving relative to each other but close together will disagree as to what are simultaneous. Notice that this does not deny that the concept of simultaneity in the sense of "at the same moment" has a referent. It is based on a concept of a space-time continuum, in which time as we know it does not exist, but whose analogue is a fourth dimension. The direction in which the "lengthened" body of the observer (lengthened in a time direction, so that youth and age are part of it) is turned at any point where signals reach it determines which direction of the continuum is regarded as time.

If a rolling stone strikes a tree at a certain moment in a universe of absolute time, there is theoretically no question as to what events are absolutely simultaneous to this one. That is, such events may be meaningfully defined: they are those events which occur at the same moment, there being no ambiguity possible about the word "moment" since the universe of three dimensions is changing as a whole from one moment to the next.

If a tree is struck by a rolling stone in a four-dimensional space-time, on the other hand, the event is a point in a sort of super-space, with no actual *time* involved. Adjacent to this point are not only points ordinarily considered by human observers to be spatial, as weeds, soil, and air, in this case, but also what they call the previous and succeeding conditions of tree, stone, air, etc. In such a space, objects exist with an extra dimension, making them long in the direction of their aging. A human observer senses only a cross-section of an object's "world band" (as the four-dimensional whole is called), and he finds it to exist in a changing world. I.e., when I see an automobile I am seeing only a cross-section of the complete object, most of which lies in the past and in the future. Observers in different rates of motion, however, see different cross-sections, according to the conceptualization of the four-dimensional manifold.

The essential point to understand about this "cross-section" concept of simultaneity is that the word concerns a relationship between single events, as does the pre-relativity concept. There is no reference to a *sequence* of events all considered simultaneous to a single event, which is the other concept of simultaneity, one that the relativist also insists upon.



3. *The Concept of Simultaneity Referring to Distance.* Concerned that, in a case of light reflection, one cannot make sure that the light will travel away at the same velocity it will travel back,* the operationist says it is not meaningful to refer to simultaneity in the usual sense, over great distances. Referral of simultaneity-observation to a midpoint between moving astronomical bodies or between instrument and moving subatomic particles is impractical. To avoid what operationalists term a physical unobservable, "simultaneity" is defined strictly in terms of certainties.

Thus, a stream of events on one planet (for example) is to be called simultaneous to a single event on another planet if it is impossible for an observer to say (from direct observation) that any of the series are before or after the single event. Reichenbach expresses this more succinctly by referring to causal interaction. Since light is the fastest possible signal, the observation of a person depending on light comes at least as soon as any other cause-effect sequence involving the source of the signal. The following quotation refers to the situation of flashing a light to Mars at noon and seeing its reflection in twenty minutes:

> But as long as we select for the time of arrival at Mars a figure of the interval from 12:00 to 12:20, the definition of time order remains satisfied. Any event of this time interval, happening at our own location, is excluded from causal interaction with the event at Mars specified by the arrival of the light signal. Because simultaneity means the exclusion of possible causal interaction, any event of this time interval at our place may be called simultaneous with the arrival of the light signal at Mars.[5]

If Earth's view of the described experiment gives a possible use of the word "simultaneity," what of the view of Mars? For convenience let us consider a reversed experiment, so that Earth receives the signal from Mars. In doing this we are considering the situation as Russell did in *The ABC of Relativity.*

Let someone on Mars shine a powerful light at us. When we see the light — which may be called the event E — we know that the sending of it was an event definitely before E. Suppose we are watching the people on Mars at

* The accepted value of light's velocity is a mean for each of the trips involved in a reflection, by experiment.

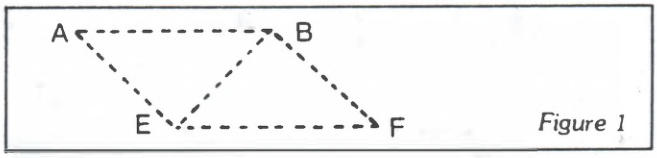


Figure 1

this time. What we see them do after E cannot be definitely located in time by us, says Russell, because we know only that some time has elapsed between their events and our seeing of them. We cannot say that these events actually took place before or after E.

Meanwhile we have allowed the special light signal to reflect to Mars. This event is also E, since the reflection from our instrument will be at the instant of reception. We will be sure that events we see there are after E when we know that they have seen the reflection. However, we cannot know the latter has happened until we receive the images from Mars that signal their reception of it. Here I have added somewhat to Russell's description, for he writes as though he considers some observer able to be in both locations. He refers to Sirius and observers there and here who can see each other:

> Anything which he does, and which I see before the event E occurs to me, is definitely before E; anything he does after he has seen the event E is definitely after E. But anything that he does before he sees the event E, but so that I see it after the event E has happened, is not definitely before or after E. Since light takes many years to travel from Sirius to the earth, this gives a period of twice as many years in Sirius which may be called 'contemporary' with E, since these years are not definitely before or after E.[6]

The observer on Earth, we must decide, has no way of knowing, according to the operationalist mode of interpretation, that the light reflection has been seen on Mars (or Sirius) until after the return signal has arrived on Earth. Thus events on Earth beginning with E and ending with the arrival of the return signal are "contemporary" with the period of events on Mars, according to the second operationalist concept of simultaneity.

To visualize this (see figure 1) the reader may diagram time as traveling from left to right and designate Earth only by "E" and Mars by a dotted line pointed in the direction of time. The dotted line should be directly over or under the point E. He will then have elements of a triangle. The left end of the Mars line may be marked "A." This represents the moment that a Martian first shines a light at us. It should be connected by another dotted line to E, to represent the travel of the photons and the sight of A by an observer on Earth at a later moment, namely the moment of E. A is the earliest distant event that can be called simultaneous to E, and just after the latest that an event on Mars could be considered before E. A third dotted line now may close the triangle from the right end (B) of the Mars line, to E. This represents the travel of light from E to the planet. The moment the observer there sees it is the last moment that a Martian can consider simultaneous to E, but on Earth we must wait longer. To show this, of course, another line must come from B, parallel with the line that came from A to E. It reaches F. An Earth travel-line EF completes a double triangle.

Reichenbach emphasizes that EF is simultaneous with B; Russell emphasizes that AB is simultaneous with E. As I have presented the whole picture — the story starting on Mars — it seems that the operationist is saying that AB is contemporary with EF.

This definition appears to regard simultaneity as a certain type of ignorance about timing.* Notice there is nothing in the phrase "exclusion of possible causal interaction" that refers to the motion of an observer, as does the first concept I have described. Rather, the second concept is concerned merely with distance and the limitations of using signals.

## PART II
## CRITICISM OF THE TWO OPERATIONALIST DEFINITIONS

4. *Assessment of the Second Concept.* The diagram of light reflections between Earth and Mars indicates a time lapse at each planet, if we follow Reichenbach's story with Russell's. It is surely meaningful, i.e., useful, to say that lapses are the same duration.** The operationalist interpretation seems to lead to the concept that the lapses we have labeled AB and EF are contemporary and equal. It also follows that the beginnings of these lapses are contemporary, and also the endings. But if any event of either series is *simultaneous* to any event of the other, the operationalist interpretation is very close to being a naive refusal to admit that light takes time to travel, although this conclusion has been reached by circuitous reasoning that does take into account travel time. The offset in times shown by our diagram has no significance according to the operationalist definition of "time of occurrence," but is only part of the theoretical structure by which we have argued ourselves out of the assumption of travel times. The observer on Earth experiences E and is permitted to assume that A is simultaneous to it, thus neglecting the light travel time. When experiencing F he may consider B simultaneous to that.

Although it specifically denies it, the second operationalist concept of simultaneity subtly assumes the idea of simultaneity between two single moments and assumes it to be increasingly calculable with increasing knowledge of the circumstances, except that the velocity of light gives the best possible knowledge and leaves a physical limitation. (That is, if we had not already decided this, we would still be seeking faster signals, to get closer to one-to-one simultaneity.) As operationalists, relativists assert that the physical limitation defines the concept, that to speak of any simultaneity other than what could be directly measured is meaningless. Yet, their depiction (even in this second concept) must employ the notion of a simultaneity between two single moments, one moment in each location.

Let us run through the explanation of this concept

* The theorist, as an operationalist, denies this, saying that where nothing exists (because operations cannot be devised to locate it) there is no ignorance involved. For example, Grünbaum says that "Einstein's denial of the existence of indefinitely rapid causal chains ... deprives the concept of absolute simultaneity of its physical meaning even within a single inertial system." The question here is, must we assume that light may travel with a different velocity when going one direction, from what applies in the reverse direction?"

** Because it takes the same time for a flash to leave Earth and reflect back from Mars as it does for one to leave Mars and reflect back from Earth. This despite any arbitrary assumptions about the velocity of light in one direction as compared with the velocity in the reverse direction.

again, more briefly. An astronomer on Earth sees a flare go up from Mars and interprets it strictly as a signal that left Mars at some moment definite only in Martian history and has arrived on Earth at some moment in our history. It is necessary to distinguish between Martian time and our time because we cannot directly find a moment-to-moment (our moment to their moment) correspondence. If the flare's ascent can be definitely timed only in Mars history, how can we say that it came before our seeing it? To preserve the concept of cause and effect, the operationalist of course assumes that the seeing of the flare can occur only after its ascent, but how are we to interpret the word "after"? Does it mean "after" in Mars history or in Earth history? If we say that the rise of the flare on Mars caused the arrival of the photons which signal the event to us on Earth, and insist that a cause must come before its effect by our time system, do we not thereby *assume a simultaneity of single moments?* How can an event on Mars be "before" an event on Earth unless the latter event has some corresponding moment on Mars that is also after the cause?

Another objection concerns the allowed arbitrariness of conceiving light velocity that cannot be directly measured. Although the fact that light's time of travel in one direction is *defined* as the same as the time of travel in the opposite direction, instead of found by experiment to be so, still one ordinarily does not change definitions to suit himself. Therefore there is no point in seeking this operationalist definition of simultaneity.

I believe it is possible to reject this description of simultaneity also by the semantic approach. I am not aware that anyone has disagreed with Einstein when he implied that a single perception of more than one item is intimately related to the normal concept of simultaneity. He took it for granted that one's meaning by the word "simultaneity" is either several sensations in a single experience or an assumed situation that would give one such a patterned perception if he were in a standard position: "If the observer perceives the two flashes of lightning at the same time, then they are simultaneous," is a statement he says pleases him.[9] Our concept of "space" has the same basis (many sensations in one perception) and essentially the same referent (an objective situation that furnishes the sensations in one moment).

Can there be any basic distinction between "simultaneity" and "space"? The concept of plurality of positions is essential to the concept of space, while an instant of time is also essential. What one refers to by "space" is a simultaneity of positions, and to reject a possible simultaneity of positions at great distance is to reject geometric space.

The first concept of simultaneity referred to in this paper (the one Einstein himself emphasized) goes along with this identification. "Simultaneity" is "space," and there are a myriad of them in the continuum. However, to say as Reichenbach and others do that simultaneity is the relationship of an instant of time on one planet to a long period at another place is to change its meaning fundamentally. Even if simultaneity of the common sense sort should be classed a "physical unobservable" for distances, it *must be assumed* in order to complete our conceptualization of reality. This recalls the old issue between idealism and realism. Is one justified in assuming what cannot be "proved"? *Where necessity demands a concept it is justified,* which was Einstein's argument against operationalism in general.[10]

5. *Assessment of the First Concept: The Space-Time Continuum in the Conceptual Scheme.* Instead of referring to the simple unobservable of simultaneous distant measurements the first concept of simultaneity emphasizes a lack of preferred positions between movers. It asks, why prefer this observer to that one, except through prejudice? It claims that there is no need to assume any special direction to time and consequently that there is no *established* space of three dimensions, time being describable as a dimension that is perpendicular or oblique to what is *observed as* three-dimensional space.

