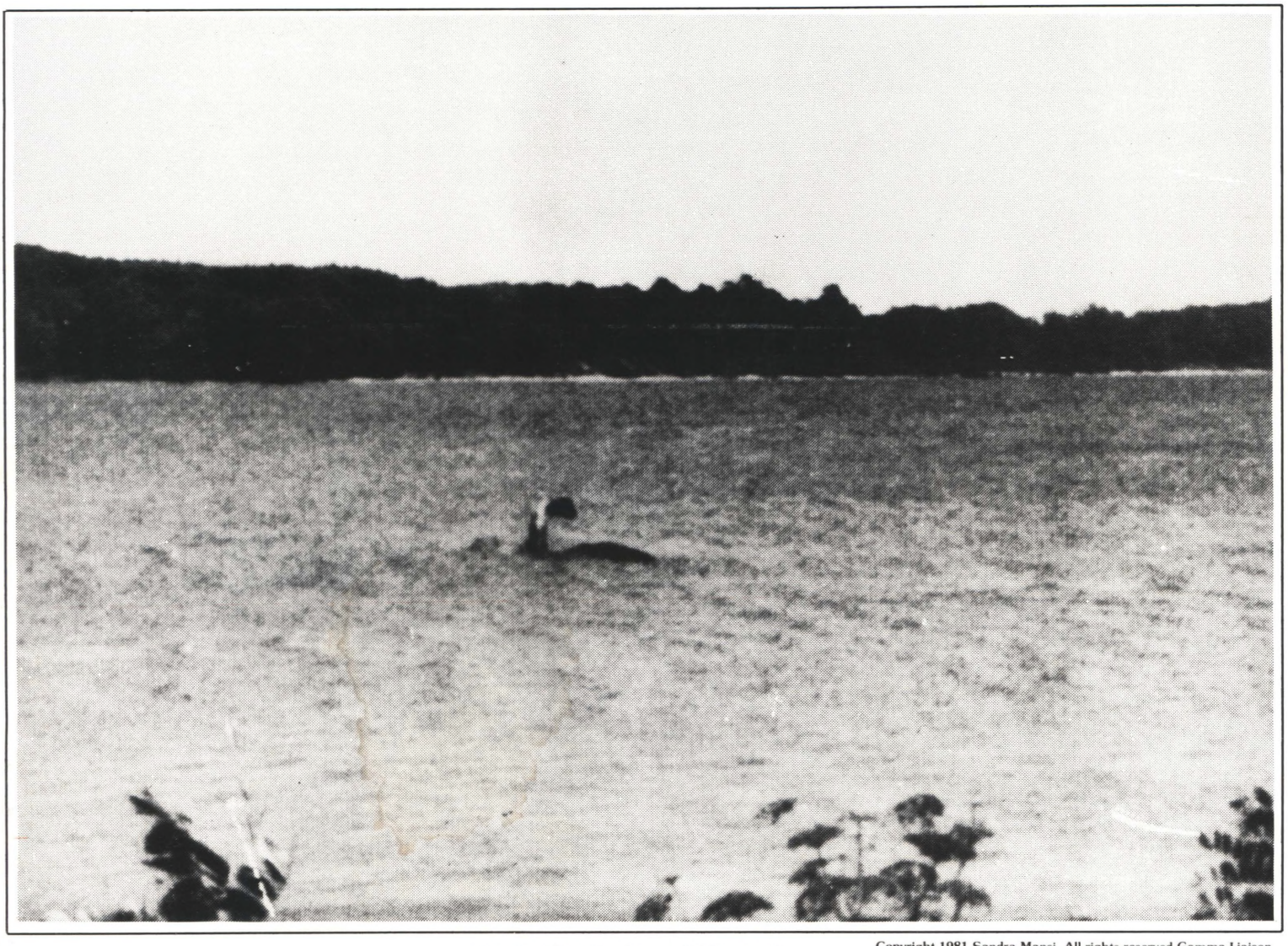
Pursuit

'Science is the Pursuit of the Unexplained'

Lake Champlain's 'Monster'

survives optical analysis of Mansi's photo, escapes identification as one of a known species, and calls attention to need for protection



Sandra Mansi's photo of "Champ"

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THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

Mail: SITU/PURSUIT, P.O. Box 265, Little Silver, NJ 07739 USA Telephone: (201) 842-5229

SITU (pronounced *sit'-you*) is a Latin word meaning "place." SITU is also an acronym referring to THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED.

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THE QUARTERLY JOURNAL OF THE

Pursuit®

SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

'SCIENCE IS THE PURSUIT OF THE UNEXPLAINED'

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EARTHQUAKES lead the list of the Earth's spoilers. Among all natural phenomena earthquakes are the least understood and the most destructive. Only volcanos, great storms and atomic explosion have a similar capacity for cataclysm.

The need for understanding earthquakes is greater than any of these, yet progress toward the ultimate goal of control is slower. You can't capture an earthquake and carry it into a lab for study, and you can't simulate one to any valid effect you'd want. Instead of experiment, you have to make do with history. The next question is, how to do it.

A few years ago Dr. Michael A. Persinger armed himself with computer tools of sufficient capacity and began a review of earthquake history and a search for relationships between earthquakes and other phenomena. Some early results of this study were published in *Pursuit* for Fall 1979 (Vol. 12, No. 4) under the title "Prediction of Fortean Event Reports from Population and Earthquake Numbers." By devoting ten pages of this issue to the results of Dr. Persinger's further investigations *Pursuit's* editors are again in agreement with those members who believe that only the best technology will ever prevail against the complex strategy of nature's various assaults. A careful reading isn't suggested as preparation for a career in computer science. It may make you a better Fortean for coming to the same conclusion as Dr. Persinger: "The study of those events we call Fortean is at the most critical stage of its history. They can remain in the cherished reservoirs of unrestricted fantasy and undisciplined speculation, or they can be subjected to the detail and precision of numerical analysis. The data available in many agencies are now sufficient in number and temporal-spatial density to allow reliable and valid results to be obtained."

Thank you, Dr. Persinger, for the article, and for waiving payment of fee and donating the amount to SITU for research activities.

And thanks to many others who have given freely of time and thought and good advice to help produce this issue, including:

—Dr. Roy Mackal and J. Richard Greenwell. They leave in September with good wishes from all at SITU for success in their search for the mokele-mbembe in the Congo.

—Lynne J. King, reference librarian at the Feinberg Library at State University College, Plattsburgh, New York. Ms. King accessed the Champlain diaries in which the gifted explorer recounted one of the best and probably truest fish stories in history.

—The professionals at China Features headquarters in Beijing. With concise accounts and dramatic photography they add to our knowledge of the yeti and its Sasquatch relatives wherever they may be.

—The editors

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'Champ' and the 1977 Mansi Photograph

IT WAS a 6x3½-inch black-and-white reproduction of Sandra Mansi's copyrighted-1981 color photograph printed in *The New York Times* issue of June 30. It could be the picture of a remarkable phenomenon. Or it could not. One of its aspects transcended argument: It was the prize that *The New York Times* had won in the lengthy media bidding for first publication rights to a picture that Joseph Zarzynski has described as "the single most impressive piece of evidence" of an anomalous creature resident in the waters of Lake Champlain.

Joe Zarzynski is head of the Lake Champlain Phenomena Investigation and has devoted much of his time during the past seven years to the search for the elusive creature familiarly known as "Champ." He has written a personal update (opposite page) for his fellow SITUans and at last reports was busy helping the Lake Champlain Committee get ready for its summer conference to be held August 29.

Placement of the Mansi photograph on page 1 of the prestigious "Science Times" section and a satisfactory solution of the always difficult problem of converting color to black and white reflected the high regard of the *Times'* editors for their prize. Along with the photograph the newspaper ran a lengthy article under the byline of John Noble Wilford which described the circumstances of the sighting and the photograph, and gave many details of the subsequent investigation.

The capture of prima facie evidence of "Champ" on film is a familiar story to many "Champ" fans, but it bears repeating for the benefit of those who may have missed the first scenes:

Sandra Mansi and her fiance were sitting by the shore admiring the tranquility of Lake Champlain on an early July day in 1977 when they noticed a turbulence such as might be stirred up by a large fish or school of fish. Then a head and snakelike neck emerged, arching above a slow-moving islet-like mass. Such a sight, enough to scare anyone, terrified Sandra Mansi, for she was brought up in the area and knew by heart all those stories about a Lake Champlain monster that couldn't be believed. With a commendable effort of will, she overcame her fear long enough to get off one shot from her Kodak Instamatic camera in the direction of the sighting.

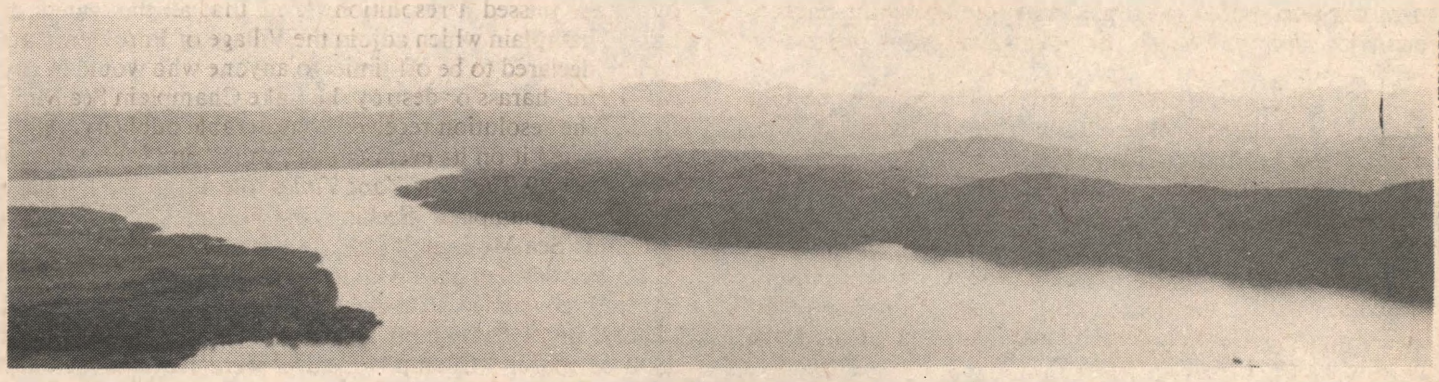
What happened to the Mansi photograph after news of its existence began to leak out will be most understandable to SITUans within the context of Joe Zarzynski's magnum effort to secure legislated protection for "Champ." Although it generally parallels the Zarzynski account, the *Times* version twice digresses: Once to quote a Dr. Philip Reines, described as "a professor of communications at the State University College at Plattsburgh, N.Y., who is considered an expert on nautical phenomena." In the quoted statement Dr. Reines said he was "bothered" that Mrs. Mansi could not "recall exactly where she took the picture," and another bothersome aspect was that the negative is missing. According to Dr. Reines, having the negative would enable the investigators to do a more thorough job of photoanalysis, and exact knowledge of the site might make it possible to determine the scale of the image.

Commenting by telephone on the *Times* story, Zarzynski said he too had interviewed Dr. Reines some time ago and did not take his objections more seriously than those of other non-experts. "We can't work with what we don't have," Zarzynski noted. "We asked Dr. Frieden (at the University of Arizona Optical Sciences Center) to work with the print we did have, and the results are fully described in his report." [See page 53.]

The *Times* also referred to an article in the journal *Science* written in 1977 by Dr. W. H. Lehn of the University of Manitoba to explain the influence of temperature inversion on light perception as a cause of image distortion that sometimes makes inanimate objects look like "monsters." (A more detailed account of Dr. Lehn's findings appeared in the First Quarter 1981 issue of *Pursuit*, No. 53, page 37.) The *Times* article did not urge that the Lehn experiments or hypothesis be taken as guidelines for study of the Mansi photo or to authenticate sightings, but the suggestion would hardly be lost among readers who could think of no other reason why the *Times* would place in a column adjoining the Lehn reference a shockingly bad photo reproduced from and credited to *Science* with a caption noting that "light conditions can cause stick to look like a creature."