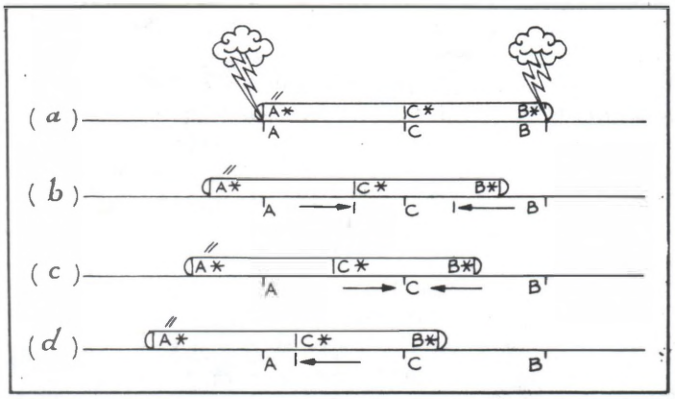
A philosopher cannot easily accept the attempt to consider all historical and future states as coexistent. On the whole it would seem that the description of a manifold with an extra dimension is convenient only for certain mathematics. "Time" is only our abstraction on the constant changing that characterizes our world. With time concretized as a dimension there is no available explanation for the course of events. The relationship of cause and effect would appear to be a coincidence. If the future is already in existence, what is the significance of the consistency we find in sequences of events? Why could they not follow in haphazard arrangement instead of such a strict order?

Another objection is based on the existence of our *perception* of change. One may seek a way out by such a statement as: "A disembodied consciousness (I who speak) is traveling through space-time and receiving impressions from it, although the latter is material (follows certain consistent principles of motion) and I am immaterial (not following the same principles)." However, this assumes a time (capacity for change) superposed upon the four dimensions, one of which is itself supposed to represent time. Further, the dualistic metaphysics of interactionism is needed to support such a concept.

I believe that one either accepts an external world in which things move in a space (i.e., a dimensionality), moving things thereby describing time, or he rejects space and properly also time, by denying objectivity, i.e., by accepting solipsism. Time — or rather, the capacity for true change — is thus as fundamental as space.

6. *Assessment of the First Concept: How It Was Useful.* The origin for Einstein's attack on the conventional notion of simultaneity was the need for some theory to explain how light can reach any observer by the same velocity as it reaches any other, regardless of motion between the source of light and the observer. His reasoning was that light cannot be carried by an ether that moves with a moving body, nor can ether be a great field that Earth and its occupants move through. In the former case an observer within one moving body would see the light in another moving body as traveling with a different velocity than the observer within that (second) body would see. In the other case, similarly, an observer moving one way through the ether would see the velocity of a light as different from what another would see if the other traveled a different direction through the same ether.

Einstein says, "Now elementary intuitive considerations seem to show that the same light ray *cannot* move with respect to all inertial systems with the same velocity c....




"It turns out, however, that this contradiction is only an apparent one which is based essentially on the prejudice about the absolute character of time or rather of the simultaneity of distant events."[11]

I must leave the problem of why light's velocity is measured the same by all movers, if it is, to physicists. My concern is to say that although motion affects the timing of the receipt of signals, there is no reason to say that there is no absolute simultaneity because of this, or any other, reason.

7. *Assessment of the First Concept: Reasoning Introduced to Support It.* Einstein's train-and-lightning illustration is often assumed to demonstrate the relativity of simultaneity. Actually it shows how conceptions differ between observers having different motion, for it is rather the assumption that all observers are correct in their choice of "midpoints" that supports the notion of relative simultaneity.

I will follow Bergmann's explanation.[12] The story is that lightning strikes at both ends of a long train, leaving marks on the train and on the ground. (See figure 2.) A ground observer stands at C, midway between the places where the lightning marks the ground (A and B). A train observer stands at C*, midway between the places where lightning marks the train. The diagram (which I have here copied from Bergmann) is made as the ground observer would have it, and it shows why the train observer has a different impression of what happened. To avoid any charge of making simultaneity mean a subjective experience only, each observer is considered to have a recording instrument which will react only if the light signals are received at the same instant.

In part (a) of the diagram the lightning strikes at A, A*, B, and B*. In part (b) the light from A* and A has reached where C* then is. In part (c) the instrument of the ground observer registers simultaneous receipt of signals. In (d) the signal from B, B* has reached C*, which is by now nearing A. The instrument at C*, then, does not register simultaneity at any time.

Despite the evidence that Einstein thought in terms of a four-dimensional space-time, it must be admitted that he first presented this thought-experiment as though it were a common-sense view of what happens in our three-dimensional world. Since this is also what most explications of the theory imply that it is,* I shall approach it first in their manner.

The only point at issue between the two observers is whether the two signals originated simultaneously, regardless of the total distance between the signal sources. In other words, this illustration allows each of the observers to judge for himself whether the signals traveled equal distances in equal times.

Let us review Einstein's definition of simultaneity:

> . . . two events taking place at the points A and B of the system K are simultaneous if they appear at the same instant when observed from the middle point, M, of the interval AB.[13]

An extension of this is made by Bergmann, in his discussion of events as seen by observers on the moving train and on the ground:

> . . . it is sufficient that each observer be able to determine the point midway between two points belonging to *his* reference body — ground or train.[14]

This extension serves to bring Einstein's general definition around to its use in the experiment. The result is a definition that slips away from the point. To establish simultaneity it is necessary to have signals that travel for equal times over equal distances. When moving observers both claim to be at a midpoint between two signal sources, it is necessary to be able to measure equal distances for both, but they must be from the actual signal sources. An event, in this case, lightning striking, that happens on a train has the motion of the train (regardless of what light itself may do — the theory claims that *light* does not take on the motion of its source), and an event that happens on the track will take on the motion of the track. One event cannot happen both places, and it cannot be in two different motions.

Let us agree that the lightning strokes were to the earth, that the train simply happened to be passing at the time. Then the sources of the light signals in question were *not* in motion relative to the earth (horizontally). In this situation should we not say that measurement to a midpoint of the track section is to be preferred to measurement of the train's midpoint? The latter has left the track's midpoint by the time the signals arrive. Of course if we decide it is more likely that the lightning was attracted by charged ends of the moving train, we must prefer the train observer's measurement. In that case the signal sources were stationary relative to him, and he knows the applicable midpoint. In that case we reject the diagram as given here and draw a new one for C*, showing that the lightning strokes were sequential rather than simultaneous. In this diagram we make train and track different lengths, C's diagram being assumed incorrect.

If we have equal velocities and equal distances, the equal times will follow, and under like physical conditions we may reasonably assume that two light signals have the same velocity. However, we do not have equal distances for both observers. That is, the signals from the lightning strokes — which I am assuming to be static relative to the earth — had not covered equal distances at the moments C* saw them, because what he thought was a valid midpoint between the strokes had shifted. In such an experiment the midpoint must be stationary relative to the signal sources, or otherwise keep a constant realtionship to both in case of sources moving relative to each other. Granted that this is often impractical, it is the philosophy

* Thus Bergmann, Bolton[13], Gardner[14], Grünbaum[15], Russell[16]. Ushenko is an exception worth reading.[17]

of operationism (or one of its interpretations) that denies meaning where there is no direct way to measure.

A stationary midpoint is at worst impractical. Simultaneity does not class as a "physical unobservable." The method of detection is known. The observer should be at rest relative to the sources of the signals.* Moving observers will be mistaken unless they should happen to reach the midpoint between the sources at the instant the signals meet there, in the case of simultaneous events, in which case these moving observers will agree with the stationary observer.

The point the relativist has in mind is that the lightning strokes left marks on the train as well as on the track; he asserts that one mover's view is as good as another's. He says that C* is just as right in saying that the lightning struck on the train as we are in saying it struck regardless of the train.

The train observer is expected to assume that the lightning was moving along with the train. However, perhaps he will see that it cannot *strike* both in horizontal motion with the train and at stasis with the track. The marking of both train and track has no significance. Likewise, the fact that all observers seem to measure the velocity of light the same has no significance here. Of the three elements — time of travel, distance traveled, and velocity — we need two. Time of travel is not evident in this experiment. Velocity alone is not enough. We must know that the signals traveled equal distances before registering on the observers' instruments. These distances must be measured from the signal sources to the midpoint in their frame of reference.

It may be because of a vagueness about what is meant by the word "event" that this point can be overlooked. Is an event something with a definite position in space or does it spread over a region? According to the relativist's diagrams the lightning strokes had definite position in space, but the two observers could not agree *how they moved.*

No doubt a lightning stroke is a vast group of micro-events. If any take place in the air of a moving train they may reasonably be assumed to be (on the average) following the train, while those that take place outside the train may not. However, Einstein could have had no intention of saying that the train observer was right as far as some of the molecular events were concerned and wrong regarding the events that took place in the air surrounding the train. The design was to support the postulate that light has the same velocity to all observers. If the molecular signal sources were split into two groups, the case would become two unrelated situations, inapplicable to the principle being defended.

If the thought-experiment had concerned the switching on of track lights, it would have been obvious long ago that only the track observer could retain equal distances from both signal sources.

Actually, the proper use of the train-and-lightning illustration is for the proponent of the four-dimensional continuum, who can use it as an example of how our perceptions in three dimensions are (he says) illusory. He can draw a diagram for C*, showing his cross-section of the supposed continuum, that looks as good as that for C. If lightning is replaced by standing lamps, the diagram looks much less convincing, but theoretically the same distances would be covered from each signal source to the moving observer. These distances are measured on slanting lines that represent his calculation of what happens simultaneously. They are measured to lines drawn so that they look just like the end of Einstein's train. However, as explained in Section 5, this brings up problems that reduce the concept to absurdity.

8. *Conclusion.* Operationism seeks to make our thinking more exact by reminding us of the operations that underly the terms we use. If a limit is established this is a very useful practice. The limit must be where we begin to consider a human operation to be more real than space and time themselves. The only logical result of crossing this boundary is to reject the reality of even people; i.e., we then are solipsists.

We must, then, agree to accept a few physical unobservables. If absolute simultaneity were not observable in principle it would nevertheless need to be assumed. It happens, however, that absolute simultaneity is observable in principle. Where relativity mathematics seems to help prediction it should be used, but its theory cannot be true as presently stated.



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### PLEASE NOTE

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* In recognition of this principle, Einstein let each observer measure distances in his own reference frame, where he was at rest.

# THE SYNCHRO DATA

## By Barbara Jordison

"*What* synchro data?" you may ask, recalling the gasping reports of persons triggered or tripping over "meaningful" coincidences, or synchronicities as they're called.

The kind of hard data from which you can draw a statistical picture of the territory — *that* kind of synchro data. It's unlike trying "to find a cobra in a dark room before it finds you."[1]

It's more like catching laboratory mice. And you can't. The problem with "meaningful" coincidences is the little buggers won't breed under ordinary conditions, usually. And if you can't produce synchro events at will, and you can't catch them in their natural habitat (which is anywhere), how can you study the critters — I mean in a scientific, statistical way?

Jung wrote a theory about the principle he thought was hidden in "meaningful" coincidences — Synchronicity. He thought there was an important acausal linking rule, but he couldn't find a way to trap such events. "Inasmuch as situations are unique and cannot be repeated," Jung complained, "experimenting with synchronicity seems to be impossible under ordinary conditions."[2]

At that time, circa 1900, the conditions were similar to having no lab mice because of no mouse traps, yet catching glimpses of them around the office. And since Jung was a practicing psychiatrist, his patients saw the elusive wee beasties also, but Jung's professional colleagues did not. They concluded that metaphysical mice belonged to a metaphysician.

Things went steadily upward after Jung died in 1961. Two Ph.D. holders continued this part of Jung's work. Ira Progoff took it in a therapeutic direction, seeing it as a self-balancing principle. Timothy Leary took on the CNS-RNA-DNA circuit and helped slay a few idiopathic dragons on his way to lame-duck professional status, convinced our planetary people are leaving adolescence and about to tread the stairway to the stars.

I silently disagree. We are universal infants, Clark reminds us. The case in point is *2001: A Space Odyssey.* What SF reader hasn't thought of renaming it before the nth showing — *3002: And Still Counting.* Better yet, loop the film and run it backward.

I once wrote an outline for a science fiction novel (Who hasn't, huh?). And the characters still hadn't made parley with the visiting Ufonauts, who were stealing the planet's resources, because (they finally figured out) they'd launched a probe back in the 1970s with nudes etched on it. And since sending porn to the universal culture file was a no-no, earthlings were therefore quarantined to the planet. If someone's already written the story, sorry I'm behind in reading and didn't want to write it anyway. I did go for an interview, though.

I didn't want to build a better mousetrap for synchro data either, but I'd better tell you about it; otherwise Empiricism will have a long wait to get served.

Saying the same word at the same time with someone else, unexpectedly, is the experimental situation. I remember when we were kids it was considered a very peaky moment. And it met the criteria for "meaningful" coincidences to us.

One interview was enough. "When you and a playmate say the same word at the same time together, do you link fingers, chant "needles and pins" and make wishes like we did?" I asked him.

He wilted me with disdain. "My sisters do."

Which was not a total loss. It probably explains why a girl stumbled on the synchro data and the males at MIT didn't. (They can run the 1500 data, for free, through their computers any time. Or, borrow the data collecting idea, also free.)

Of course I didn't follow kids around with a notebook, waiting for them to say the same word at the same time. And it would take a lifetime to collect a 100-word sample if I waited for the times I said the same word with adult friends.

A two-person conversational environment is reconstructed to monitor. And it works. One of the conversationalists is represented by listening to a broadcasted television or radio talk show. Well, that's misleading. Just so there's some talk, song lyrics will work but orchestral music obviously will not. This is input channel #1 of English Text (E.T.). It's routed to the observer's auditory system.

### TABLE 1

Frequency Distribution for the Synchro Data for 5-Minute Intervals of the Hourly Period, based on research conducted between 1972-1976

| *Minute Intervals* | *Number of Synchronous Events* |
|---|---|
| 00 - 04 | 166 |
| 05 - 09 | 138 |
| 10 - 14 | 117 |
| 15 - 19 | 112 |
| 20 - 24 | 96 |
| 25 - 29 | 98 |
| 30 - 34 | 115 |
| 35 - 39 | 107 |
| 40 - 44 | 102 |
| 45 - 49 | 94 |
| 50 - 54 | 110 |
| 55 - 59 | 87 |
| | 1342 |

This is the frequency distribution for 60 minutes for all synchronous data from approximately 1972 to 1976 (collected by the described 2-channel-input method) with the results of a chi square test of significance of the goodness of fit to a rectangular distribution.

The average number of synchronous data for each five-minute period was 111.83. The chi square test of goodness of fit yields a chi square value of 46.095 which is significant at the .001 level. Thus one could conclude that synchro word pair's occurrences varied significantly among the 5-minute periods.

The other conversationalist is represented by reading, at the same time. This is input channel #2 of E.T., input to the visual network.

It takes concentration to catch the synchronous word pairs between the two input channels at first, so add the necessary 10% persistence and keep practicing. After a while, hopefully, you'll get your input channels in synch and will find that the signal increases. Once you've entered the acausal dimension of human experience, I cannot guarantee the results.

So keep a record notebook. The data to record are: (1) the sources of E.T. you monitor, (2) the time of occurrence of a word in synch, (3) the word itself (with any prefix or suffix differences), and (4) the length of time it takes your data to run.

Table 1 should give you some idea of the synchro data's occurrence pattern (you'll notice data lurk in advertisements and news updates) during a one-hour interval. The synchro data's habitat seems to be condensed verbal contexts, but not always — data occur anywhere and at any time.

If you're staying home tonight, how about trying the experimental setup and begin a record notebook? The saga of Synchronicity continues. If I told you exactly what to look for, that might be all you'd look for and find. Do it. Empiricism, y'know.



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# FROZEN MAMMOTHS

## I. THE BEREZOVKA MAMMOTH MYSTERY

## *Volcanoes, comet-storms, or permafrost?*

**By Leo Trunt**

I have been thinking about Ivan T. Sanderson's mystery of the Berezovka Mammoth for several years now. Although I like the theory offered by Sanderson, I think I may have a more complete answer.

I kept wondering how a mammoth could get buried in the muck which surely should be as frozen as solid rock. I will offer you my theory, which borrows heavily from Sanderson's; I hope SITU members will find it satisfactory.

In his book *More Things*, Sanderson stated that these animals were located in "muck," but there was no explanation for this. Sanderson indicated that, through volcanic eruptions, the dust and gases emitted would have cooled and come down in violent *cold* blobs which froze anything in their path and offered destruction to anything in the vicinity of the falling blobs: very good, but I have a very different approach.

What if the eruptions gave off a high concentration of carbon dioxide and other similar gases? This would create a greenhouse effect which could, in a very short period of time, have heated the Northern Hemisphere (and perhaps the entire earth) by an incredible amount. Subsequent explosions and eruptions could then have blown enormous quantities of dust and other gases into the atmosphere, thus giving rise to the "cold" blobs that Sanderson suggests.

The mammoths in Siberia could have been on a northerly migration, indeed. Suddenly, while walking in (quite possibly) two or three feet of watery "slew" above the frozen permafrost, the heat wave struck. This could have occurred in a short period of time, anywhere from a few hours to a few days, with the temperature probably reaching around 40-50 degrees Fahrenheit. Then came more eruptions.

In a very short period of time, the atmosphere would become saturated with carbon dioxide and other gases, causing the temperature to rise rapidly, reaching perhaps 100-150 degrees Fahrenheit (or more).

The mammoth, feeling this heat, would perhaps seek deeper water or "slew" in order to cool off. A creature as big as a mammoth, like an elephant, would probably be in the habit of eating perpetually; so there is no reason to suspect he stopped eating in order to await a slow (and unexpected) death. As the heat rose, the permafrost probably melted rapidly. Soon the mammoth would have found the going slow and sticky, and in a very short time would find himself in virtual quicksand, in which he probably struggled until he was suffocated and eventually buried.

The second wave of volcanic explosions (now in full force) would send dust clouds into the atmosphere. As the particles descended on our Berezovka mammoth, they would act to freeze the creature *in situ*.

Now what of our Alaskan-Canadian mammoths? Perhaps some of these are preserved in a manner similar to the Siberian ones. Others could have been on sand bars, in (or near) lakes, on ridges, hills, mountains, etc. Perhaps when the violent winds came they were carried away to be smashed up in the characteristic mess common to the state of preservation of mammoths from this region; meanwhile the Siberian climate, as well as the Alaska-Canadian one, would have eventually returned to normal. The mammoths, however, were by this time sufficiently buried to prevent further decay.

Perhaps other members of SITU may discern some weak point in my theory, but I can think of no other possible way for the events to have occurred; I should be happy to hear from anyone regarding their feelings on this subject. (Write: Box 8, Swan River, Minn. 55784.)

# II. MAMMOTH PROBLEM— TWO SOLUTIONS

## By Member #340

***What force could quick-freeze thousands of mammoths and other large animals and then bury them beneath the frozen tundra?***

Solution one, an hypothesis:

Not far from the herd, the mammoth grazed on the endless meadow that was the tundra in late July. The great size of these beasts coupled with the defensive behavior of the herd had made them the masters of their landscape, almost independent of predators. Even so, that particular herd had only minutes to live.

The tundra is treeless so the sky is a bowl sealed to the edges of the world, the horizon visible at every point; and on that horizon something moved.

As yet there was no sound except the faint hum of mosquitoes and the soft hiss of the wind in the grass. The mammoth saw it coming, but only because he was facing that way. The object grew swiftly into an immense blue-white cloud that covered half the sky. The sun went dim then suddenly was gone as the cloud engulfed it. Daylight was being replaced by the flares and flickers of lightning. The mammoths bellowed but they didn't panic, they began to move together into a defensive formation.

The darkness would have been complete but for the lightning, almost continuous now. The mammoths were in a rough circle. They could hear a distant sound that swiftly grew into a roar. Suddenly a cold wind struck them, like a wall of ice. The wind grew both stronger and colder at the same time. The mammoths were adapted to arctic storms — they turned their backs into the wind.

The wind blew harder every second.

With the wind blowing at one hundred and fifty miles per hour, the great beasts were being pelted with flying mud and freezing chunks of turf. When the wind speed reached two hundred miles per hour the lords of the tundra began losing their footing.

The temperature was eighty below. Darkness was absolute, the wind carried enough dust, debris and mud to cut off all light. A few seconds later the mammoths were gone. They had been blown, rolling and sliding, into a battered heap at the bottom of a gully a quarter mile downwind. In a few more seconds the gully had been filled in. The comet-storm had struck.

A comet, a loose collection of dust and frozen methane, frozen ammonia, and even frozen water, had hit the earth's atmosphere at a low angle. A dense, high tensile strength meteor will bore its way through the air, vaporizing as it goes, and some of the pieces of the comet were just that. But the rest, the "ice" chunks, were spread out so thinly and vaporized at so much lower a temperature that the comet very rapidly gave up its mass, its temperature, and its speed to the atmosphere. A sudden, cold and violent wind was the result. It only affected a small part of the Earth's surface because, astronomically speaking, the head of a comet is tiny.

Is this the answer or . . . .

Solution two, an alternative hypothesis:

THE FOLLOWING ARTICLE, ENTITLED "PERMAFROST," IS FROM *PETROLEUM TODAY*, VOLUME 4, NUMBER 3, 1974.

The trappers had been gone from the cabin only a short while — a two-day trip into the surrounding Siberian forest to check their wolf traps.

They returned to find an appalling sight. The glass was gone from the windows. In its place was a glistening cascade of ice, shimmering in the low autumn sunlight. Frozen waterfalls hung pendulously from the windows, from the cracks under the eaves, and even from the tops of the chimney. The cabin was filled from floor to ceiling with ice — a solid, cabin-shaped block of ice contained within the log walls.

In Siberia, "icing" of cabins was a not-too-rare happening. There, settlers built cabins directly on the ground the way their fathers and grandfathers had built their homes in the south. They knew nothing about the permafrost beneath them or the problems it could create.

Permafrost, or perennially frozen ground, is a widespread phenomenon. About half of the Soviet Union, most of Canada, and about 85 percent of Alaska is either in the continuous or sporadic permafrost region. Altogether, one fifth of all the land area of the world is underlain by permafrost — anything from solid rock to muddy ice that remains below freezing throughout the year.

In the coldest regions, permafrost comes close to the surface and is covered by a relatively thin layer that freezes and thaws with the seasons. Surface vegetation insulates the freeze/thaw zone and keeps the permafrost from thawing too deeply. In places the zone may be only a foot and a half thick.

It is this seasonally thawed area that plays havoc with cabins — or anything else — not designed for permafrost. While Alaskans have not had the dramatic experiences that the Soviets have, they still must be careful to avoid disturbing the insulating vegetation. Once the vegetative mat is removed or broken, the permafrost below melts, turning the unprotected ground into a series of ponds. This happened in the past with everything from caribou trails to man-made tracks. The freezing and thawing of this active layer can destroy poorly designed structures. Railroads sink into the ground and have to be abandoned. Old highways dip sinuously, and require constant maintenance. Houses can cant drunkenly and must be shored.

Farming in permafrost is a challenge. Once the land is cleared of its natural insulating cover, the permafrost thaws. Over a two to three year period, large lakes may develop in the midst of former cabbage fields.

Icing, one of the weirdest phenomena associated with permafrost, usually occurs in mountainous areas, or in areas with a steady flow of water beneath the surface. As winter approaches, the thaw zone begins to freeze from the surface down toward the permafrost below. As it freezes, water in the thaw zone is put under increasing pressure. Above it an impermeable cap of ice descends relentlessly; below it the solidly frozen permafrost blocks any water flow. Tremendous hydrostatic pressures build up in the trapped water — pressures as great as 30,000 pounds per square inch.