A couple of cautions do not much lessen the public impact of the "Champ" phenomenon and the Mansi photograph when a great newspaper accords them even-handed treatment, without tongue-in-cheek, tasteless comedy or insult. SITUans should be grateful to the *Times*, to writer John Noble Wilford, and to all the media brethren who have learned that to venture safely into this or another corner of the "unexplained" one needs to be armed with those feelings of awe, wonder and respect for free inquiry that best become humanity.

—Fred Wilson



GEORGE WILSON AIRPHOTO

Except for the Great Lakes, Lake Champlain is the largest lake in the U.S.

'Champ'—A Personal Update

by Joseph W. Zarzynski
Chairman, The Lake Champlain
Phenomena Investigation

MY seven-year investigation to identify the "Champ" creature(s) can be compared to a giant and incomplete jigsaw puzzle. Gradually the hard work of the search has harvested evidence of some anomalous, unknown animal or animals in Lake Champlain and solid clues to their possible identity. Among all the references, testimony and documentation, the single most impressive piece of evidence is the 1977 Mansi photograph of "Champ," substantially authenticated by several sources.

Lake Champlain is 109 miles long and cuts like a jagged dagger through the Green Mountains of Vermont and the Adirondack Mountains of New York State. It is "the largest of the deep, cold water, near-oligotrophic lakes in the United States with the exception of the Great Lakes." It lies in a great valley that stretches from the St. Lawrence River south to New York City. By way of the Richelieu River Lake Champlain drains northward to the St. Lawrence. The lake reaches a maximum depth of 400 feet and has a water surface area of 440 square miles. Such huge dimensions exacerbate the difficulty of searching for, identifying and documenting an anomalous creature.

To date approximately 120 "Champ" sightings have been catalogued by the Lake Champlain Phenomena Investigation (LCPI), an organization whose purpose "is to gather data and documentation on the enigmas and phenomena of Lake Champlain for dissemination to the public. . . . Its primary thrust is directed at data collection for identifying and protecting Lake Champlain's unknown creatures—'the Champ.'"

The Mansi photograph is the only clear photo that exists. Why there are no others is not surprising to those who know the area and its traditions. Unlike the thousands of tourists who annually bumble around the shores of Loch Ness in Scotland with cameras at the ready, few visitors to Lake Champlain come there with thoughts of finding and photographing strange creatures. The Mansi sighting was by accident and the photograph a stroke of good luck.

The now famous photograph was taken by a Connecticut couple, Sandra and Anthony Mansi, in early 1977. Knowledge of their photographic coup remained a family secret until autumn, 1979, when they copyrighted the photo and then looked for help in getting it analyzed and authenticated. Shortly after this time I was told about the photo's existence, and thus began the lengthy and slow process of verification.

After the necessary attestations by the Mansis, several people were called into consultation, among them Jim Kennard of the Rochester Engineering Laboratories, Fairport, New York; Monty Fischer, program director for the Lake Champlain Basin Program; George Zug, head of the department of vertebrate zoology at the Smithsonian Institution's National Museum of Natural History; Charles Johnson, state naturalist of Vermont; Tim Dinsdale of the Loch Ness Association of Explorers; and Ricky Gardiner of the Loch Ness & Morar Project.

An important breakthrough came when cryptozoologist Roy P. Mackal, of the University of Chicago, looked at a copy of the photograph and decided it warranted optical analysis. Dr. Mackal forwarded a copy to his colleague Richard Greenwell, at the University of Arizona in Tucson. Greenwell brought it to the attention of Dr. B. Roy Frieden of the university's Optical Sciences Center. During this time literally dozens of phone calls were made, scores of letters exchanged, many personal meetings held, and there was a lot of "just waiting" for the verdict. The Mansi family showed admirable patience. They were insistent that the photograph be employed toward getting "Champ" protected and that it should be withheld from publication until the results of the analysis were known.

By November 1980 the Mansis became aware of the need to plug the "news leaks" and stop the innuendo which threatened their credibility (not to mention "Champ's"!). They gave me permission to issue a press release, and on November 22 Vermont's largest newspaper, the *Burlington Free Press*, headlined a front-page story "Lake Champlain Monster Caught—on Film." Wire services summarized the information and as quickly as they could say telex, media people all over the world joined the hue and cry: "We want to *see!*"

The Mansi photograph, showing what appears to be an animate object, gray-brown in color and with serpentine features, refueled investigative fervor among those who knew about it. For several days during the summer of 1980 the LCPI and the Rochester Engineering Laboratories deployed a transducer affixed to a tripod in Lake Champlain in an attempt to capture "Champ" on sonar; shore-watching camera equipment was also used. In September Jim Kennard, Scott Hill and I had the great good fortune to locate the wreck of the 258-foot steamboat *Champlain* near Westport, New York, during a sonar expedition in search of "Champ." We found the skeleton of the historic steamboat clearly outlined on Jim Kennard's side-scanning sonar. Similar equipment had been used by Marty Klein to look for the Loch Ness monster, in the Atlantic in Jack Grimm's effort to find the *Titanic*, and in the North Sea by Clive Cussler in his search for the *Bonhomme Richard.*

For the first time along the lake the Mansi photograph was shown to a public audience during the course of a lecture I gave on October 5 at the Crown Point State Historic Site, New York. The next day the governing body of a nearby village passed a resolution ". . . that all the waters of Lake Champlain which adjoin the Village of Port Henry are hereby declared to be off limits to anyone who would in any way harm, harass or destroy the Lake Champlain Sea Monster." The resolution received considerable publicity. ABC-TV reported it on its evening news show, and in its issue of November 29 *The New York Times* told about the "Village on Lake Champlain Seeking Its Fortune in Tale of a Fabulous Sea Monster."

The region then got down to business. A Champlain Valley bank advertised a 21-inch stuffed toy, assuredly a good likeness of "Champ," as a gift for opening an account of $300 or more. "Champ" T-shirts were featured in daily newspaper ads by an outfit in Colchester, Vermont, called

Regional Promotional Services. The *St. Albans Daily Messenger* sponsored a "Draw the Champ" contest.

Though barred by the Mansi copyright from reproducing the photograph, media managers joined in the welcome as they assiduously gathered "quotes" from experts and not-so-experts who had gotten a look at the picture. Among the former were Dr. Mackal, the University of Chicago zoologist, who said, "The leaves in the foreground, the perspective and the horizon on the far side—all that makes that picture a very difficult one to produce a fraud of. It's my personal opinion the picture is absolutely genuine in every respect." Mackal believes "Champ" may be a zeuglodon—a primitive, serpentine type of whale.

Dr. George Zug of the Smithsonian Institution wrote: "The Mansi photograph is fascinating and quite good considering the circumstances under which it was taken. Unfortunately, I can offer no unequivocal identification. . . . At this time, I cannot provide a match with a known animal."

Charles Johnson, Vermont's state naturalist, examined the photograph and personally met with the Mansis to discuss it. "I must say that the photo appeared real," he wrote, "and what was depicted in it certainly was no lake sturgeon, turtle, snake or other creature one often hears attributed to the monster."

The early weeks of 1981 were devoted to finding a Vermont legislator or legislators who would sponsor legislation on the state level to protect "Champ." My strategy was to try to get Montpelier to pass a resolution first, before making any effort in the probably more difficult arena of Albany. Two of Vermont's Representatives showed strong interest: Millie Small of Quechee, and Verne Switzer of Brattleboro. After meeting with Rep. Small and showing the photograph and documentation, I drafted a resolution and submitted it to several people for advice. Among them were Bob Hohmann, former professor at Notre Dame, attorney Dean Coon, and Monty Fischer of the Lake Champlain Basin Program. Seeing to it that "Champ" would have a proper name for his first legislative appearance was Dr. Helga Doblin of Skidmore College who conferred the Latin designation *Belua Aquatica Champlainiensis*, "the large water animal of Champlain" in translation.

A public hearing at the state capital of Montpelier was convened by the Legislature's Natural Resources Committee on February 26. Sandra Mansi was among the witnesses. She said, "I just want you to know that 'Champ' is there. Believe me, 'Champ' is there." Monty Fischer told the committee: "Lake Champlain is America's Loch Ness." State

(Continued on page 58)

'Champ' Look-Alikes?

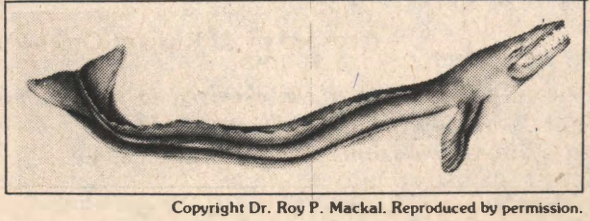
Chaousarou: **Indian name for a fish of "marvelous ingenuity," so described by Samuel de Champlain who put it on the map and likened it to a Mr. Hyde when alive and a Dr. Jekyll who, upon losing his head, became a popular remedy for the common headache.**



In July 1609 Samuel de Champlain made his first tour of the lake which later came to bear his name. In graceful style and with meticulous regard for details, the French explorer entered in his diary a description of many natural wonders of the area, among which was a strange inhabitant, the *chaousarou*. Champlain's editors and English translators did not seem to know the origin of the word, but all agreed that *chaousarou* was the Indian name for the gar pike, *Lapidosteus osseus*. In *The Voyages of Samuel de Champlain 1604-1618* is the earliest published report from an eyewitness who sighted a strange creature in the waters of Lake Champlain. That eyewitness was Champlain himself, and this is what he wrote:

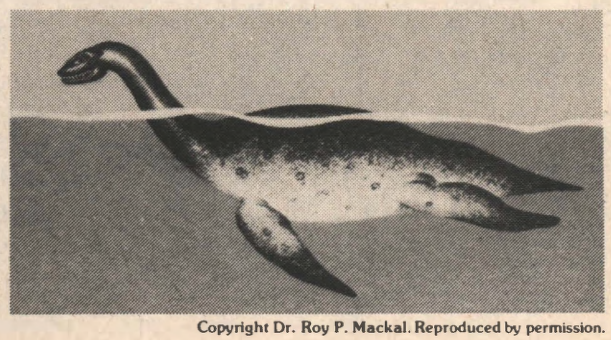
". . . the lake which is some 80 or 100 leagues in length, in which I saw four beautiful islands about ten, twelve and fifteen leagues in length, which, like the Iroquois river, were formerly inhabited by Indians: but have been abandoned, since they have been at war with one another. . . . There are many chestnut trees which I had only seen on the shores of this lake, in which there is also a great abundance of many species of fish. **Amongst others there is one called by the natives *chaousarou*, which is of various lengths; but the largest of them, as those tribes have told me, are from eight to ten feet long.** I have seen some five feet long, which were as big as my two fists, with a snout two feet and a half long, and a double row of very sharp, dangerous teeth. Its body has a good deal the shape of the pike; but it is protected by scales of a silvery gray color and so strong that a dagger could not pierce them. This fish makes war on all the other fish which are in these lakes and rivers. And, according to what these tribes have told me, it shows marvelous ingenuity in that, when it wishes to catch birds, it goes amongst the rushes or reeds which lie along the shores of the lake in several places, and puts its snout out of the water without moving. The result is that when the birds come and light on its snout, mistaking it for a stump of wood, the fish is so cunning that, shutting its half-open mouth, it pulls them by their feet under the water. The natives gave me the head of one of them, a thing they prize highly, saying that when they have a headache, they bleed themselves with the teeth of this fish at the spot where the pain is and it eases them at once."