If the water finds an escape valve, a weak spot where a building (or even an overturned barrel) keeps the ground

from freezing, the water will suddenly burst through like a broken main. When the water reaches the air, it freezes. Layers of ice build up quickly.

Everything built in the Arctic must be designed with permafrost in mind — buildings, roads, bridges, runways, railroads, towers, drainage ditches, pipelines, dams and reservoirs, sewage disposal facilities, telephone lines.

In the early days of Arctic road construction, builders didn't understand this.

During construction of a road along the Onon River in Siberia many years ago, crews scraped off the insulating layer of vegetation and excavated down to the permafrost along the road. When winter came, the denuded surface froze, pinching the ground water between the surface and the permafrost. Intense water pressure built up.

"Six icing mounds formed along this part of the road," Siemon Muller wrote during the Second World War in one of the first comprehensive engineering reports on permafrost published in the United States. "The second mound from the south after a preliminary cracking and trembling, suddenly exploded with a loud sound resembling that of a cannon." Large slabs of ice six feet thick and up to 60 feet long were thrown out and were carried down the valley across the road by a rushing torrent. "The waters which poured out of the exploded mound spread down the valley for a distance of about five kilometers (three miles). A small highway bridge in the path of this torrent was shaved off to its foundations, shrubs were flattened down to the ground, and the bark on large trees was badly scarred by the moving pieces of ice."

* * * *

It should be pointed out that water under pressure can remain liquid down to very low temperatures; if the pressure is released the water will freeze quickly. It could even quick-freeze any animal unlucky enough to be caught by the icing phenomenon.

Even if such an event is extremely rare, only a few animals would have to be trapped by it each year over a period of thousands of years, to build up the store of frozen remains that are found today.

Of the two hypotheses, the second seems more reasonable. But in each case the animals would be quickly frozen and just as quickly buried in congealing muck.



# FORTEANA GALACTICA

## By Alan Gray

Even if the late, great Charles Fort is swimming in the Super-Sargasso Sea, or chortling about some blithering inconsistency in the great beyond, he has doubtless taken time out from his mirthful romp to notice this one. He would give it a prominent place in *The Book of the Damned.*

The high priests of orthodox astronomy are trying to bury a persistent preposterousness.

An article entitled "Reflecting On Superluminal Velocities" appears in the December 10, 1977, issue of *Science News,* and contains an account of three quasars that are behaving "improperly." They are either going faster than light, or behaving in such a way that they seem to be going faster than light, and going faster than light for any reason is taboo.

"The response of most astronomers is that it is just an appearance and must somehow be explained away," reports *Science News* and goes on to say "The most popular explanations to date seem a bit contrived ..."

And a gentleman named Lynden-Bell has contrived such an accounting for this anomalous phenomenon, bringing a mirror of sorts into the fray.

He says that flashes emitted by these rogue quasars in some way are admixed with infalling matter being drawn into a black hole. In some manner a flash of light is produced by this cosmic confection, and that flash yields a mirror image flash that generates along the axis of the black hole vortex.

Mr. Lynden-Bell continues in earnest, explaining how these black-hole-born flashes bounce off vast patches of ionized gas and in some way the original flash and its mirror image appear to be traveling away from each other at an apparent velocity of 2c — when in fact they are only traveling at 1c.

He then points to a 1901 record which tells of a sun destroying itself in a spectacular fashion, something the astronomical fraternity called the "Nova Persei." The "light echo" from that Nova also gave an apparent velocity of 2c. A trick done with mirrors.

In spite of the fact it's been explained away, astronomers are re-calculating, making a slight correction of the Hubble constant used in quasar watching.

"The apparent large values of c are gotten rid of by changing the value of the Hubble constant from the commonly used 55 km/sec per megaparsec to 110 km/sec/megaparsec," says *Science News.* Off by 100%? A minor correction. That should have laid the matter to rest, but LO! "The faster than light phenomena include apparent velocities up to 8c..." concludes the *Science News* article.

*"All would be heavenly—*
*If the damned would only stay damned."*

—Charles Hoy Fort
*The Book of the Damned*

# THE TRANSFORMIST MYTH

By Dr. Silvano Lorenzoni

One of the foremost myths of our time is "evolutionism" — or, more exactly, transformism — in its strictly *darwinian* form. And when I use the word "myth" to indicate transformism, I do so with full intent, because that word can have two equally acceptable meanings that are different but not necessarily exclusive: (a) a myth may be simply something that is false; (b) a myth can be the "force-idea" behind some action or ideology. And transformism/darwinism is both a falsity and an important force-idea at the base of the structure of modern times.

Let us start by setting a few "landmarks" that will be (a) *semantic*, (because semantic confusions are and have always been a battle-horse of decadentists), and (b) *historical;* we shall then continue with a direct criticism of darwinism and transformism.

Terminology, therefore, should be our first concern. Let us begin by examining the following terms:

(a) *Evolution:* Strictly speaking, the term "evolution" refers to the simple acknowledgement of the fact that, at least on the basis of a certain set of geological and palaeontological data and observations, the living forms in the world have not always been the same as geological ages gone by. The same observations would also seem to indicate that the changes in question were in a direction of lesser to greater organizational complexity, at least from the viewpoint of anatomical and biochemical structure. To use the term "evolution," although standardized by usage, to indicate these changes is, in my opinion, inadequate because it carries implicitly a certain idea of "betterment"; and this kind of judgment (ethical or moral) should always remain outside the sphere of positive, empirical and natural sciences. For the moment, however, I shall be content with having set down the meaning of the term.

(b) *Transformism:* It is that doctrine whereby the successive living forms that have appeared in the world had their origin by *transformation* of older or pre-existing forms. Such transformations would have crossed boundaries not only between species, but also between gender, family, order and even type of *phylum.*

(c) *Darwinism:* It is that *theory about the reasons of transformism* postulates *natural selection* as the cause of the transformations which are, in turn, postulated by that doctrine. Its name comes from the fact that it was structured and generalized in its present form by an Englishman, a certain Charles Darwin, author of the now (unfortunately) famous two books, *The Origin of Species by Natural Selection* (1859), and *The Descent of Man* (1871), the latter of which contains his well-known suggestion that man is descended from the ape.

In formulating his "origin of the species," Darwin based his theory fundamentally on (a) the work of a much less fortunate predecessor of his, Jean-Baptiste Lamarck, author of *Philosophie zoologique* (1809) in which, even though by somewhat different ways from Darwin's, he arrived at a "natural selection" not too unlike its darwinian counterpart, and (b) his own observations, made almost exclusively during his trip to the Galapagos Isles (Ecuador) aboard the ship *Beagle* (1831-36).

It has been conclusively proven (from a strictly scientific standpoint) that Darwin was totally off the right track when it came to interpreting the ecological, biogeographical, morphological, and genetic data which were collected by himself and others at the time; his mistakes became more and more obvious as a greater amount of observational data accumulated.[2] But this still has not removed the darwinian theory from the place of honour it still enjoys in official biological circles, where "evolution" implicitly means *darwinian transformism,* thus constituting a great affront to semantics and, at least in certain circles, indicates the intention to continually "brainwash" listeners.

Let us proceed to a critical analysis of darwinism from a strictly logical and scientific standpoint.[3]

The darwinian idea of natural selection is based on the concept that life has a strictly *economic* basis and that, as a consequence, it limits itself to a brutal and desperate struggle to satisfy *exclusively* the physiological necessities of existence — especially that of feeding. This struggle manifests itself at all levels: among living beings of different species as well as among individuals of the same species. And a consequence of this merciless struggle, according to Darwin, is that those individual organisms which *by sheer chance* turn out to be more apt for the struggle for survival in a given environment will end up by exterminating (either directly or indirectly — by excluding them from the food sources) the less apt; and in the long run will replace them completely and will secure for their descendants possession of the specific environment in which the struggle took place.

If we further assume, as does Darwin, that those winners owe their superiority to some anatomical and/or physiological characteristic making them substantially different from the vanquished, then the process will have originated a different quality of living being — perhaps a new sub-species or species. And the continued repetition of the process will give rise to increasingly important differentiations which eventually will produce new genera, families, *phyla.* As those characteristics which imparted superiority to another, it follows (according to the same theory) that, by repeating the process of natural selection in different places, a single species will produce many more, giving rise to increasing evolutionary branching.

Such is, in very brief but *exact* terms, Darwin's doctrine. Darwin himself acknowledged that, in order to minimally adhere to some kind of (however hypothetical) reality, the doctrine must pre-assume two things: mutations and the isolation of the mutants. Let us examine these conjectures in detail.

(a) *Mutations.* In general, children are equal to their parents except by small deviations which are totally statistical in nature. In order for darwinism to function, individuals must (at least sporadically) appear to differ substantially from the average of their species; otherwise

it would be difficult to speak of such organisms as being much more apt for the struggle for life. Such individuals are conventionally called "mutants," their morphological peculiarities, "mutations."

When *The Origin of Species* was published in 1859, the existing knowledge of genetics was not sufficient to determine the truth or falsity to the axiom of the possibility of mutations; Darwin could introduce an *ad hoc* hypothesis to support his construction. (It was only in 1865 that Mendel proved the invariability of inherited characteristics. Certain darwinians have had the gall to consider it fortunate that Mendel's discoveries did not become public before 1859; otherwise they *could* have provided an important obstacle to the acceptance of the theory of natural selection (sic)! And when, towards the end of the last century, De Vries *thought* he had detected mutations in certain plants, there was universal applause — to the point that even today, when it is well known that De Vries was wrong, he still is the "official discoverer" of mutations.)

According to modern molecular biology, hereditary characteristics reside in certain components (the so-called "genes") of the cell which have proven to be exceptionally stable and much more resistant than the rest of the cell to such modifying or destructive agents as poisons, temperature shocks, ionizing radiation, etc. They are not, however, stable in the absolute sense; *mutations*, after all, *are indeed possible*. But (1) they are extremely rare, and (2) within the limits of our present knowledge they never produce anything but *monstrosities*, individuals which are totally maladapted to live in the medium in which they have come to life and in which normally they would be condemned to die in a short time. Such monsters normally do not reproduce; when they do (for example, under artificial laboratory conditions), they produce a poorly adapted progeny which is destined to quick extinction (as soon as those artificial conditions protecting them are eliminated).

(b) *Isolation*. The problem of *favorable* mutations is not the only one darwinism faces. Even assuming that those mutations are or had been possible, the problem remains as to how the mutants could produce progeny. First, it is obvious that an isolated mutant or a few isolated mutants would either be condemned to die without leaving descendants or would dilute their new characteristics to the point of unrecognizability — making them therefore useless, depending on whether or not the new individuals were genetically compatible with the older population. Therefore the darwinists must assume (1) that a reasonably high number of mutants appear simultaneously, (2) that such mutants are genetically compatible among themselves; i.e., each of them must have acquired the *same* new characteristic, which differentiates him from the older population, and (3) that the mutants are genetically incompatible with the older population; i.e., the mutation has been of sufficient magnitude to *isolate* the mutants from the older population by introducing some physiological or anatomical impediment which prevents mating.

An alternative to this last point could be that the mutants appear all together in a location which immediately after their appearance becomes physically isolated; or, perhaps the mutation immediately affects the majority of individuals and the older population, which therefore remains a minority, is quickly eliminated. These assumptions, however, may be even more far-fetched than the original ones.

On the basis of what has been expounded above, especially when keeping in mind that all the mutations invoked by darwinism would have a strictly accidental and statistical origin, it should become easy to judge the objective probability that such a doctrine explains nothing at all. Darwin himself was not entirely insensitive to the difficulties listed above and therefore invoked the authority of a countryman of his, the lawyer-geologist Lyell, whose *Principles of Geology* (1830) suggested that past geological times had a duration that (to all intents and purposes) was infinite. In fact, given an infinite period of time, it is admissible that *all* imaginable possibilities, including the more absurd and grotesque, *may* have taken place. But this is scarcely a scientific argument; and, in any case, modern geology and astrophysics do not appear to corroborate Lyell's statements.