Zeuglodon: **Oldest and most primitive whales for which there is evidence. "They probably looked something like a giant anaconda," says Dr. Roy Mackal. "They were an elongated, snake-like whale that flexed up and down when they swam instead of side to side."**



Copyright Dr. Roy P. Mackal. Reproduced by permission.

Plesiosaur: **Extinct marine mammal that once frequented large, fresh-water lakes connected to the sea, as Lake Champlain. Richard Greenwell supports "the Plesiosaur Hypothesis—also for Nessie and others."**



Copyright Dr. Roy P. Mackal. Reproduced by permission.

INTERIM REPORT/LAKE CHAMPLAIN 'MONSTER' PHOTOGRAPH

Dr. B. Roy Frieden, Optical Sciences Center, University of Arizona

(April 30, 1981)

From what I can see, the photo does not appear to be a montage or a superposition of any kind. The object appears to belong in the picture, and I say that because there seems to be a separate set of surface waves coming from it that are independent from the waves of the rest of the lake. That would make it much more difficult a hoax by superposition—you would have had to hoax a separate set of waves as well and that gets to be too difficult a problem.

Also, we don't see any evidence of tampering with the photo, that is any sharp demarcation lines indicating a superposition. We have not yet confirmed distance and size. This seems to be possible with trigonometric calculation, although you'd have to know the approximate height above the lake to really know the distance out. But that could be estimated, I suppose.

Generally, the photo is a very sharp, crisp photo and what we suspected was that the colors would be saturated—and all the densities saturated—all the way as dark or light. The result is that you can't do a productive restoration of such a photo because there is nothing blurred in it. (A restoration attempts to "de-blur" a blurred picture.)

What we did do was false color enhance it, and "grey-scale stretch" it on the IPPS viewing system at Kitt Peak. Viewing the photo in this way after densitometerizing it verified our suspicions that there really wasn't extra detail that could be further enhanced out of it. In doing this we found some peculiar vertical stripes in the picture which first we questioned. But then we noticed the original print has a mat surface and this caused the vertical stripes in the picture.

There is one suspicious detail in the picture which merits looking into. When I showed it to a woman who formerly lived at Lake Champlain, she immediately noticed a brownish streak going horizontally from left to right across the picture right up to the object in question. She right out said that it looked to her like a sand bar.

I hadn't noticed it before because there is just a little more brown in that streak than there is in the rest of the picture. But if you rotate the picture clockwise by 90 degrees, then that stripe is vertical and is more apparent to the eye. You see, the eye doesn't discriminate horizontal darknesses on a lake very well because we're so used to seeing horizontal greynesses, so that's why you have to rotate the picture so that the vertical position really shows up much better.

I think it's a real detail in the picture because the picture is a very high quality print and it looks like the colors are developed very accurately. I think that the browns that we see there really do belong in the picture. And since they all string together, it certainly looks like a real detail. In other words, it's not an artifact of the development process.

Now if that detail really is there, it has some interesting implications. It might mean there was a sandbar going across. There is another school of thought which says that since it's dark, maybe it means deep water. But I don't think it would be a brownish color if it was deep water—it would be more toward a dark blue. At any rate, if it is a sand bar—and this could be verified by a person who knows lake biology, a limnologist—if it is a sandbar then there is a distinct possibility that the object was put there by someone, either by the people who took the photo or by the people who were fooling them, because you could simply walk out on such a sandbar and tow the object behind you and hide behind it as you made it rise out of the water and so forth. There'd be a way of hoaxing people, especially if they were frightened out of their wits as these people say they were. Otherwise, the water being as cold as it is, and the object appearing to be so far out as it is—of course that distance has to be verified—it would be very difficult to hoax the object. If it is that far out, it is large; and the water is cold, therefore you'd have to have a wet suit on, real protection from cold water, and it would be a big bother to do such a hoax. But if that is a sandbar then it makes it much easier, the water is shallow and you could pull it out behind you and so forth.

Also, the water would be warm if this is a shallower part, and this is in the daytime. So the sandbar problem really has to be investigated. And you don't probably have to find the actual spot to verify it, you could get an expert on lakes and he could tell from the picture, I believe, if that is a sandbar or not.

Another question posed by this woman who used to live there: She was suspicious that the lake was so narrow at that point because Lake Champlain is colossal in width, and that this would have had to taken place at what's called "The Narrows" by the native who live around there for it to be a true photograph of the area. I say that it's suspicious because if it is an uncharacteristically narrow portion of the lake, perhaps the picture wasn't taken at Lake Champlain but rather at some other body of water.

We have a permanent record of the head, and half of the neck, and just a tiny bit of the back hump. This is recorded on computer punch cards, and I'll be having it in my office for any possible future processing of that data.

To summarize: The picture appears to be a valid print, not a superposition, of a real object somewhere out on a fairly large body of water. There are some interesting things that have to be verified, such as the possibility of the sand bar, and if the sandbar question is resolved and the fact that it's not a sandbar can be really confirmed, then there's much smaller likelihood of this being a hoax.

—recorded by J. Richard Greenwell

[Dr. Frieden's interim report is reprinted without editing, word for word as it was received in the editorial office on June 22 along with a covering letter from Mr. Greenwell in which he noted: "Although Dr. Frieden is a good friend of mine, I do not agree with some of his conclusions."]

The Elusive 'Powys Beast'

by Janet & Colin Bord



Powys, Wales, is about 50 miles west of Birmingham in the Midlands of England.

WALES is a small country of mountain and moorland, the home of such creatures as the otter, badger, hare and fox, and literally thousands of sheep. One species definitely not native to Wales is the big cat, but in 1980 strange reports began to emerge, of lynxes and pumas running wild in the hills.

The first publicity was at the end of October when a sheep farmer on a remote 1,500-acre farm near Llangurig in the county of Powys contacted the police to report what he believed was a strange animal lurking in his barn among the bales of straw. He had heard unusual snoring noises coming from the barn, he had found large footprints in the mud, and four of his 3,000 sheep had been killed in a way not typical of dogs or foxes.

Armed police went to the farm and kept watch throughout the night of October 23. Using subtle tactics, they "hammered hell" (in the farmer's words) out of the side of the barn when they heard the animal snoring. At midday on the 24th they decided to go in, and, not surprisingly, they found that the beast had flown. The farmer later told us that some bales were wet, as if with urine, that strange droppings 3-4 inches long were found, and that there was a strong smell.

The so-called "Powys beast" (though it must be noted that no one had actually seen any animal) was widely publicized on television and radio, and in the newspapers. As a result, a most interesting delayed report came from Old Churchstoke on the England/-Wales border 30 miles to the northeast of an incident that pre-dated the Llangurig events by nearly a month.

A district nurse revealed how, on September 29, 1980, while she was on her rounds, she came upon an unexpected animal. Having parked her car, she was walking along a lane to a farm at about midday when she saw a large cat-like animal ahead of her. "I stayed rooted to the spot," she said. "I shut my eyes and opened them and it was still there, about 40 yards away. I remember thinking 'God, what *is* it?' It looked like one of those Scottish wild cats. I just saw the front half of it and I didn't step any nearer. I was really quite frightened." The same size as an Alsatian (German shepherd) dog, the animal was described as having gray fur with black spots, and large pointed ears with tufts of hair—a clear description of a lynx. The nurse retreated to her car, where she sat for five minutes before plucking up the courage to walk again along the lane. This time, no animal was to be seen, and no one at the farm knew of any pet of that description in the area.

A month after the Langurig stakeout, the local papers reported that the "Powys beast" had actually been seen, on a farm near Llanidloes only six miles from Llangurig. The farmer who saw it as it bounded across the fields said it was cat-like, and definitely not a dog. He said: "The animal was a dark color with some white on it. It was difficult to see what part was white because it was moving. It was the size of a large dog. The animal moved very quickly and ran in leaps and bounds like a cheetah. It looked as if it was scared and stopped from time to time and looked around. I haven't got any idea what it was but it was definitely wild and not a dog. The tracks left by the animal were the size of a small palm with claws about the size of a finger."

Although the farmer did not actually see the animal make the tracks that were found, plaster casts were taken of them, and members of the staff at Dudley Zoo in the English West Mid-



Farmer Michael Nash describes to Janet Bord the events at his Llangurig farm. To the right is the barn where the 'Powys beast' was thought to be hiding. Wooden box covers 5-inch footprint found in the mud.

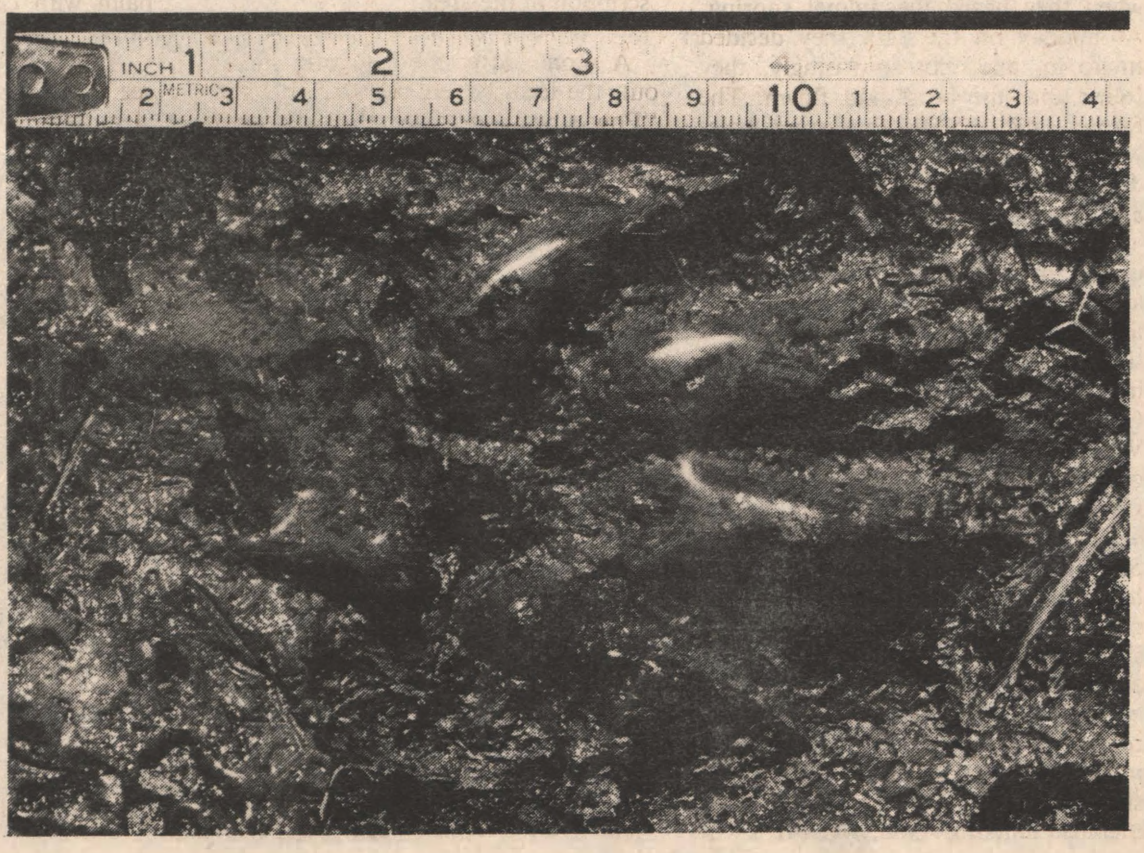
lands said the prints could have been made by a large dog. Back in October, we had photographed the one preserved paw print at the Llangurig farm, and this too was the size of a small palm, five inches long by three inches wide. After seeing our photographs, the Llangurig print was also pronounced dog-like by the Dudley Zoo superintendent. He had a special interest in the "Powys beast" because earlier in 1980, in July, he saw a strange animal at Wolverhampton (which is in the West Midlands, 40 miles east of Old Churchstoke where the "lynx" was seen).

The first sighting of what sounded like a puma was made by a schoolteacher who was walking near a disused and overgrown railway line. A few days later, the zoo superintendent and his senior cat-keeper visited the area and saw a large animal about 300 yards away being mobbed by birds. They noted that the animal was definitely cat-like, but said they were too far away to make a positive identification. Late in December 1980 a large animal moving in leaps and bounds like a cat, and with a very long tail, was seen in car headlights in a lane near Wolverhampton. A week earlier, the "Powys beast" was seen again near Llanidloes, a fortnight after the first sighting in that area. A farmer's wife and her 11-year-old daughter saw a reddish-brown animal with a longish pointed nose. It was standing by the farm gate, and the family sheepdog was curious. "Our dog Bobby went up to it, but it didn't try to attack him, it just stood there," the woman said. However, when she approached, it ran off quickly across fields and into a woods. Large paw prints with claw-marks were found. The woman described the animal as "looking like a large dog."

Was it perhaps only a large dog that was responsible for all the sightings of the so-called "Powys beast"? From the district nurse's detailed description, it seems unlikely that she was frightened by a dog. But her description does not match the descriptions of the Llanidloes witnesses, so it was probably not the same animal that she saw. At Llangurig, of course, no animal was seen, and after the event the police tried to explain it all away. The paw-print was made by a large dog; the snoring noise was made by owls; the "droppings" (unfortunately not available for examination) were owl pellets—all reasonable assumptions in the absence of any sightings, or a corpse.

We are left with four dead sheep, killed in a manner untypical of dogs. It is indeed true that sheep farmers in this area are plagued by dogs worrying their animals. Some are domestic pets, others are former pets living wild after having been abandoned by uncaring owners. These dogs turn naturally to the plentiful livestock for their food. Perhaps the "Powys beast" is a dog. But there were no reports of sheep-killings in the Llanidloes area around the time the "beast" was seen, and the Llanidloes farmer who saw the animal said it was definitely *not* a dog. The footprints found cannot be considered positive evidence in favor of a canine identification, because no one actually saw the "beast" make the prints.

Until or unless someone manages to trap or shoot it, the "Powys beast" must remain unidentified, and as much a mystery as the "Surrey puma" which reappears from time to time in southern England, or the "lion" which terrorized the Midlands county of Nottinghamshire in the summer of 1976. It is intriguing that in Britain, where the only native "big cat" is the small Scottish wild cat, sightings of big cats are frequently reported. Coincidentally with the events in Powys, autumn 1980 saw an upsurge in the number of reports, from southern England, Warwickshire and the West Midlands (both in central England), and parts of Scotland, where a farmer actually managed to entice a "wild" puma into a cage.



Footprint of unknown animal photographed at Llangurig, Powys, October 26, 1980.

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Ice Falls and the Leidenfrost Effect

A Common Kitchen Phenomenon May Explain How Ice from Outer Space Beats the Heat as Earth's Atmosphere Tries to Deny its Passage

by Morgan D. Eads

ON a Monday evening in 1849 an unusually loud peal of thunder boomed out of the heavens over Ord, Scotland. The sound was followed immediately by the fall of a monstrous piece of ice, said to be "nearly twenty feet in circumference, and of a proportionate thickness."[2]

Towns in many lands have been subjected to bombardment by giant icy missiles. In the late 1700s a lump of ice "the size of an elephant" was said to have landed near Seringapatam, India.[2] So huge was this boulder of frozen water that it took three days to melt!

In our century reports of ice falling from the skies[6,12,13] need to be checked against air-traffic patterns. Nowadays routine ice falls from aircraft are often mistaken for those rare, bizarre and sudden arrivals on Earth of chunk-style frozen water product that qualify as "true" or classic ice falls. It is my belief that some of the latter are not byproducts of human vagaries, nor are they the results of unusual weather or climatic conditions. Rather, they are icy travelers from outer space.

The idea that extraterrestrial ice might survive the infernally hot drop to the Earth's surface has intrigued many writers, including Charles Fort who hinted at the possibility with characteristic whimsicality.[3] Contemporary writers such as Clarke[14] and Corliss[2] have made similar conjectures, based on the evidence.

How can a lump of ice survive the hellish descent that incinerates the majority of stony and metallic meteors? There is a rather obscure physical phenomenon known as the Leidenfrost effect. It occurs when a stable liquid comes into contact with a heated surface. If the temperature of the heated surface is far enough above the boiling point of the liquid, a vapor layer forms that insulates the liquid from the direct heat of the surface. The vapor barrier is a very poor conductor of heat, but it does allow *some* heat to reach the liquid via infrared radiation that passes through the vapor layer. An additional small amount of heat reaches the liquid through the thermal conductance of the vapor. It is the heat that penetrates to the liquid that sustains the reaction.

As J. G. Leidenfrost discovered[10], if the liquid is water one can actually levitate it over a heated surface. A droplet of water on a surface heated to at least 250°-310° C.[4] will float on a cushion of vapor. The water, sustained by the vapor layer, will evaporate much more slowly than *cooler* water that is closer to the boiling point of 100° C.

A simple demonstration in your own kitchen provides a first-hand view of the Leidenfrost effect in operation. Heat an iron skillet on the kitchen range and randomly sprinkle water on it. Soon the temperature will rise sufficiently to initiate the Leidenfrost phenomenon. Little droplets of water become spheres, and if you blow on them they race around the bottom of the skillet seemingly unimpaired by friction. Time the rate of evaporation of the droplets and you will find that they last much longer than droplets that are set on a somewhat cooler surface.

Two familiar tricks of the magician's trade make use of the Leidenfrost effect. If a moist (i.e., prewetted) hand is dipped into molten lead quickly enough it can be withdrawn unharmed. What has happened is that the moisture on the hand suddenly vaporized and acted to shield the hand from the great heat. The same thing happens when a stuntman licks a red-hot bar with his tongue. The saliva on the tongue forms a vapor shield to give a fleeting moment of protection from the heat.

In the laboratory the Leidenfrost effect has been seen to occur in a variety of situations of which the following are examples.*

1. "Liquid air" has been observed to undergo the Leidenfrost effect at room temperature.[1] In this particular reference the effect was called "the spheroidal state." If poured onto a table or the floor, liquid air will roll about madly in little droplets. The droplets survive for a surprisingly long period of time.

2. Liquid nitrogen (boiling point −196° C.) has been studied as it undergoes "film boiling," and that term is an apt stage-name for the Leidenfrost effect in one of its more dramatic performances.[9]

3. Common liquids such as water, benzene, carbon tetrachloride, ethanol and n-Octane have been observed to levitate, via the Leidenfrost effect, over heated stainless steel and other metal surfaces.[4,5,10,11]

4. Metal samples heated under water with lasers have shown a related phenomenon called the "inverse Leidenfrost effect."[7] In this case, the metal temperatures were on the order of 1500°-3000° C.

5. Masses of cold liquids have floated upon masses of "superheated liquids" while exhibiting the effect.[8]

6. "Extended liquid masses" have also been observed to undergo the Leidenfrost effect over heated surfaces.[11]

This is a small sampling of many instances in which the Leidenfrost effect has been observed, but it should serve to refine the definition. Next we need to know how the phenomenon may influence the fate of a cosmic piece of ice falling to Earth. Consider the following scenario:

One hundred fifty miles out in space three meteoric objects are beginning a descent to Earth's surface. The first is a stony meteor (a chrondite), the second consists of some iron compounds in a silicate matrix, and the third is a large lump of ice.

Our hypothetical wanderers have sneaked up on the planet from its backside, as the Earth maneuvers around the Sun with an orbital speed of 66,000 mph. Objects that

* Special thanks to Professor Kenneth J. Bell, Regents Professor of Chemical Engineering at Oklahoma State University, Stillwater. Prof. Bell was able to direct me to a number of useful references, including some of his original work (references 4, 5, 9 and 11). This is not meant to infer that Prof. Bell either accepts or rejects my mechanism for ice falls. His papers will be a boon to anyone who wants to do further research on the Leidenfrost effect.

move head-first into the Earth's orbital path attain much greater speeds than our three meteors. We will assume that our meteors have only enough speed to overtake the Earth, so they will begin dropping at a relatively slow initial speed.

At one hundred miles up the three meteors begin to penetrate the tenuous outer fringes of the atmosphere. At this point the ice bolide begins to glisten with a thin layer of moisture as gas molecules strike its cold surface. This is the first step in a process that will separate our ice block from the two companions that are heating up alongside it.

The next step is the sudden plunge into deeper and denser layers of atmosphere. The incredibly fierce heat of atmospheric drag friction now comes into play. Within a few seconds the stony and metallic meteors glow white hot and burn up. All that remains of them is a sparse streamer of hot dust that will cool and slowly settle to the surface of land or water below.

The ice bolide performs in a completely different manner. The surface film of moisture on the ice confronts the enormous heat of drag friction and a Leidenfrost vapor layer is formed. Vapor blows out from the lower surface of the ice and up the sides. Now the bolide consists of three parts: an ice core, a layer of liquid, and a layer of water vapor.

The extremely low heat-conductivity of the vapor protects the core of ice from instant dissolution. The heat that does penetrate the vapor sustains the vapor shield and slows the melting of the ice. The ice bolide will continue melting until it is totally liquified or vaporized, or until the core of ice hits the ground.

Now that we have explored a process that might allow the ice to reach the Earth's surface, we should next consider a problem related to ice falls in general, namely, *speed.* The velocity of a piece of cosmic ice just before it strikes the ground would seem to be enormous; images of impact craters come readily to mind. But in all the ice-fall reports of which I am aware the impact craters are either unimpressive or nonexistent. This suggests that the final velocity of an ice bolide may be considerably less than might be expected.

What kind of braking mechanism could slow the descent of an ice bolide through the atmosphere? One mechanism might be the braking action of atmospheric friction. As the ice falls into an increasingly dense and viscous medium it is subjected to powerful frictional forces which act in opposition to the motion of the ice. The frictional forces gain as the object loses altitude. Eventually the frictional force becomes equal to the gravitational force and the ice is then said to be at terminal velocity. Terminal velocity is a complex function of the speed, volume, shape, and mass of the ice, as well as the density of the atmosphere. The terminal velocity is also dependent upon the gravitational acceleration ("g") which will vary with height. Thus, at terminal velocity the leveling-off of speed may be considerable.

A second braking mechanism acts only on pitted, rotating ice cores. In such case the rotating bolide periodically exposes its pitted sections to the most intense frictional heat at the bottom surface of the ice. When the heat penetrates into a pit a vapor layer blows outward like the thrust from the tail of a rocket.* Under these conditions a small additional amount of braking action is provided and it reinforces the much greater effect of atmospheric friction. The terminal velocity of a pitted bolide would therefore be less than that of a smooth piece of ice.

To summarize: The underlying fact we have to consider is that large pieces of ice do fall from the sky. Ice falls do not always admit to a conventional explanation. If some of the chilly invaders actually come from beyond the Earth, the Leidenfrost effect may indeed provide an answer to the challenge question: How do they get here?

Johann Gottlob Leidenfrost was a German medical doctor. In 1756 he published some observations concerning water. One of the phenomena he described has since become known as the Leidenfrost effect. Others before him had commented on the effect, but Leidenfrost was the first person to publish detailed observations on the subject. The following extracts are from the original Latin version *De Aquae Communis Nonnullis Qualitatibus Tractatus*—in translation, *A Tract About Some Qualities of Common Water.* A portion of the text has been translated by Carolyn S. Wares*[10] and is excerpted here as historically interesting. (Within-text deletions are denoted by ellipses—M.D.E.)