* * * *

I shall not consider here the problem of *why* darwinism has had the phenomenal success it enjoys — that I have done elsewhere.[4] Let it suffice to note here that darwinism has become to all intents and purposes a dogma, acquiring therefore (as is its concomitant right) its own priests who have dutifully constructed for it a whole theology and, what is more, a *theodicea*[5] — over and above their normal preoccupation of hurling curses against the "gentiles" who do not believe in the Word of the new Messiah, Charles Darwin. As scientific *facts* mount against darwinism, the darwinists — entrenched in well-paid positions of power within official academic and university circles — pile up additional hypotheses and strange kabalas to mend it; and when they cannot invent anything to reply to critics, they resort to direct insults. Croizat[6] has recently remarked that "... Darwin, darwinism, etc., are by now not a matter of calm scientific debate, but rather matters of faith. Everything regarding Darwin is wrapped in an atmosphere that is factually mystical and, what is more, mythological."

"Everything regarding Darwin is wrapped in an atmosphere that is factually mystical and what is more, mythological."
—Leon Croizat

In view of all the above it is not surprising that few professional biologists have cared to propose transformistic schemes which differ from darwinism.

According to Croizat[7], the key error of darwinians is that of attributing mutations exclusively to factors external to the living being. On the contrary "... evolution is due basically to *internal* agents, in the individual and in the group, and as such it is an essential part of molecular biology" and ". . . darwinism has been unable to understand that a mutation taking place in a mother-cell can start off a whole chain of mutations — i.e., macromutations, that are precisely the instrument that evolution

uses to establish new types of organization ... along currents of *oriented evolution.*" Similar conclusions had been reached much earlier by a distinguished Italian transformist, Piero Leonardi.[8]

## 'Transformism is not supported by facts.'

It is, however, my opinion that these efforts to break with Darwin, while nevertheless deserving praise, try to circumvent the problem rather than attacking it frontally. *Transformism is not supported by facts.* In particular, not one of those intermediate forms or "missing links" (the expression is appropriate because few things are *more* missing than those hypothetical "links") has been found or identified. In view of the great variety of living forms, those intermediate "links" should have been very abundant and should therefore, if the transformists were right, have left some trace.

Although such a claim was prompted by the discovery of the *Seymouris,* a Permian animal that apparently cannot be classified with certainty either as a reptile or an amphibian, this creature had lived a few million years too late to provide such a possible "link."[9]

To wrap up the argument, it is highly unlikely that any headway will be made towards unraveling the mystery of evolution — one closely tied to the origin of Life itself — as long as investigators continue to cling to the 19th century mechanicistic models such as Darwin's and purposely ignore those subtler forces which, even though normally undetected, nonetheless pervade the entire Universe.



### REFERENCES


[1] Leon Croizat, *Space, Time Form: A biological Synthesis,* Wheldon & Wesley, London, 1964.

[2] Leon Croizat, "Darwin y su teoria," *Boletin de la Academia de Ciencias,* Caracas, 1977. The following quotes are worthy of note: "Darwin's work ... has been essentially damaging, because his contribution to the progress of biology's thought has been negligibly small compared to the enormous confusion that biology owes him"; and "... biology will not be in a condition to advance as long as it acquiesces to the bad habits acquired under Darwin's whip."

[3] There is no end to the number of books and papers written by those who fawningly crawl at the feet of His Highness, Charles Darwin. This essay will, in order not to be accused of partiality, refer to only one of these laudatory works: Kai Petersen: *Prehistoric Life on Earth,* American translation, Methuen, London, 1963.

[4] Silvano Lorenzoni, "El mito transformists," to be published.

[5] The "theodicea" is that branch of Theology which attempts to reconcile factual reality with characteristics of Divinity, which, in turn, are defined in an *a priori* manner.

[6] Leon Croizat, "Darwin y su teoria." Op. cit.

[7] Leon Croizat, "Darwin y su teoria." Op. cit.

[8] Piero Leonardi, *L'evoluzione dei viventi* (Morcelliana, Brescia, 1950).

[9] Kai Petersen, *Prehistoric life on Earth.* Op. cit.


# A LITTLE RIDDLE

### By Jasper McKee

**Question:** What do all the following phenomena have in common:

1) Spontaneous human combustion
2) Dowsing
3) Hauntings
4) Poltergeists (taking the word of some that these are different from hauntings)
5) Inexplicable condensation of liquids in strange places (e.g. mineral oil on ceilings, or steady falls of rain on one particular tree for days on end)
6) Bizarre falls from the sky (e.g. frogs, ice, rocks, periwinkles)

**Answer:** They frequently take place in the immediate vicinity of some specific wooden object, such as a frame house, piece of furniture, particular living tree, or even a forked stick.

* * *

The purpose here, rather than to declare any firm or final conviction, is to enlist the thoughtful review of an audience familiar with the literature of these occurrences. One problem is that many published descriptions tend to be rather subjective and haphazard, and even the most scholarly reports do not concern themselves with a highly detailed account of the surroundings. To the student of these matters, however, some patterns do emerge.

First, there is the matter of localization. This is easily established with any phenomenon which repeats itself over a period of time: either it happens all over, or it only happens in a very few repeated places. In regard to falls from the sky, Fort called attention several times to the repetition of bizarre falls in the same localities. Haunting phenomena are also frequently repetitive, and clearly localized. Presented with the fact of localization, one must wonder whether the localization is connected with some particular object.

Second, for all these phenomena, whether repetitive or one-shot, it seems clear that they *do* associate themselves with houses, typically, or other wooden objects. They *seldom* occur in busses, airplanes, sports stadiums, open fields, or steel and concrete high rises.

Probably I should stop here, but I yield to the temptation to mention one thing more. Perhaps the secret of the pyramids may be buried within in the form of a gigantic wooden infrastructure ... and that the whole purpose was to erect and protect a large, precisely configured wooden frame. After all, the roofs of houses frequently come to an apex, as do dowsing rods.

# MR. BERLITZ—AGAIN!

## By Paul G. Begg

Two years ago Charles Berlitz's book *The Bermuda Triangle* (1) was published. Although it was not the first Triangle book it was undeniably the most popular, going straight into the best seller lists and notching up five million sales worldwide. It created a popular legend, telling the story of a roughly triangular patch of ocean in the western Atlantic, where ships, aircraft and people have disappeared in mysterious circumstances, leaving no wreckage and no survivors, and where weird phenomena take place — wildly spinning compasses, fireballs, inexplicable breakdown of electrical power, strange objects seen in the sky and traced in the depths of the ocean, and so much more. It is all very exciting and *very* disturbing, particularly to those of us who take our cocoa to bed every time there is a late night horror movie on tv.

Now Mr. Berlitz continues the story of the Bermuda Triangle with a new book *Without A Trace* (2), reviewed in *Pursuit* (Vol. 10 No. 3 Summer 1977): "... master Fortean Charles Berlitz has been meticulously pursuing new leads ... *Without A Trace* covers new ground ... In addition to detailed descriptions of many new and interesting cases, it painstakingly examines all the possible explanations ... The professional anti-Triangle critics will have difficulty in finding flaws in his arguments ..."

I am not anti-Triangle. I am anti- those Forteans who manufacture and/or perpetuate mysteries through careless or nonexistent research. I want facts and if they can be presented in an entertaining manner then so much the better. However, as I have said in a previous article (3), it seems that much of what is written about Fortean matters is far from factual, and this particularly applies to the Bermuda Triangle.

Perhaps because of its enormous success *The Bermuda Triangle* gained the attention of Triangle investigators and critics and has borne the brunt of the criticism, though not without good cause. Lawrence David Kusche (4) and others — most notably in Britain the B.B.C. (5) — have shown that few, if any, of the incidents happened as Mr. Berlitz described them. It is therefore surprising to find *Without A Trace* so briefly reviewed in *Pursuit*, the reviewer ignoring Mr. Berlitz's track record for accuracy (which is abysmal and doesn't inspire confidence) and without making any apparent attempt to check even a few of the claims he makes. So, at risk of being labeled anti-Triangle ... let's begin at the beginning.

On page five Berlitz tells of a National Airlines 727 flying to Miami which was lost on radar for 10 minutes, during which time the pilot reported flying through a thick fog. Upon landing it was found that all time-keeping equipment on board, including the watches of the passengers and crew, were all 10 minutes behind real time. No date, time, or flight number is given for this incident and checks with FAA, Miami Airport, and Eastern Airlines have failed to produce any record of such an event. An Eastern Airlines official told Graham Massey (6): "If that had happened, we'd sure as hell know all about it."

On page six Berlitz says that in spite of its vociferous detractors the Bermuda Triangle mystery has yet to be explained. This is because there isn't a mystery to be explained. Of course Mr. Berlitz is likely to argue this point, but as Kusche has shown, Berlitz's arguments are based on incorrect information and use of sources which often lack corroborative evidence. Berlitz (and I should say that he is not alone in this; and I regret that he is alone in the pillory receiving this modern equivalent of rotten vegetables hurled by angry villagers) also suggests that something mysterious is going on by implication — he gives reasonable explanations for strange phenomena yet manages to suggest that such explanations are not acceptable. As happens too often in Fortean literature, and particularly in books, a writer needs only to hint that something, no matter how absurd, has occurred and he can rest in near certainty that it cannot be disproved. The Bermuda Triangle mystery has been explained — there isn't one — and if Mr. Berlitz wants us to believe otherwise he must show us the evidence (*good* evidence, that is). The burden of proof should always be on those who make such statements, not on those who dispute them.

On page 13 Berlitz opens his arguments with a bang. Apparently a sophisticated weather satellite run by the National Oceanographic and Atmospheric Administration (NOAA) malfunctions only when passing over the Triangle. Professor Wayne Meshejian, who has studied this phenomenon is quoted as saying: "... we are talking about a force we know nothing about!" The solution to this so-called mystery was given in *Pursuit* (7) (Berlitz is a member of SITU isn't he?) In fact, what happens is this: the satellite collects and transmits both visual and infrared information on cloud cover and in order to send the information conveniently the visual signal is stored on a loop of tape and transmitted after the infrared signal. Over the Triangle, however, a blank occurs — the visual signal is not transmitted. The reason is very simple. The tape is full when the satellite passes over the Triangle and the recorder has to rewind to the start. The recorder cannot transmit and rewind at the same time, so the blank appears. Professor Meshejian is fully aware of what happens (as every reader of *Pursuit* who is interested in the Bermuda Triangle should be) and is none too happy with the way his name has been associated with the myth: "Practically everything I've said on this has been distorted, twisted and taken out of my hands. Frankly I'm sick of the whole affair. I've been misquoted and misinterpreted."

On page 17 Berlitz talks about the *Sea Venture*, her longboat, William Shakespeare's alleged reference to the Bermuda Triangle in *The Tempest*, and the large number of vessels which vanished in the region during the Elizabethan era. It would take far too long to analyze all of this, but it should be pointed out that the *Sea Venture*, carrying would-be colonists to the Jamestown settlement in Virginia, was caught in a violent storm and separated from the rest of the fleet. She was on the verge of sinking when the haven of Bermuda was reached and the

*Sea Venture*'s skipper managed to run his ship aground. It was in a valiant attempt to reach the mainland that several men set out in the *Sea Venture*'s longboat. They were never seen again — which is hardly surprising; it's a long way to the mainland from Bermuda, and once there they would have had to face Indians. There is nothing mysterious about the wreck of the *Sea Venture* and as for Shakespeare's involvement, he was apparently inspired to write *The Tempest* by the wreck of the *Sea Venture*, but his line 'the still-vexed Bermooths' more probably refers to the treacherous coral reefs which surround Bermuda (and which claimed many Spanish vessels), than a supernatural force.