> An iron spoon of any size, well polished within and free from rust and dirt, is heated over glowing coals until it glows with light. To this glowing spoon, removed from the coals, send through a glass tube of suitable length, of which the other end finishes in a very narrow capillary canal, one drop of very pure distilled water . . . At the instant when the drop touches the glowing iron, it is spherical. It does not adhere to the spoon, as water is accustomed to do, which touches colder iron . . . Moreover, however, this drop only evaporates very slowly. For if you turn to a pendulum indicating seconds with its oscillations, at least 34 or 35 seconds, that is it runs a little over half a minute of an hour before the whole drop disappears. Which at last exceedingly diminished so that it can hardly any more be seen, with an audible crack, which with the ears one easily hears, it finishes its existence . . .

Dr. Leidenfrost also notes that as the spoon cools down closer to the boiling point, the unusual effect disappears. The water droplets begin to boil in the usual fashion:

> . . . Meantime while the iron is cooled more, after the second drop has evaporated, then let go a third, which, with a great motion of globules greater certainly than can be called boiling, it will disappear within the space of three seconds . . . If then you put in the fourth drop with the same precautions, this is no longer rolled into a globe, but adheres to the spoon and makes a damp spot in it and with a whistle surges into a true motion of boiling, and thus foaming into vapors it will depart very swiftly inside the space of one second or even swifter . . .

Theories of matter and energy are quite different today

* One of the more imaginative ideas making the rounds in aerospace circles is to pack ice into the tail of a rocket. The ice would be blasted with energy pulses from ground-based lasers and the vapor that would blow off the ice would be directed out of the tail to give thrust.

*A note on the translator: Ms. Carolyn Wares has instructed Latin at the University of Oklahoma, Norman. As a graduate student in the area of medieval history she was associated with the Degolyer Collection and the History of Science collections at the university.

than they were in 1756 when Leidenfrost prepared his tract. The phlogiston theory of heat was exalted, and the "four elements" defined as earth, air, fire, and water could be transmuted one to another. It is interesting to learn how Leidenfrost was able to merge his observations into the prevailing theories of his day. The interested reader should peruse the original translation.[10]

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* The author assumes full responsibility for the interpretation of quoted material. The translator, Ms. Wares, has emphasized that different interpretations of the material are possible.

'Champ'—A Personal Update

(Continued from page 52)

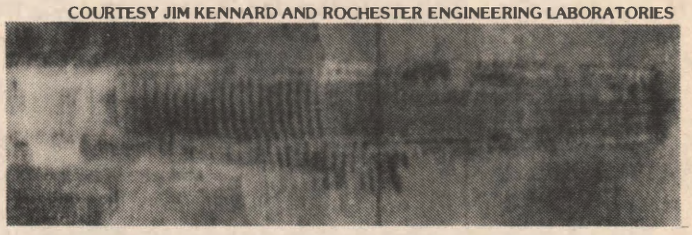
naturalist Johnson said he was convinced something unusual and strange was in the lake and should be protected. During my 45-minute slide presentation and lecture I informed the public and media of my greatest fear: that "Champ" might be harmed if he were not protected. I recalled the 1976 account of a man who had a "Champ" sighting and did not know whether to run and get a gun or a camera. The Mansi photograph was shown to Governor Richard Snelling and to many legislators in pre-hearing private sessions but was not shown to the public because of the Mansis' decision to withhold publication until the optical analysis results were in.

The resolution did not proceed; Rep. Small could not garner enough support to move it out of the Natural Resources Committee before the 1981 Legislature ended its session. But "Champ's" cause may yet prosper. In a forecast of the 1982 legislative term the *Burlington Free Press* suggested that "lawmakers . . . may take action on neglected bills that would protect the Lake Champlain monster. . . ."

The uses of adversity are not unknown to "Champ" supporters. When Clifford Rollins, a 66-year-old resident of Rutland, offered a $500 cash reward to anyone "who can deliver me 'Champ's' hide, dead or alive," the friends of "Champ" quickly deflected the thrust by saying that Rollins' deadly proposal made one of the better arguments for their cause.

Debate about "Champ" and the Mansi photograph will most assuredly continue. The photograph will convince some that "Champ" exists; others will consider it inconclusive, in no way resolving old doubts. Many on both sides will agree that the fragments of cryptozoological

COURTESY JIM KENNARD AND ROCHESTER ENGINEERING LABORATORIES



Although it has so far failed to produce evidence in the search for "Champ," the side-scanning sonar device designed by Jim Kennard proved its accuracy by recording the remaining rib structure of the *Champlain*, a passenger steamboat wrecked in 1875 and sunk in 25 feet of water.

evidence are beginning to give "Champ" identity, perhaps as a zeuglodon, plesiosaur, or maybe . . .

For far too long the Loch Ness monster, "Champ," sea serpents, Bigfoot creatures and other unknown animals have been the targets of human ignorance strongly rooted in fear. The study of these phenomena has been abused and much maligned. It's time to throw aside the executioner's weapons and use more rewarding tools to find out the things we need to know. The Mansi photograph has renewed incentive, not only to seriously consider the existence of "Champ," but also to delve freely and without a smirk into the mystery of many other "unexplaineds."

Dr. Mackal, for one, agrees. "No one," he is quoted as saying, "whether amateur or professional, need apologize for his or her romanticism, provided that it is accompanied by reasoned and balanced credulity." Ralph Waldo Emerson wrote somewhat earlier: "Nothing is rich but the inexhaustible wealth of nature. She shows us only surfaces, but she is a million fathoms deep."

Opinion

Why the Government Should Fund UFO Studies

by Thomas B. Burch

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THERE WAS A TIME when public awareness of the UFO controversy could be summarized by such cliches and catch phrases as "flying saucers" and "little green men." That was a long time ago. Public attitudes toward the UFO phenomenon have changed dramatically in the past decade.

In the early 1950s distinguished spokesmen representing government, military and scientific institutions vocally maintained that the possibility of flying saucers from Mars (or anywhere else) was just too utterly preposterous to be considered seriously. These spokesmen, in their infinite wisdom, assured us that the saucer mystery was only a short-term fad. Furthermore, they said, UFO sighting reports were the product of post-war nerves, hallucinations and mass hysteria. Well, if any members of Washington officialdom have kept score they might note that the "short term fad" has continued unabated for 33 years. If there ever was anything short-term about UFOs, it was our government's serious consideration of this prevalent yet elusive and bewildering phenomenon.

The U.S. Air Force conducted its own investigation of UFO phenomena from 1947 until 1969. In 22 years of Air Force data-collection and investigation over 12,000 UFO sightings in the United States were reported and logged. While a majority (94%) of all the UFO sightings were found to have prosaic causes, 6% of the reports were never satisfactorily explained and were therefore cataloged as true "unidentifieds."

In 1969 the Air Force discontinued UFO investigations. Since then the task of collecting and investigating sighting reports has become the exclusive domain of private UFO organizations and individual researchers. Despite the embarrassingly meager resources at their disposal these individuals and private organizations have performed their investigations admirably and, in the opinion of many, every bit as scientifically as the Air Force. However, the lack of adequate funding has severely limited the scope of efforts which can be realistically pursued by researchers in the private sector.

The most productive tasks undertaken by the private sector have been, and will continue to be, sighting-report collection and follow-up investigations. The reason for this is simply that data collection and investigation usually require only an expenditure of time and personal effort on the part of the independent researcher; considerable activity can be financed with quite modest expenditures of cash. In a way this is fortunate, for the typical independent researcher or research group rarely receives much, if any, financial support from outside sources. What the private researcher lacks in financing and sophistication he tries to make up for with enthusiasm and tenacity. But these admirable characteristics are as nothing compared to the staggering costs of the state-of-the-art scientific research which are necessary to deal conclusively with the complexities of the UFO phenomenon.

The continued collection of sighting reports will expand the UFO information data base, no doubt. But it seems unlikely that further expansion of the data base will contribute much to further research. J. Allen Hynek, former astronomy consultant to the Air Force projects "Sign" and "Blue Book" and the founder/director of the Center for UFO Studies, has described the UFO phenomenon as "incredible things seen by credible people." Continued collection and investigation of sighting reports will, in all likelihood, only confirm that the same types of incredible things are being seen by an increasing number of credible people each year. Substantiation of the performance will scarcely contribute to the mystery's solution.

Unless we are really willing to wait for a UFO to land on the White House lawn, we must develop a more assertive approach toward UFO studies. Clearly it is time for genuine, top-dollar, scientific research on the grandest American scale—the same type of quality research and development that sent Apollo to the Moon, landed Viking on Mars, and navigated Voyager past Jupiter and Saturn.

Certainly I am not the first to advocate such an increased level of effort, nor shall I be the last. Neither do I underestimate the financial expenditures which are required to implement such research and development programs. Yet without a considerable financial investment UFOlogy will, of necessity, be forced to busy itself with continued sighting report data-collection activity instead of pursuing programs which might result in measurable progress.

No adage can describe the critical relationship between funding and scientific research more adequately than "you get what you pay for." Also pertinent is another quote from Dr. Hynek: "Years ago an old professor told me that the most important letters in

the phrase 'fundamental research' were the first three. He was wrong. The most important are the first four."

Laboratory equipment, portable measuring instruments, test and analysis programs as well as salaries for qualified technical, administrative and consultant personnel are expensive almost beyond belief. Where will the money come from? There are two primary sources: the private sector is one, the government is the other.

If organized UFOlogy has learned anything in its years of existence, it has been that funds are hard to come by in the private sector. UFO organizations have been initiating and promoting fund-raising campaigns for years but the results have been less than rewarding.

Likewise, official ears have generally turned deaf to requests for federal funding of UFO research. It is my belief that the government has resisted such requests for two fundamental reasons. The first reason is that a well-defined UFO research program or plan has never been presented for serious consideration by any recent Administration or Congress. The second reason is that no one has yet explained, in a convincing manner, just WHY the UFO mystery needs to be solved. Anyone wishing to loosen government purse-strings must address these two critical issues or expect little in the way of serious consideration.

As to HOW the UFO phenomenon can best be studied I will leave to Staton Friedman, Dr. Hynek, Jacques Vallee and other noted leaders in the UFO field. By virtue of their collective experience such scientists are far better qualified than I to develop meaningful research programs. However, in regard to WHY the phenomenon needs to be solved, let me offer the following argument.

UFOs *exist*! Air Force investigative records prove it. After 22 years of investigation a significant number of UFO sighting reports remain unexplained. These are genuine UFOs. However, Air Force investigations did not determine what UFOs *are*. This still needs to be determined, and nothing less than the national interest requires that it be a *full* determination of what UFOs are.

Various theories attempt to explain the causes of UFO sightings. These theories are too numerous to attempt to list without overlooking someone's pet interest, but all of them seem to fall into three basic categories:

1. Extraterrestrial origin/visitation
2. Manifestations of the psychic/paranormal
3. Currently unexplained conventional phenomena

Which theory is valid? That question has been hotly debated for years, without resolution. No amount of persuasive evidence favors any single theory, so a truly objective study of the UFO phenomenon should pursue the investigation of all three categories.

There is no need to narrow the field of candidate theories in order to argue convincingly for government funding of UFO research programs. Whatever UFOs turn out to be, the realization will have a most profound effect on all humankind. As Dr. Hynek puts it, "The UFO is one of the great mysteries of our age. Its solution . . . one of mankind's greatest challenges. When the long-awaited answer to the problem comes, I believe it will prove to be *not merely* the next small step in the march of science, but a mighty and totally unexpected quantum jump."

Will the long-awaited answer provide benefits to humanity or will it pose a threat to the existence of our species? No one knows. But it is of utmost importance for us to seek the answer. And this, in a nutshell, is precisely WHY the government should either re-enter the UFO research arena itself, or fund the civilian UFO research community to act as its surrogate.

Let us review each of the theory categories and try to project the potential benefits and threats each might be able to convey.