On page 37 Berlitz tells the old story of the DC-3 airliner which vanished when approaching Miami after sending a radio message: "We are approaching the field ... We can see the lights of Miami now. All's well. Will stand by for landing instructions." This incident happened in December, 1948 and the cause of the tragedy is unknown. However, the pilot of the DC-3 did not say he could see the lights of Miami. He said (in a message intercepted by the New Orleans Overseas Foreign Air Route Traffic Control Center and *not* the Miami Tower as is almost always stated) that he was 50 miles from Miami (An approximate position report. He could easily have been 100 miles away). Nowhere, except in the Triangle books, is there mention of the pilot saying that he could see the lights of Miami. It appears that writers made that assumption believing that he would have been able to see the lights of Miami if he was 50 miles away. Well, maybe he could, but he certainly never said so. Anybody wanting further info on this incident should read Kusche's book (4).

> 'if there is a mystery in the Bermuda Triangle, and that is a very big **IF**, the evidence is slight.'

Kusche's book will also explain — or remove any hint of mystery from — other cases; the *Raifuku Maru* and the *Witchcraft*, both mentioned on page 39 of *Without A Trace*.

On page 60 Berlitz discusses the *Hollyhock*, a Coast Guard vessel which recorded a phantom land mass on radar. This story, one of several incidents suffered by the *Hollyhock*, was first told by Lieutenant Wisman to, I believe, Richard Winer, who certainly tells it in his book *Devil's Triangle 2*. But is the incident really mysterious? Lieutenant Wisman, an officer aboard the *Hollyhock*, does not think so and says that such radar readings are fairly common and due to natural causes. They do not constitute evidence for strange supernatural forces.

On page 70 Berlitz talks about Flight 19 (ho, hum) — and still presents us with those panic messages from Lt. Taylor, despite the fact that they do not appear in any official documents; that Commander Wirshing, Berlitz's source (Commander Wirshing was in the tower at Fort Lauderdale and made notes, from which Berlitz took his information), has denied being in the tower when the alleged messages took place and has denied keeping notes; and that nobody in the tower at the time has any recollection of those messages.

Berlitz also says that Lt. Taylor radioed to Lt. Cox, a pilot circling Fort Lauderdale, a message which ended "Don't come after me!" Berlitz, quoting the wife of one of the men who disappeared, adds "... he (Taylor) did not want Lieutenant Cox to jeopardize his own life; (having seen) something which, possibly for national security reasons, the Navy still does not want the public to know about ..." Berlitz makes no comment, hinting at its accuracy by implication.

The official log does record Taylor saying "Don't come after me," but it doesn't add the second part of the message (so often given): "They look like they're from outer space." Berlitz fails to mention that the full message sent by Taylor was: "I know where I am now. I'm at Angels 2.3. (2,300 feet). Don't come after me." And that this message was sent to Cox who was about to search for him.

The 'mystery' of Flight 19 (ho, hum) and the alleged official cover-up have been proved false time and again, yet the old story keeps on being presented.

On page 73, when on the subject of debunkers, Berlitz mentions Lawrence David Kusche, a research librarian who blew the whole Triangle mystery sky high when he examined fifty of the so-called Triangle mysteries and provided devastating proof that almost all of them were based on misquotation, misinterpretation and false evidence. In *Without A Trace* Berlitz writes that Kusche was 'not influenced by any personal familiarity with the area ... His research techniques are characterized by a rather touching reliance on long-distance telephone calls as a means of investigation.' This, Berlitz's only answer to Kusche's crushing analysis of the Bermuda Triangle "mystery," is unfair to Kusche, who studied hundreds of official papers and first-hand reports and whose investigation cannot be faulted (unlike Mr. Berlitz's). It is also an example of Berlitz logic (?). Messing about on a boat is absolutely no help in trying to find out what happened to Flight 19 (ho, hum) or ships which disappeared 20 or 30 years ago.

And so I could go on, citing error after error: Bruce Gernon, a Palm Beach pilot who is reported as having landed at Miami half an hour ahead of time and with half an hour's worth of extra fuel in his tanks after flying into a strange cloud over the Bermuda Triangle, tells his exciting story on page 112 of *Without A Trace*, but there is no corroborative evidence, Gernon's flight plan seems to be missing, and there is no independent proof of his story. It's not that I don't believe it, but I would like some supporting evidence.

On page 119 Berlitz records a sighting of the spectral ship Flying Dutchman by King George V when, as Prince, he was serving aboard HMS *Inconstant*. An entry in the *Inconstant's* log records the incident, says Berlitz, but in fact the details he quotes are to be found in a book *The Cruise of Her Majesties Ship Bacchante* (9).

On pages 149-151 Berlitz relates the story of the disappearance of a British Regiment, the First Fourth Norfolk, said to have vanished after marching into a strange loaf-of-bread shaped cloud at Gallipoli in 1915. A long-distance telephone call or a considerably cheaper letter would have furnished Berlitz with the info that the First Fourth Norfolk was a Battalion and not a Regiment and

that they did not vanish at Gallipoli in 1915 or at any time or place thereafter.

If there is a mystery in the Bermuda Triangle, and that is a very big IF, the evidence is slight. Unfortunately it is a complaint which can be made right across the board concerning Fortean research. Criticizing the Bermuda Triangle leaves the way open to being accused of having a closed mind, of being a blinkered sceptic, as one author described critics in the introduction to her book. But, on the contrary, it is the proponents of such theories who have closed minds. They have closed their minds to criticism and insist that they are right and that their conclusions have been fully confirmed when they have not.

Many Fortean researchers — and many investigators of the Bermuda Triangle — have complained bitterly about the unwillingness of scientists to investigate claims of new and extraordinary phenomena. But extraordinary phenomena demand extraordinary facts, not grand generalizations based on slender evidence, which is the real basis of *The Bermuda Triangle* and *Without A Trace*.

Forteans beg their readers to have open minds and to question orthodox ideas, yet Berlitz does not have an open mind. His mind is closed to the possibility that the Bermuda Triangle is a myth and that he has been suckered by writers before him. In the foreword to *Without A Trace* he writes: 'the aim of this book is neither to refute, inform, nor educate critics of the reality of the mystery.' Which is a pity. I would like to hear Mr. Berlitz answer his critics rather than dismiss them and hope they will go away.

False information misleads the public and does Forteans and Fortean research a disservice. I hope that maybe we shall see an attempt to mix Fortean research with accuracy in years to come.



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# AN OBSERVATION ON CRITICS WHOSE APPRAISAL OF PHENOMENA IS UNDISTURBED BY PERSONAL KNOWLEDGE OR EXPERIENCE

*The preceding commentary concerning Charles Berlitz's latest book,* Without a Trace, *is in rather sharp contrast to the review of that book last Summer (*Pursuit, *Vol. 10, No. 3), by John Keel, who wrote: ". . . The professional anti-Triangle critics should have a difficult time finding flaws in his arguments, and Forteans everywhere will find the book fascinating and thought-provoking. You'd better read this one because everyone will be talking about it."*

*Book reviews and editorial crticism have appeared in previous issues of* Pursuit *— not always to the liking of Mr. Berlitz, who graciously offered the following response to Mr. Begg's article.*

### By Charles Berlitz

I am not aware that the Bermuda Triangle has been "blown sky high" nor apparently is anyone else who has had access to the newspapers during recent months — especially January 1978.

As far as so-called experts who have never visited the Bermuda Triangle area, I have but little to add to what I said in *Without a Trace:*

> . . . mention should be made of a book written by a librarian in Arizona named Lawrence Kusche *(The Bermuda Triangle Mystery — Solved)*, which expressed the point of view that the mystery had been solved because there was never any mystery in the first place. It should nevertheless be noted that the author's approach to the subject is not influenced by any familiarity with the area of the Bermuda Triangle, the Atlantic Ocean, or any other large body of water. His research techniques are characterized by a somewhat touching reliance on long-distance telephone calls as a means of investigation, as mentioned by him on page xv of the introduction to his book.

As quoted in *The Riddle of the Bermuda Triangle*, by Martin Ebon, Kusche has observed: "There was nothing to be gained by my going to the area to do the research." — a refreshing comment

on investigative techniques which would immeasurably simplify the work of detectives, police, research investigators, and explorers throughout the world.

Some of the ships mentioned in the above work as never having existed could have been easily located if the investigator had known where to look for their records,

> 'the Bermuda Triangle has existed for at least half a century and has been the object of study by reputable investigators'

another disadvantage of investigation by telephone, the perusal of back issues of magazines and newspapers (cf. *The Bermuda Triangle Bibliography)* and, above all, of interviewing only the sources uniquely interested in downgrading any elements they do not understand.

A good example of manipulative reporting was the BBC program so confidentially cited by Mr. Begg. Interviews with me and others on this program were doctored so as to change the meaning of what was said and the same Mr. Kusche brought such pressure on Lt. Commander Roy Wirshing, USN-Ret., a witness of Flight 19, to change his account that the former was halted in his harassment only by a threat of legal action.

I once met the author of *The Bermuda Triangle Mystery — Solved* on a TV program. He seemed to be a pleasant young man although curiously uninformed about his own specialty, library work, as I noted when he asked me whether *The New Yorker* was a New York newspaper.

No one "invented" the Bermuda Triangle. It has existed for at least half a century and has been the object of study by reputable investigators, including Ivan T. Sanderson, the founder of SITU, Dr. J. Manson Valentine and his associates, and many others who have been investigating the phenomenon of the Bermuda Triangle and compiling reports of survivors since before 1945, not by telephone, but personally in the area where the incidents happened and continue to happen.

A philosopher has left us a maxim applicable to the study of the mysterious, the unusual, or the not yet explained. It goes as follows:

"There is a disbelief born of ignorance and
a scepticism that is born of intelligence."

I would personally hope that Messrs. Kusche and Begg would strive to qualify for inclusion in the second rather than the first category.



# SITUATIONS

*This section of our journal is dedicated to the reporting of curious and unexplained events. Members are encouraged to send in newsclippings and responsible reports they feel should be included here. Remember,* local *newspapers often offer the best (or only) information concerning some events. Please be sure to include the source of reference (name of newspaper, periodical, etc.), the date the article appeared and your membership number (or name, if you prefer to be credited that way).*

## MYSTERIOUS, BIG BLACK CAT IN PLAINFIELD, ILLINOIS

March 6, 1978: Around 5:15 p.m. William Hughes spotted a coal-black cat, which he described as about the size of a police dog, near the warehouse of an industrial corporation where his wife works as an evening security guard. While observing the animal (for some five minutes) from a distance of 75 or 100 yards, Hughes noted that it seemed to be "stalking something," and did not pay him the slightest heed. "I couldn't believe my eyes. I've been hunting a lot and I've seen all kinds of cat but nothing like this before. This was big, and pure black," he said.

On Wednesday, March 8, Mrs. Hughes saw the animal across the road from where she was on guard duty. She called the police and the Conservation Department after she found footprints, which she felt may have been made by the cat, in the snow. Each print was larger than a size-five woman's shoe.

Mrs. Hughes again found prints matching the same description after a big snowstorm in the third week of January. When she discovered similar prints under a broken window of a company trailer, she guessed the animal may have tried to break into the trailer.

The Hughes couple concluded that the beast, about the size of a lynx but pure black, and smaller than an ocelot, must be a medium-sized black panther. The question remains, however: why, in northern Illinois, should such a creature appear in a location where it is not known to habitate?

It might also be noted that Mrs. Hughes attributes to the animal the "high, unsettling shrieks" and noises "almost human and resembling the screams of a desperate woman," which were heard on three different occasions a few years earlier. The Hughes were told that cats the size they claim to have seen are known to make shrieking sounds.

CREDIT: *Joliet Metro East Herald-News,* 10 March, 1978. SOURCE: Member #985.