Extraterrestrial Origin/Visitation

If UFOs are extraterrestrial spacecraft, from what source, or sources, do they originate? How many races of beings do they represent and from how many star systems do they come? What form of social psychology might they possess? Could we possibly communicate with them and hope to understand what they are saying to us? Most important, what are the motivating factors behind their visitation? Observation? Assistance? Exploitation? A fertile mind can fabricate a nearly endless stream of thought-provoking questions. But let us consider some matters which should, for selfish national reasons, be of prime interest to our government.

If the extraterrestrials possess a benevolent nature, could they be persuaded to assist humankind in dealing with the many chronic, terrestrial problems of our age? If so, who on this Earth would our government want to develop the list of problem priorities to be dealt with? Would the elected leaders in Washington want to undertake this choice assignment, or would they be willing to let a world forum, such as the United Nations, develop the priorities list? And if the United States decided to "recognize" and negotiate with an extraterrestrial race, who would be empowered to speak for the nation? The President? The State Department? The Senate? The House of Representatives? The UN Ambassador? Or some specially appointed envoy? The time to come to grips with these questions is now. It is quite possible that an extraterrestrial race of beings orbiting our Earth in advanced spacecraft may be unwilling to wait for us to decide just who "our leader" is!

We have considered these unique questions as derived from initial contact with a *benevolent* race of extraterrestrials. But what if these beings exhibit a malevolent nature? What then would be our response? Would we resist them totally (like the Indian nations resisted their exploitation at the hands of the white man . . . with perhaps the same consequences)? Would we negotiate diplomatically with them in the hope that a "sense of fair play" is a universal trait among all

rational beings? Or would we capitulate to any and all of their demands? If we decided to engage in a true War of the Worlds, what strategy would we employ? Would we be willing to fire the first shot? Would our tactics be predicated upon defensive confrontation or should we seize offensive opportunities as they may appear? Would we be willing to share our most closely guarded military secrets with the Soviet Union in a combined attempt to thwart an extraterrestrial threat?

Here also a nearly endless list of scenarios can be envisioned for human confrontation with a technologically advanced race of beings. The grade-B science fiction movies of the '50s and '60s are full of such invaders-from-space themes. Are these themes merely sensationalized flights of fancy? Perhaps so. But then again . . .

If UFOs are the product of an extraterrestrial technology, humankind will either stand to gain benefits beyond comprehension or else come face to face with the ultimate challenge. Our ability to meet the challenge, or optimize the benefits, will be proportionate to the extent of our decisive action. Currently our government chooses to ignore the potentialities. If we wish to maintain some control over our destiny these theories must be seriously considered before we find theory overtaken by actuality.

Manifestation of the Psychic or Paranormal

Some scientists who have been involved in UFO studies are now giving considerable attention to the psychic/paranormal aspects of UFO experiences. The increased popularity of this theory is the "new wave" in UFOlogy. It is too early to tell whether the pursuit of this theory will lead to paydirt. At times it seems that the current inspection of paranormal linkage may be a by-product of UFOlogy's collective frustration in dealing with the nuts-and-bolts extraterrestrial hypothesis. The concept of UFOs as a mind phenomenon means considerably different things to different people. Some researchers think that UFOs may be a form of holographic projection observed by witnesses who incorrectly perceive them as actual spacecraft. Others suggest that circumstances may exist which allow a person or persons to subconsciously project mental images which are then consciously perceived by other persons. Then there are those UFO reports which contain aspects of both physical and paranormal phenomena as, for example, in the use of telepathic communication by a UFO occupant which is otherwise perceived to be quite "real" by the witnesses' senses. Other theories associated with the psychic/UFO overlap include elements of time travel, remote viewing, teleportation, materialization/dematerialization and self-induced hallucinatory experiences.

The concept of UFOs as a paranormal phenomenon receives its momentum from an ever-increasing scientific awareness of mind power. If this mind power is controlled by forces external to man we find ourselves being led back to the extraterrestrial hypothesis because someone, or something, has to be doing the controlling. However, if man's own mind power is responsible for UFO experiences then it behooves us to educate ourselves rapidly in all the ramifications of mind power.

Both the Soviet Union and the United States seem interested in the potential military and political applications of psychic/paranormal phenomena. Apparently the Soviets are more actively pursuing psychic research toward these ends than the Americans, and there has even been talk of a widening "psychic gap" between the two superpowers. The potential uses of psychic/-paranormal abilities for either military or political purposes are restricted only by the limits of one's imagination. Some possibilities that immediately come to mind are: psychic spying (utilizing accelerated ESP or remote-viewing abilities), psychic sabotage (through the concentrated use of psychokinetic energy), and perhaps even psychic assassination!

Whether these mind powers are to be regarded as a threat or as a benefit is mostly a matter of perspective. They would be considered a wondrous benefit if we (the U.S.) acquired them first. Conversely, if our adversaries (the Soviets) developed and perfected the use of these powers before the U.S. did, we would consider ourselves gravely threatened.

Will man's own mind power prove to be the ultimate superweapon? The cartoon character Pogo may have written an appropriate epitaph in his famous words: "We have met the enemy and he is us."

Currently Unexplained Conventional Phenomena

There are other individuals involved in UFO studies who rarely make headlines in the national tabloid newspapers. These individuals are the UFO skeptics, also known as the "debunkers." Some of them, like their pro-UFO counterparts, have managed to capture public attention by persistently and loudly expressing personal opinions regarding UFOs. Philip Klass and Donald Menzel, James Oberg, Carl Sagan and Robert Sheaffer are among the notable names on the contemporary roster of UFO skeptics. The debunkers believe that, while extraterrestrial life is indeed possible, the vast distances between star systems make interstellar travel virtually impossible. They therefore maintain that nuts-and-bolts interstellar spacecraft (i.e., UFOs) are also an impossibility.

The debunkers are also unimpressed by the alleged paranormal attributes of the UFO phenomenon. The Committee for the Scientific Investigation of Claims of the Paranormal was formed several years ago by debunkers for the stated purpose of separating "fact from myth in the flood of occultism and pseudoscience on the scene today." Unwilling to agree to any extent with the previously described pro-UFO theories, the skeptics offer their own down-to-earth explanation of UFO sightings. They maintain that UFOs are either

(1) currently misunderstood natural phenomena such as ball lightning, plasma effects, swamp gas, temperature inversions, etc., or (2) the misidentification of aircraft, satellites, astronomical displays, etc., by laypersons uneducated in such matters.

The skeptics are convinced that any UFO sighting can be explained, at least to their satisfaction, by some conventional cause. However, even if the skeptics are largely correct the best of reasons still remain for the government to plan serious UFO studies.

On two separate evenings in the summer of 1952, UFOs were seen in the skies over the District of Columbia. The UFOs were plotted and tracked on radar scopes at both Washington National Airport and at Andrews Air Force Base. Reports indicate that the radar scopes were operating perfectly when the UFOs appeared over Washington. In addition to the radar confirmation, the UFOs were visible to and reported by commercial airline pilots, USAF interceptor pilots, airport ground crews and civilian witnesses by the score. The UFOs were seen and photographed in the sky directly over the U.S. Capitol building. The photographs were front-page material in Washington newspapers for days after the sightings. The Air Force later "explained" these UFOs by announcing that both the radar and visual sightings "were due to mirage effects created by a double temperature inversion."

Even if you find this Air Force explanation hard to swallow, which many people do, there is still considerable importance in the statement. If a double temperature inversion is capable of causing a mirage effect which can simultaneously confuse radar sets, cameras and many pairs of human eyes, shouldn't this be good news to our government? Just imagine what an advantage it would be to our national-defense planners if temperature inversions could be used as part of our military strategy and tactics. Huge sums of money are spent every year to design and acquire aircraft and missiles that are capable of penetrating an enemy's airspace and attacking his military targets. Instead of building, manning and maintaining those thousands of aircraft and missiles, perhaps we could build fewer weapons systems and still accomplish our mission by enlisting the aid of the simple, natural temperature inversion.

As fanciful as this recommendation may seem, it would appear to be as viable (and imaginative) as the Air Force double-temperature-inversion explanation of the UFOs that were sighted over Washington in the summer of '52.

Even if the whole temperature-inversion story was fabricated to "explain away" the Washington, D.C. sightings, there still might be other prosaic causes to account for this extraordinary event as for the UFO phenomenon in general. The eventual understanding of conventional phenomena, through investigation and research, could lead to our ability to duplicate them and thereby provide the Pentagon with some unquestionable defense advantages. Greater understanding of conventional phenomena should be sought by the whole scientific community, not just those members who are engaged in military research and development. Very little is actually known about the ball-lightning and plasma effects so frequently used by the skeptics to confound UFO reports and those who make them. Serious study of this aspect of UFO sightings would expand our knowledge of the physical laws of science—in itself a sufficient justification for the federal funding of UFO research programs.

In summation, it should be reiterated that UFOs *do exist*! What UFOs *are*, however, has never been determined. Numerous theories attempt to explain *what* they are. Some theories are more exotic than others, but none can be validated at our current level of scientific understanding. Thorough investigation of all these theories can and should be undertaken now by the many individuals who have both the desire and the scientific qualifications to do the work effectively. What they need to start with is money, and to keep going, more money.

Regardless of which theory is ultimately found to be the real cause of UFO sighting reports, each of the theories poses certain potential benefits or threats to the human condition. Whether these benefits or threats come from an extraterrestrial race of beings, from the human mind, or from the physical environment is inconsequential. Humankind must strive to acquire all the benefits available to it, and understand all the threats that confront it.

The UFO mystery is a challenge to science, yet many members of the scientific community prefer to believe that the mystery doesn't exist. For far too long people who report seeing a UFO have been treated like lunatics and crackpots. The ridicule usually comes from individuals who consider themselves intelligent and rational. But old attitudes do change. In recent years many scientists have reconsidered their previous, biased opinions regarding the UFOs. The high ridicule factor long associated with the UFO phenomenon is still working, much to the detriment of scientists who would like to shed their fear of expressing themselves to their scientific peers. There must be a way to lift the shroud of ridicule from the UFO phenomenon and open the door to the fresh air of truly free expression. Americans might be surprised to hear what the scientific community really thinks about UFOs.

Who will lift the shroud of ridicule? Who will open the door to the fresh air of free expression? Who will provide science with leadership? The answer should be, of course, the federal government. Only the government can make the leadership decisions that will set the machinery of science in motion. Instead of directing science to prove what UFOs are *not*, the government should direct the scientific fraternity to prove what UFOs *are*.

To those who consider the UFO phenomenon only a quixotic crusade, let me offer one last quotation—this from Niels Bohr, the noted Danish physicist: "There is no hope of advance in science without a paradox."



Sweet Influences Of Pleiades

by Diane E. Wirth

IN LIGHT of what we know today of the Pleiades, it is difficult for us to comprehend why an apparently small cluster of stars, located in the constellation of Taurus, was so greatly venerated by the ancient world. A Greek myth relates that Zeus himself gave the seven " daughters" a good start in life by locating a heavenly home for them and placing them in it. The Pleiades have since had a bearing on the destinies of empires and the daily affairs of commerce and agriculture that seems almost beyond belief and certainly is out of proportion to the size and conspicuousness of the group. For centuries they were objects of worship, admiration, and the subject of song and story; woven about them were the fancies, the mysteries, the romance, and the religious ideas of the ages.

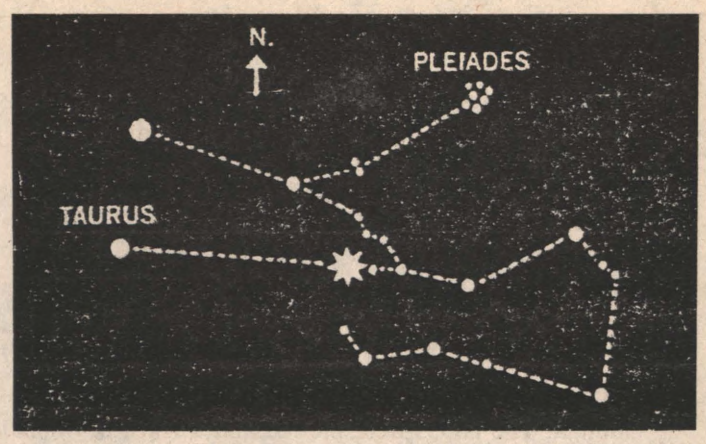
The Pleiades comprise but one of the many thousands of star-clusters in our galactic neighborhood. There is no relationship between the solar system and the Pleiades other than the fact that both are members of the Milky Way—our galaxy. Why then have the Pleiades cast their rays so obtrusively across the path of history? Could ancient astronomers have had knowledge of which we are currently unaware and which has been forgotten along the way?



Aztec priest watching the Pleiades at night. (After the Mendoza Codex)

In the Old Testament, Job acknowledged something special about this group of stars when he wrote "Canst thou bind the sweet influence of Pleiades . . ." We begin to understand their significance to the ancients when we take a closer look at the lore of nations.

In a further development of the godly origin theme, another pervasive legend regarded the Pleiades as the eternal home of the gods—especially of those gods who were supposed to have visited Earth. Other legends claim the vicinity of the Pleiades as the location of paradise, the natal home of the human race and the place to which its departed spirits were destined to return.



As a reference point the Pleiades group figured in many of those calendar measurements which contributed a prophetic quality to early astronomical science and made priests of the practitioners. Some American Indian tribes established their year from the period these stars rise at sunset. And several scholars have voiced agreement that the year of the Pleiades and the date of the Great Pyramid are one and the same: that is to say, the meridian of the primeval Pole Star became rigidly stationary on Alcyone at the time the Great Pyramid was erected, and Alcyone, being the major star of the Pleiades, had to be the throne of the Great Creator.

It is remarkable that the ancients were so tenacious of their belief that the Pleiades contained *seven* stars. To our naked eyes, as presumably to theirs, only six stars are readily apparent, and extraordinary vision is needed to see the seventh even under the best of conditions. Perhaps there is an element of truth in still another old legend which says that the seventh star was once more brilliant, then dimmed and faded from sight; to have declared it dead would have amounted to sacrilege, so the count was held at seven and the wayward star acquired a special aura as the "lost" daughter.

After the passage of centuries and with the advent of modern technology it has become evident that there are more than 2,000 stars within this "small" cluster. We know that the solar system does not revolve around the Pleiades, but we also acknowledge that it falls in the general direction of the nucleus of our galaxy. Whether or not the ancients had the site correctly pinpointed, perhaps their concept of a central beginning point is the core of truth within the periphery of legend. A centrality that directs the motions of the galaxy could be the abode of the creator, the home of life, and the paradise to be regained after death.

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Scientists Find Nearly Perfect Remains

A TEAM of Chinese scientists has turned up convincing evidence of the existence of an "ape-man," or a race of ape-like creatures, in the wilds of central and eastern China. At a school in Zhejiang province they found the hands and feet of an animal, apparently some kind of ape, which had been preserved by a biology teacher since May 1957, when a group of women killed the animal after it had attacked a young girl.

The team of local scientists was the second to join the hunt for the ape-man late last year. Members of the Chinese Academy of Sciences had been searching for several months around the Three Gorges on the Yangtze river, in Hubei province [as reported in *Pursuit* No. 51, page 116 and No. 52, page 142—Ed.] A second group was making a survey of plant resources in Zhejiang when they heard reports of sightings of "ape-men." The leaders promptly redirected the expedition to look for the mysterious creature.

Encounters between peasants and ape-men—said to resemble the Bigfoot and Sasquatch creatures of North America—have been reported in this sparsely settled part of China for centuries, and with increasing frequency over the past 20 to 30 years. The Zhejiang team found many signs of the creature's presence, including nests shaped from branches, footprints and samples of hair, but the discovery of the hands and feet caused the most excitement and refuted many doubts.

The story of the killing of the Zhuantang ape-man was reported in the local press on a day in May, 1957, when all the men of the village were laboring in the hills. During the afternoon Xu Fudi, then in her mid-30s, heard a scream from her young daughter who was tending cattle. She rushed to the spot and found the girl grappling with a young, ape-like animal, about 1.5 meters tall. Xu Fudi picked up a piece of wood and struck the animal which jumped into a paddy field. It was unable to move quickly in the mud and Xu Fudi got in a few more blows before it turned to attack her. About a dozen women joined in the fight and beat the animal senseless. As the creature recovered consciousness it began to grunt, and Xu Fudi says there were tears in its



The well-preserved hands of what is thought to be a young "ape-man," killed in east China in 1957. Palms are 14 centimeters long.

of 'Zhuantang Ape-Man' Killed in 1957

eyes. The frightened women turned on it again and chopped off its head.

The report in *Sonyang Daily* described the animal, soon dismembered by the villagers, as being covered with long, dark-brown hair and weighing about 40 kilograms. It was a male and seemed to be young, with white teeth, a human-like tongue, ears and eyebrows, a sunken nose and a big chest. The navel, thighs, knees, calves and genitals were all similar to a man's, and the skin was soft and white when the hair was removed. Undigested bamboo was found in the stomach.

Xu Fudi is now 57 years old, but the recollection of the frightening experience remains undimmed as she relates a strange aftermath: "The day after we killed the animal we heard a noise in the hills like the grunting it made during the fight. We think it was the mother calling for its child." It was Xu who told the Zhejiang scientists that a young teacher had come to the village and took away the hands and feet.

The scientists soon tracked down the teacher, Zhou Shousong, now 52, who teaches at the Bihu middle school in Lishui county. Zhou showed them the hands and feet which he had carefully preserved. Some shrinkage of the muscles was evident but otherwise the remains were in good condition. The feet measured 19 centimeters long with clear print lines on the soles and were covered with soft, yellowish-brown hair. The palms of the hands measured 14 centimeters long. According to the scientists' preliminary assessment, the animal belonged to the family of primates. Some likened it to a chimpanzee.

The Zhejiang group seems to have had better luck than their colleagues who were searching in Hubei province. The latter group also found hair specimens, apparently from a member of the primate family, plus footprints, and caves where an ape-like creature might live. But the Zhejiang group reported more dramatically that they found "nests" that could indicate the presence of "a whole troop of apes."

Led by a 60-year-old guide who has spent a lifetime picking herbs in the local mountains, the investigators found a



The feet of the "ape-man" killed in 1957. The ape-like characteristics are clearly recognizable, despite shrinkage of the muscles.

nest wedged between some trees and a rock in a forest about 1,500 meters above sea level. The small "stockade" was built of large and small branches and was lined with grass and leaves. Judged by its size and sophisticated construction, the nest could not have been built by a creature with intelligence lower than that of a four-year-old human child or the survival experience of a ten-year-old. The size of the branches which had been torn from the trees indicated a very powerful creature.

The scientists found eleven more nests at 1,550 meters above sea level. These were several meters apart and were scattered over an area of 250 square meters. Some were on the ground and others were built in the trees. One nest was estimated from the condition of the branches to be only a month old, and none seemed to be more than two years old. The largest tree-nest could support a weight of 150 kilograms. There were scratch marks on the trees, possibly from the animals' nails, and many footprints, droppings and samples of hair were found in the surrounding area.

At about 1,600 meters the group found signs of recent nest-building, with two prints from a left foot (33 centimeters long) that showed the toes separated like those of a man. They also found samples of soft brown hair. The scientists described the area as 15 kilometers from the peak of the Nine Dragon Mountains where centuries-old trees block out sunlight and where human beings rarely venture.

At Xikangli village, 57-year-old Zhang Qilin told them: "For the past 30 years or more I have gone up to Nine Dragon Mountains every year, in September or October, to guard the maize crop against ape-men.

"I saw an ape-man about ten years ago. It approached from Fengshuyang (where the eleven nests were discovered). It was about as high as a house door and it was covered in reddish-brown hair with long hair falling around its shoulders and over its face. It walked upright and shook its head as it walked.

"On another occasion I saw an ape-man lying in a nest in a tree. It was quite relaxed and it clapped its hands when it saw me. Most of the time it just lay there, eating maize. There was a big pile of cobs on the ground."

"We know they also like to eat persimmons and wild pears," Huang Jialiang, of Chenkang village, told the scientists. "On August 14, 1978 I saw an ape-man in the forest, about 20 meters away. I hid behind a tree. It was carrying a piece of wood and walking toward Fengshuyang." Huang's description of the ape-man tallies with the report of Zhang Qilin.

The hunt for the ape-man, also known as the "wild man" or "bear man," has intensified since 1974 when the Academy of Sciences mounted its first expedition in Hubei province after a rash of sightings. Whatever scientific objections there may be to the theory that giant apes still live in central and eastern China, the authorities have decided that the caliber of eye-witnesses is such that they have to take the reports seriously."

[Courtesy of China Features, Beijing, China]

The Coral Castle Mystery

Members who would like to know more about Coral Castle and the late Ed Leedskalnin may obtain literature by sending $6.00 with request to Coral Castle, 28655 Federal Highway, Homestead, Florida 33030, USA.

Sailing in a

by Charles E. Wood

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ON a cool, foggy September night I was traveling with five others aboard a 53-foot Spencer sloop, making a passage off the California coast from Morro Bay past Point Conception to Santa Barbara. We were in heavy fog and experienced periods of visibility of less than 50 yards. Two friendly dolphins had taken a shine to us and stayed for a long period, twisting and turning, leaving phosphorescent trails around the vessel. Because of the fog we were keeping a good lookout.

Shortly after midnight a line of bright water appeared fairly suddenly ahead of us. It ran roughly east to west athwart our course. The extent of the light could not be gauged as it disappeared into the void of the fog on both sides.

My first impression was tinged with apprehension. The glowing bank appeared to be a large track similar to those made by our accompanying dolphins, but considerably greater and straighter. I thought a whale or even a submarine could have just passed and left such a track, and I could do without such complications on a foggy night. For a moment I debated stopping, but then I noticed that the dolphins led on across the zone of light, apparently unperturbed by it. The magnitude of the glowing band became clearer as we came up to it and crossed it.

It was as though there were a broad source of light well under water. As measured in reference to our boat's length, the band was at least 50 feet wide, and its ends stretched off beyond our visibility. The light seemed bright enough to be able to read by it. The edges of the band between light and dark were clear-cut, and there was no apparent change in the sea motion as we crossed it.

The first mysterious band slowly dimmed behind us as it passed into the fog, and then another band appeared ahead. During the next two hours we crossed many successive bands. They were never perfectly regular, sometimes having a curve or jog in the general length visible to us. Even later when fog lifted slightly we could not see the ends. However, the transition from dark sea to glowing light always was delineated.

The dolphins continued to accompany us and made their own phosphorescent trails crossing the bands. This weaving of their bright trails over the glowing strip gave me the impression that the source of the great light was below the surface, rising slowly upward and brightening as the night wore on, and then slowly receding and dimming.

Calculations made from our cruising speed later showed that we must have passed through about 15 miles of sea banded every few hundred yards by 20-yard-wide strips of light. This was a prodigious display of phosphorescent mass, of pattern, and of brilliance. Finally, the gaps appeared wider and the bands less bright. Ultimately, we saw no more of them.

Displays of phosphorescence—or more correctly, bioluminescence—are one of the many extraordinary aspects of

Glowing Sea

the sea. I had seen and admired the common forms of bioluminescence at night in the fiery wake of a boat, in the bright-green cylinder behind an outboard propeller, and in the liquid drops of white light falling from the tips of oars. I'd even seen footprints give off a ghostly glow as I'd walked on some beaches during certain nights. But I had never seen, nor expected to see, these larger, more complex sea lights.

After our passage I discovered that *sea lights* is, indeed, the name given to this phenomenon, and that they have been observed, studied, and commented on for several years. With growing interest, I researched the subject and discovered how little they are truly understood. While the basic mechanism of bioluminescence is partly understood, the reasons for the massive and complex sea-light displays are still unknown.