*It is interesting to note here that several of us from SITU, while investigating an alleged Bigfoot sighting in Sussex County (northern New Jersey) last year, heard shrieking sounds coming from a wooded area. The sounds, lasting for at least half an hour, could be compared to those of a woman in pain or distress. The local people there with us, upon hearing the sounds, told us these were similar to the screams heard during the period in which a number of members of the family had encountered a large bipedal hairy creature near their house. —Editor*

* * *

## BIGFOOT

The Soviet News Agency *Tass* claims specialists at the Yakutia Institute of Language, Literature and History have been evaluating testimony of Siberians who claim to have seen the so-called "Chuchunaa," meaning "fugitive" or "outcast." The man-like creature has been seen in the vast expanse of forest, mountains and tundra in northeastern Siberia.

The creature has been variously described: about six and a half feet tall, with long arms hanging below its knees, dark

and shaggy-haired — a wild man with a shrill voice.

Some Siberian authorities had believed the last Chuchunaas might have died out in the 1950s, when what they felt to be the last trustworthy sighting of the creature was made on the Adychi River. Now, however, it is supposed that the creature may have just retreated deeper into the desolate Verhoyansk region of Yakutia, about 400 miles north of the city of Yakutsk.

SOURCE: *AP*, 4 February, 1978. CREDIT: Member #466.

* * *

## ICE FALL IN NEW JERSEY

Although the following event took place several years ago, we are including it here because the photographic evidence of a fallen chunk of ice is very uncommon.

It was a warm summer evening and a thunderstorm was approaching from the northwest. The sky was still clear overhead, however, and the witness, who had just gone into his kitchen after tending the outdoor grill, was startled by a very loud noise in his backyard. He was quite unnerved to find that a large chunk of ice had fallen almost exactly at the spot upon which he had just been standing.

The police, who were called to the scene at 8:05 p.m. August 5, 1967, said that the chunk of ice might have weighed 25 pounds before breaking up as it landed at the residence on Waverly Place, Long Branch, New Jersey.

Neighbors three houses away, it was reported, came running from their homes at the sound of the impact. The chunk of ice made an 8-inch depression in the ground near the grill, after passing through (and damaging) a silver maple tree. The ice-contaminated grass died.

SOURCE: *The Long Branch Daily Record*, Long Branch, NJ, 7 August, 1967. CREDIT: Member#432.

* * *

## SEA CREATURE A PLESIOSAUR?

A Japanese Professor, Tokio Shikama, a scholar of ancient animals at Yokohama National University, stated that the 44-foot-long sea creature (the original report estimated a length of 32 feet) dragged up off the coast of New Zealand by a Japanese fisherman in April of 1977 is a plesiosaur — thought to have been extinct for more than 100 million years. After examining color pictures of it brought back to Japan by the fishermen, Dr. Shikama said it could not be a fish or mammal. He believes *Plesiosaurus* must still roam the seas off New Zealand feeding on fish.

Earlier, it had been reported that the captain of the fishing vessel, the *Zuiyo Maru*, had ordered the carcass of the sea creature dumped overboard for fear it might pollute his catch; but in retrospect scientists believe that the creature, whatever it was, might have been worth considerably more than the catch of fish for which it was sacrificed. Later, sea vessels from several nations sought in vain for the dumped remains of the creature.

SOURCE: *UPI*, 25 July, 1977. CREDIT: Member #2258.



*Whence came the ice that fell in New Jersey?*

* * *

Residents from the vicinity of Little Eagle, in the Standing Rock Indian Reservation of South Dakota, have reported Bigfoot sightings on numerous occasions in late summer and fall of 1977. Various witnesses have reported, among their observations, that the creature seen walked slumped over like "an old man" with long arms hanging almost to its knees, and that it left footprints indicating the presence of five long toes on each foot. (More than one creature has been reported as well.)

Several persons said they heard screams, or howling, particularly when the creature was subjected to the glare of car lights at night. Howling sounds coming from local wooded areas have apparently caused dogs to bark and wail after dark. Horses and cows have shown fright as well. One witness claimed to have seen one of the creatures walking about 200 yards behind a herd of running cattle. Another witness observed one of the large hairy creatures flee from human approach "as fast as an antelope" as it scampered up and down a butte.

Attempts to lure or capture the creature (by hanging "Sasquatch bait" sacks in trees) proved futile. Two of them were allegedly sighted, however, when they were attracted by sounds produced from a tape recording of "screams of Sasquatch" (made in Oregon) which were played by a Bureau of Indian Affairs policeman.

SOURCE: *McLaughlin Messenger*, McLaughlin, South Dakota.

* * *

## TOOTH GROWING IN BOY'S FOOT

A youth, 13-year-old Doug Pritchard of Lenoir, North Carolina, was taken to Dr. Amor Bouraouie on January 20, 1978, to have a foreign object removed from his foot. The object, reported to have caused the boy pain for several weeks, had been wearing out shoes worn on that foot.

The object removed by the doctor, in a

rare case of genetic misdirection, was a tooth, fully grown and with roots. Dr. Bouraouie, it is stated, kept the tooth as a souvenir.

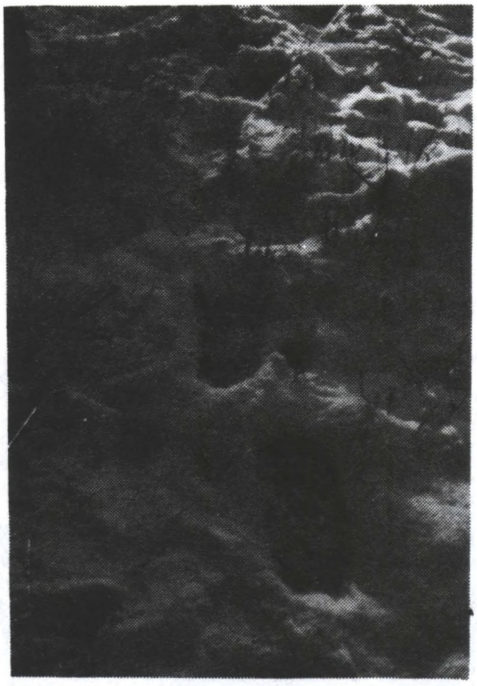
Although an opposite variation of the effect is frequently employed, this is the first account we have of someone putting their *mouth* in their *foot*.

CREDIT: *UPI*, 22 January 1978.

* * *

SITU member #2843, a 25-year-old forestry student at Clatsop Community College, took the accompanying photograph of unusual footprints in the backlands of Clatsop County, Oregon, on November 18, 1977.

By looking carefully in the center of the large, four-toed print (lower portion of the photo), what appears to be a cub's footprint can be seen. A second small print is placed just to the right of the large (adult) print in the center of the picture. Our member reported that the adult print measured 7½ by 17 inches, whereas the smaller footprint was 2 by 4 inches.



Some of the impressions, evidently made in soft snow which later froze, were virtually unaffected by subsequent tire marks of a car passing over them.

Also discovered on a "salmonberry" bush nearby were two strands of black and brown curly hair which have been sent to a laboratory in Portland, Oregon, for analysis. Tree branches, said to be too high to be easily broken by one person, were broken between 6 and 11 feet from the ground. Also significant, perhaps, was that no smaller prints were found in the heavy undergrowth, which might indicate that the little creature was carried over the more difficult terrain by the adult.

Our member, who escorted about 15 persons to the site, has declined to publicly disclose the location, saying, "I would never want the responsibility of shooting one (of the creatures) or seeing one captured."

SOURCE: *The Daily Astorian*, Astoria, Oregon, 16 December 1977. CREDIT: SITU member #2843.

# SYMPOSIUM

## Comments and Opinions

### ANOTHER BIGFOOT HOAX

No doubt SITU members have heard about a new film of an alleged Sasquatch taken in the Mt. Baker area of Washington State toward the end of last year. John Green, Rene Dahinden and I have viewed the footage many times. It is an obvious fake.

Frank White, the man who eventually produced the footage, originally came to Rene last April wanting to know all about "Bigfoot," and asking to be introduced to Ken Cooper at the Lumni Indian Reserve. He said he would like to cruise the roads at night (as Rene and I had done for six weeks the year before).

Rene took him there, introduced him, and even spent a night or two with him to show him where most of the sightings had occurred. White and his wife then spent several nights cruising around the reservation on their own.

A few weeks later, they decided to rent a movie camera and take a run up by Mt. Baker, "to film the colors of Fall." Apparently, they decided to stop along the highway (one of the most traveled tourist highways in the state) to have their lunch. As they walked about 600 feet into the woods looking for a nice place to eat, guess what stepped right in front of their rented camera!

According to them, they hurriedly left the area, but stopped a short way down the road to talk it over, then returned. But, try as they might, they were unable to find the location again. Later, at their home, Frank White told me he thought he could now re-locate the spot. Would I like to go with him to look the area over?

I told him I certainly would, and to bring along the film because I had a stop-frame projector and we could therefore all study the film, frame by frame, together. By now, I already suspected the film was faked; I therefore told him we would have to take many measurements on location, explaining just what that meant: I had to know exactly where White had stood, the path taken by the creature, the height of the tree-limb under which the creature had passed, all distances from each object, etc.

On the day we were supposed to do all this, he called me to cancel our appointment, claiming he had to await a phone call from a film outfit in Los Angeles — and besides, he didn't know if he could locate the area in question after all. What he really wanted to know was how much we thought the film would be worth.

White is retired and lives on a pension. Like Rene, I feel they are a funny pair. All they talk about now is money. Green, Dahinden and I are not even interested in the film sight, so let's let that speak for itself. What I *am* interested in is receiving legitimate Sasquatch reports.

— Dennis Gates
Sedro Wooley, Washington

*(Members wishing to contact Mr. Gates are invited to write: Bigfoot/Sasquatch Information Service, P.O. Box 442, Sedro Wooley, WA 98284.)*

* * * *

Patrick J. Macey, 7401 Mason Ave., Canoga Park, California 91306, has once again offered SITU members an invitation to visit with him at his home. He has a large living room in which he shows films of his expeditions into Bigfoot and UFO sighting areas in Oregon and Washington. He also has a number of expeditions planned for this year. Interested members are invited to contact him.

* * * *

### RENEWALS

Many members have asked us why *Pursuit* was not mailed out earlier last time. Besides the serious weather problems, there was another very good reason for our late mailing. Because we are non-profit, we must make the best use of our bulk mailing permit. That means that we have to wait for renewals to come in before mailing out the copies of our journal. It would help us all if members would send in their renewals by the end of the year.

## AMERINDS, COLUMBUS AND THE "TEN LOST TRIBES"

After reading your book review of *American Indian Myths and Mysteries, (Pursuit,* Volume 11, Number 1), I am very interested in reading the book, as it may have something to do with Columbus's voyage that will perhaps shake orthodox thinking.

That the Amerinds speak of cataclysm and flood, and that they are prophetic and perhaps came from Atlantis can possibly be tied together — they may be the ten lost tribes of the Jews.

Columbus, I am convinced, did not come from Genoa. The Columbus that the Italians claim was the great navigator, cartologist and seaman was a simple weaver at the age of eighteen. When Columbus first showed up in Portugal, where he was shipwrecked, he was an experienced sailor whose ship was destroyed *fighting* the Genoese fleet off Portugal. He stated he had started his career as a cabin boy at the age of fourteen. He spoke fluent Castilian Spanish.

To go back a ways, the word *Sephardam* in Hebrew means the westernmost part of the Mediterranean Sea. This is also called "The Gates of Hercules," beyond which lies (lay) Atlantis. The *Sephardim* are one of the surviving tribes of Jews who made up perhaps twenty-five per cent of Spain's population after the expulsion of the Moors.

Soon after the Inquisition, Jews, too, faced expulsion. The day chosen by Ferdinand and Isabella was August 2, 1492. Columbus had his entire crew aboard three ships at 2300 on August 1, 1492. Of the one hundred and twenty "catholic" seamen, there was no priest, yet there was a professional Hebrew language interpreter brought in from Alhambra. With whom did they expect to be speaking?

The *orthodox* story is that Ferdinand and Isabella financed the voyage from Spain's treasury. It was in fact financed by one Luis de Sant Angel, a Sephardic Jew who was one of the King's most trusted officials. The Sant Angels were the Rothschilds of their time.

Sant Angel wanted desperately now to find a new home for the Jews. Seamen consistently told of a land to the West where the rulers were Jewish. Could these people have been the survivors of Atlantis (who could have been the ten lost tribes) who ended up as Amerinds?

This could explain the prophetic nature of the Amerind as well as their knowledge of the flood, cataclysm, holocaust, purification, etc.

— E. J. Toner, Jr.
Howell, New Jersey

* * * *

## 'MIND OVER MATTER' AND 'THE COSMIC HOLOGRAM'

Mr. T. B. Pawlicki's articles in the Winter, 1978, *Pursuit* (Vol. 11, No. 1) have interesting ideas, but he gets so excited he forgets to think cautiously. For instance, we need more evidence that "field is identical to space." Time of travel is a method of measuring space. Unless some sort of field is necessary for every motion, a rock hurled across a chasm would reach the other side as soon if there were no fields in the space as with them.

He says movement is behavior, and behavior is intelligence, although only the movements of animal muscles are related to intelligence, which is an ability to learn, and it is only *evidenced* by behavior. Not all behavior is intelligent behavior, and not all movements are behavior. Also, if his consciousness is space or movement of objects, it is much different from mine.

It isn't clear what the standing waves he describes do or what it is that contracts. Where is conservation of energy if "standing" waves are moving so rapidly that they disappear? If rarefactions and re-enforcements get closer together, the many waves would presumably unite into one great one, since the energy is conserved.

In "The Cosmic Hologram," the type of radiation — whether electromagnetic, neutrino, or what — is not specified. There seem the problems of obstruction, absorption, and especially the distances between the "atoms" (perhaps quarks would be closer) and bodies that are said to be out-of-phase vibrations. One can change positions of objects, but the very consistency of these objects is said to be dependent on continuous radiations from "infinity." How do these happen to coincide wherever an object is placed?

Do sourceless vibrations stretch tiny distances only? Then each subatomic particle could have its own nodes and double-crests, spinning and revolving as necessary to form atoms and molecules. What, however, is vibrating? It isn't space, because space is needed to separate one wave packet from another. In fact, it is needed to give leeway for the vibrating.

The disappearance of an electron from one orbit and appearance in another is no surprise to those of us who believe in discontinuous motion, although one wonders how it is proved that electrons don't simply travel at great velocity. I certainly agree that the notion that great velocity increases mass is mistaken.

The speculations about waves are worthwhile, but I believe we must reason carefully.

—Harry E. Mongold

* * * *

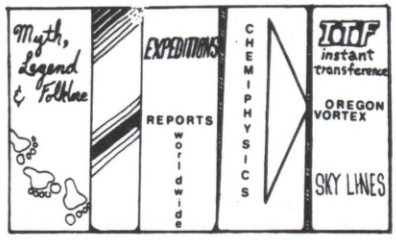
## MEMBERSHIP DIRECTORY

We are still processing names for the new Membership Directory. Since we will be attempting to have it ready soon, all members who would like to be included should contact **Martin Wiegler, 694 Stuyvesant Ave., Irvington, NJ 07111** by July 1, if possible. Give him your membership number and address (print clearly!) and area(s) of interest, and he will do the rest. It is hoped that the Directory will enable members to engage in a productive exchange of information and interest.

## BOOK REVIEWS

We would like to include more of these in the pages of *Pursuit,* and all members are invited to contribute. Submissions of up to 500 words, or in some cases longer, will be considered for publication; but we prefer shorter reviews wherever possible, as this will allow more coverage of the many new books concerning unexplained phenomena coming into print. Include the author, title, publisher and price of the work; and please be sure to specify with your review whether you would like us to print your name or simply your membership number.

# BOOK REVIEW




***THE HAUNTED UNIVERSE by D. Scott Rogo, New American Library (Signet Books), New York, N.Y., 1977, 168 pages, $1.50 (paperback).***

D. Scott Rogo has written eleven previous books and numerous articles on virtually every aspect of parapsychology. He now turns his attention to UFO's, as well as other types of unexplained phenomena. It is Rogo's contention that UFO researchers are generally not well-read on parapsychological matters and may fail to notice parallels between psychic manifestations and UFO cases.

That there is a psychic element to UFO reports (or some of them, at least) seems undeniable. However, Rogo has perhaps assumed and speculated too much in his attempt to explain UFOs in paraphysical terms. His basic knowledge of the UFO subject is, in many cases, sadly and obviously lacking. For instance, Rogo summarizes the case for UFOs as follows: "Unlike ESP and psychokinesis, which can be studied in the laboratory, the evidence for the existence of UFOs, miracles, weeping pictures, and teleportation still rests only on disjointed observations." Aside from lumping UFOs in with more esoteric phenomena, Rogo's statement is certainly open to question.

But just exactly what does he think UFOs are? "I have no doubt that such things as UFOs and 'monsters' are physical realities ... realities totally apart from our minds. But I believe that they are psychic realities as well. These enigmatic creatures and vehicles are haunting our planet, *but through the power of our minds* we are imitating them and creating more and more of them. For every UFO that flits through the sky, many more are created by the psyche."

One would think that, somewhere in the book, Rogo would give his opinions as to what sort of "physical realities" may be responsible for the "real" UFOs. He does not. He finds the theory of physical space vehicles inconsistent with the evidence because "no one has ever downed one, shot off a part of one, or captured one on the ground." That assertion is highly debatable, to say the least.

In discussing the Hickson/Parker UFO abduction case, Rogo says at one point that the two fishermen were "completely oblivious" to the other UFO reports from the Pascagoula, Mississippi area on the night of their experience. Yet, a few pages later, he suggests that "the UFO activity which was prevalent that night could have served as the prototype suggestion from which Hickson molded the terrifying drama."

The book contains several other factual errors and generally reflects Rogo's unfamiliarity with his subject. By failing to thoroughly research the UFO literature, Rogo has hurt his case, while giving us a book which seems to be just one more quickie "pot-boiler" paperback.

— Lucius Farish

# WITCHCRAFT AND WEATHER

*(Continued from page 60)*

[16] *Code Theod.* 9. 16. 3 (Clyde Pharr ed. 1952).

[17] Eunapius, *Vitae sophistarum: aedesius,* quoted by Frazer, *Golden Bough,* 1:325.

[18] Lex Visigothorum 6. 2. 4, in *Monumenta Germania Historica* [hereafter cited as *MGH*] (Legum, Sectio I, Legum Nationum Germanicarum, 1902), 1:259; Statuta Rhispacensia Frisingensia Salisburgensia 15, in *MGH* (Legum, Sectio II, Capitularia Regum Francorum, 1883), 1:228; and Additamenta ad Hludowici Pii Capitularia, no. 196, in *MGH* (Legum, Sectio II, Capitularia Regum Francorum, 1897), 2:45.

[19] Agobard, "Liber contra insulsam vulgi opinionem de grandine et tonitruis," in *Patrologiae Latinae* (J. P. Migne ed. 1864), 104:107.

[20] Theodore, *Liber poenitentialis,* quoted by C. L'Estrange Ewen, *Witch Hunting and Witch Trials* (1929), p. 2; Summa de judiciis omnium peccatorum 7. 4, 17, in Hermann Jos. Schmitz, *Die Bussbücher und das Kanonische Bussverfahren* (1958), 2:480, 495-96; and Excerpsus Ecgberti 4. 14, in Schmitz, 2:664.

[21] Burchard of Worms, *Decretum lib.* 9 (Corrector) §68, in Joseph Hansen, *Quellen und Untersuchungen zur Geschichte des Hexenwahns und der Hexenverfolgung im Mittelalter* (1901), pp. 39, 41 [hereafter cited as *Quellen*].

[22] Monumenta Gregoriana, in *Bibliotheca Rerum Germanicarum* (Philippus Jaffé ed. 1865), 2:412.

[23] Reginald, *Libellus de vita et miraculis S. Godrici* §238 (Pub. Surtees Soc'y, vol. 20, 1893), p. 253; and Marcin Kromer, *De origine et rebus gestis Polonorum* (1558), p. 143.

[24] *De secretis,* quoted in Sayed Idries Shah, *The Secret Lore of Magic* (1972), pp. 120, 135.

[25] J. M. Vidal, *Bullaire de l'inquisition francaise au XIVe siècle,* doc. 72 (1913), pp. 118-19.

[26] Johanne Nider, *Formicarius* 5. 4, in *Quellen,* pp. 88, 94-97.

[27] Norman Cohn, *Europe's Inner Demons* (1975), pp. 166-73.

[28] S. M. L. Mathers, *The Key of Solomon the King* (1889); Add. MS 10,867 (Isau Abbraha trans.), quoted by Shah, *Secret Lore,* p. 52; Sloane MSS 2731 (1676), 3648, quoted by Shah, *Secret Lore,* pp. 188-89, 206, 210; and C. C. McCown, *The Testament of Solomon* (1922).

[29] Thomas Walsingham, *Historia Anglicana* (H. T. Riley ed. 1862), 2:250-51; and *The Chronicle of Iohn Hardyng in Metre* (1543 ed.), ch. 202, quoted by George Lyman Kittredge, *Witchcraft in Old and New England* (1929), p. 156.

[30] Johannes Nider, *supra* note 26. The same text is also found in Jacobus Sprenger & Heinrich Kramer, *Malleus Maleficarum* (Frankfurt ed. 1600), pp. 694, 726-27.

[31] *Quellen,* p. 17; E. William Monter, *Witchcraft in France and Switzerland* (1976), p. 151 [hereafter cited as Monter]; and *Quellen,* pp. 459-66.

[32] *The Brut, or The Chronicles of England* (Early Eng. Text Soc'y, no. 136, Friedrich W. D. Brie ed. 1908), pp. 477-78.

[33] *Quellen,* pp. 553-55, 556-59, 565-67.

[34] *Errores Gazariorum,* in *Quellen,* pp. 118, 120; Johann Hartlieb, *Buch aller verbotenen Kunst, Unglaubens und der Zauberei,* in *Quellen,* pp. 130, 132-33; *La Vauderye de Lyonois,* in *Quellen,* pp. 188, 194; and Jordanes de Bergamo, *Quaestio de strigis,* in *Quellen,* pp. 195, 199.

[35] Innocent VIII, *Summa desiderates affectibus,* in *Quellen,* p. 25.

[36] Heinrich Kramer & James Sprenger, *The Malleus Maleficarum* (Montague Summers ed. 1948), pp. 147-49.

[37] Ulrich Molitor, *De laniis et phitonicis mulieribus,* in *Quellen,* pp. 243, 245; Geiler von Kaysersberg, *Emeis,* in *Quellen,* pp. 284, 289; Trithemius, *Antipalus maleficiorum,* in *Quellen,* p. 294; and Paulus de Grillandis Castilioneus, *Tractatus de hereticis et sortilegiis,* in *Quellen,* pp. 337, 339.

[38] *Quellen,* pp. 586-87; William Hale Hale, *A Series of Precedents and Proceedings in Criminal Causes* (1847), pp. 36-37; and *Quellen,* pp. 592, 597-98.

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## PAPERS INVITED

*(The following notice is included here in response to a number of inquiries concerning the procedure for submitting manuscripts.)*

*Pursuit*, the quarterly journal of the Society for the Investigation of the Unexplained (SITU) is seeking, for consideration for publication, articles of 1,000 to 5,000 words (or in some cases longer — write for details) on unexplained phenomena from various fields. *Pursuit*, devoted to the investigation of "Things" that are customarily discounted, emphasizes an interdisciplinary approach in the study and analysis of unexplained phenomena. Being non-profit and supported solely through membership, we cannot afford payment for articles used. Instead, we return the copyright rights to the author upon publication; in addition, in some cases involving articles longer than 5,000 words, we will provide a complimentary membership for the year.

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