Apart from the magnitude, I was most impressed by the brightness of the light and its clearly defined edges. Later in my research I found that similar impressions were retained by other observers. Descriptions vary with the individual, but everyone quoted the awe and sometimes fright or terror they felt; the lights were variously described as "powerful beams of light directed upward under water," "bright shoal water," "broad and narrow belts," "luminous wheels of lights," "rivers of fire," and so on. The mathematical precision of the bands and their edges also were observed.

In an encounter with sea lights on the Red Sea, the third officer of the *MV British Empress* reported that for over 25 minutes shafts of pale white, diffused light appeared in parallel lines, changing slowly to an apparent rotation of the bands. A complex pattern of "switching" on and off of the light occurred. Another reference, Dr. N. B. Marshall in *Aspects of Deep Sea Biology,* quotes a merchant skipper as seeing a broad belt of bright light a half-mile wide. Here again, a complex pattern of switching of the light occurred.

The magnitude of the displays adds to their eerie and wondrous nature. Yet these manifestations are made by very small creatures, millions on millions of dinoflagellates. Scientists have credited the *Noctiluca scintillans* and other luminous protozoans with the production of steady sheet-like glowing forms of light. Along the Pacific Coast of the United States the luminous species include *Gonyaulax polyedra,* which have an interesting day-night rhythm. They luminesce in the evening and stop producing light at dawn. Their maximum output normally occurs at about 0100. There appears to be a master clock within the tiny organisms controlling their luminescence and regulating other physiological processes. Interestingly, *Gonyaulax* and *Noctiluca* often occur together. Perhaps this accounts for the apparent gain in intensity followed by a decline over the time we saw the display.

You should be cautious regarding edible seafood in areas where bright displays of luminescence have occurred. Some species of *Gonyaulax,* in particular *G. tamarensis* in the North Atlantic and *G. catanella* in the North Pacific, have been implicated in causing the toxicity of edible shellfish that leads to paralytic shellfish poisoning. Where large-scale sea-light displays are seen, I would be careful in my use of shellfish caught within its environs.

Bioluminescence is produced within the living creatures by a complex chemical reaction. Within the cells themselves there is a chemical called *luciferin* (named in 1887 by Raphael Dubois after Lucifer the Light Bearer). The luciferin combines with oxygen in the presence of a catalyst *luciferase.* (The suffix *-ase* denotes that the catalyst is an enzyme.) During the reaction energy is released as light. Afterwards, the reaction reverts to the original state and is ready for the next triggering sequence to produce light.

The light itself is extremely efficient with very little waste heat. The phrase *cold light* applies accurately to bioluminescence. These tiny creatures surpass the best of man's inventive genius, for we are most wasteful in our energy production, producing far more heat than usable energy.

None of this explains the distinct linear definition between the light and dark areas, nor gives a clue as to what triggers the mass reaction. The dinoflagellates normally need a mechanical, physical, or chemical stimulus to elicit bioluminescence. Such stimuli include the disturbance of a turning propeller, breaking waves, currents, and chemical changes. Because the bands were so large and extended so far from our boat, we felt we probably had not triggered the bioluminescence. Nor did the dolphins appear to have "switched on" the bands, as they were swimming close to the boat, not far ahead.

Whatever the source and mechanism of the display we witnessed, it was a striking and intriguing mystery of the ocean. I felt privileged to have seen such magnificent sea lights, part of the wealth, knowledge and beauty in the seas waiting to be understood.



Slip-ups in Science

These are answers taken from student test papers in a nationwide compilation by the *Mobserver*, newsletter of Alaska Mensa:

—Charles Darwin was a naturalist who wrote the Organ of the Spices.

—Benjamin Franklin produced electricity by rubbing cats backward.

—The theory of evolution was greatly objected to because it made men think.

—The dodo is a bird that is nearly decent now.

—To remove air from a flask, fill the flask with water, tip the water out, and put the cork in quick.

—The process of turning steam into water again is called conversation.

—The cuckoo does not lay its own eggs.

—To collect fumes of sulphur, hold a deacon over the flame in a test tube.

—Algebra was the wife of Euclid.

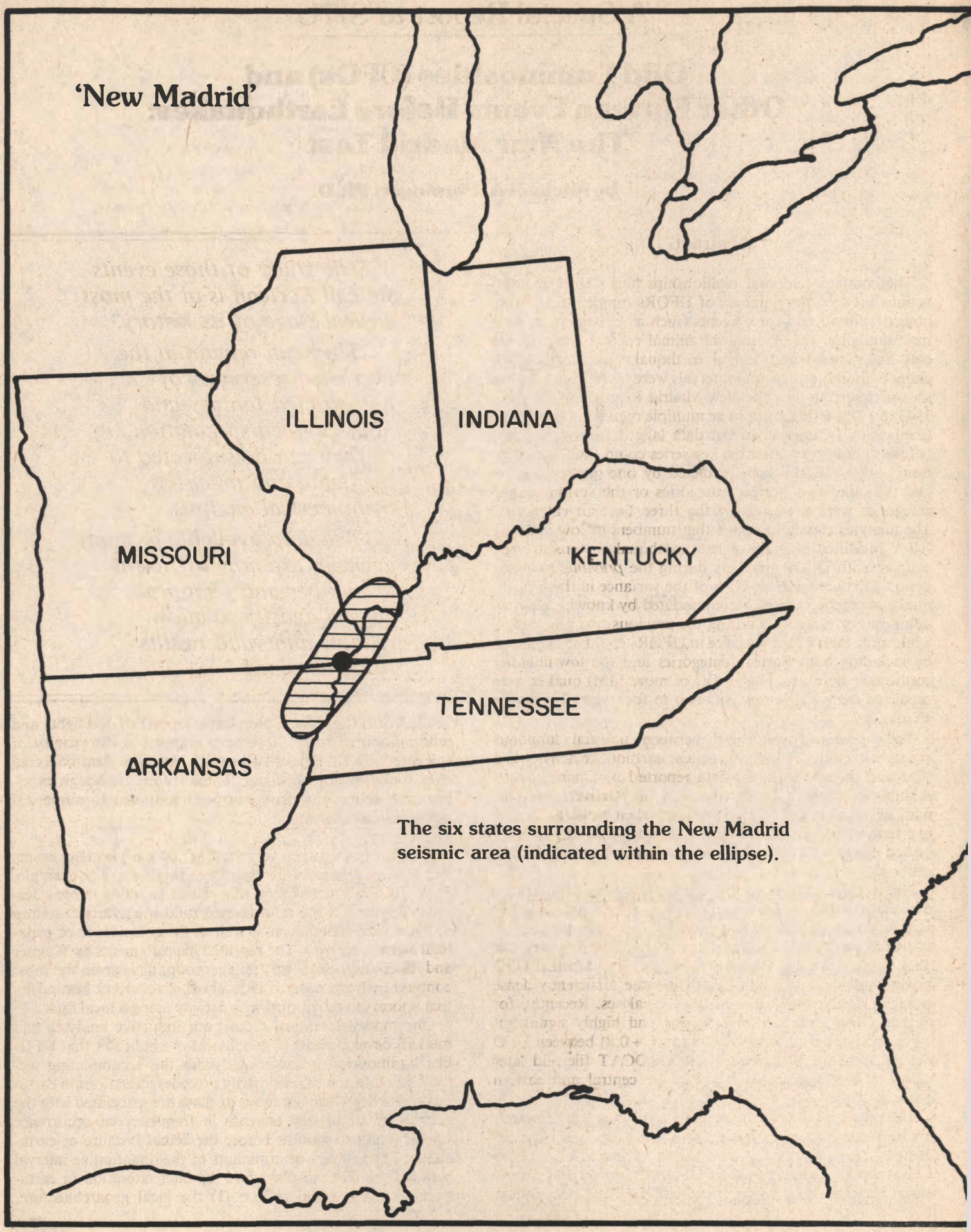
—Parallel lines never meet unless you bend one or both of them.

—Algebraic symbols are used when you do not know what you are talking about.

—Geometry teaches us to bisex angels.

—The moon is a planet just like the earth only deader.

—The pistol of a flower is its only protection against insects.



The six states surrounding the New Madrid seismic area (indicated within the ellipse).

Odd Luminosities (UFOs) and Other Fortean Events Before Earthquakes: The New Madrid Test

by Michael A. Persinger, Ph.D.

Abstract

The complex temporal relationships and statistical interactions between the numbers of UFORs (unidentified flying object reports), odd-force events (such as poltergeist or animal mutilation cases), unusual animal reports (such as big cats and bipeds) and several earthquake measures within either 6 -month or one-year intervals were investigated for the six states surrounding the New Madrid Region for the years 1943 to 1973. Using a step-wise multiple regression procedure (temporally symmetric so that data lagged from four years before to four years after the key series could enter the equation), either UFORs were predicted by one quake measure and the other two Fortean categories or the various quake categories were predicted by the three Fortean categories. The analyses clearly indicated that numbers of low intensity (IV-V Modified Mercalli or less) earthquakes were strongly coupled with UFOR numbers during the *previous* two-year periods. Between 40% to 60% of the variance in these earthquake numbers could be accommodated by knowing the variation in Fortean events during the previous two-year period while up to 80% of the variance in UFORs could be explained by including both Fortean categories and the low-intensity earthquake numbers. Higher (VI or more MM) quakes were predicted more by force events two to four years before the seismicity.

'The study of those events we call Fortean is at the most critical stage of its history.

'They can remain in the cherished reservoirs of unrestricted fantasy and undisciplined speculation, or they can be subjected to the detail and precision of numerical analysis.

'The data available in many agencies are now sufficient in number and temporal-spacial density to allow reliable and valid results to be obtained.'

The apparent relationship between unusual luminous events and coincident or consequent earthquake activity is a recurrent theme within the data reported by Charles Fort[1]. Although frequently obscured within his relatively odd format, this relationship is clearly evident when his data are read in a temporal sequence[2]. The combination of all of Fort's reported events with historical seismic data enhances this connection.

Numerical estimates of the intervals between luminosities and earth tremors are difficult within Fort's data for the U.S.A. since even the larger classes of events are plagued by statistical problems of distribution. In the last 30 years, the data matrices for both luminous events (now labelled UFO reports) and seismic displays have become sufficiently dense to allow reliable and valid statistical analyses. Recently, for example, this author[3] reported clear and highly significant correlations (that varied from +0.6 to +0.8) between UFO reports from the Saunders/Hynek UFOCAT file and later increases in seismic activity within the central and eastern portions of the U.S.A.

The possible relationship between local ($\sim$1 km^2) Fortean events in general and local tectonic processes has been reported in several parts of the U.S.A. Laporte[4] has noted a conspicuous concentration of UFO-type events and a variety of Fortean displays along the Gold Hill Fault near Indian Trail, North Carolina. Comparable reports of odd lights and unusual animal forms have been mapped in the vicinity of epicenters by D. Fideler[5] who used historical data collected over southwestern Michigan. These studies, although excellent case collections, have not been subjected to numerical and statistical analyses.

Associations between very local ($<$ .01 km^2) Fortean events and tectonic processes are even more persistent. For example, P. A. Jordan's[6] description of a classic haunting in New Jersey demonstrates the multifaceted (and multivariate) nature of haunt-like phenomena as well as the coincidence of proximal tectonic activity. The repeated measurements by Wagner and his colleagues of the Vestigia group[7] have given the most comprehensive profile to date about a recurrent luminosity that appears to be coupled with activity along a local fault.

One model developed from both inductive analyses and modern developments in geophysics[2, 8, 9] indicates that UFO-like luminosities are associated with the accumulating tectonic stress/strain that primarily precedes alterations in earthquake activity. Such luminous displays are associated with the pockets of strain that increase in frequency of occurrence several weeks to months before the actual fracture or earthquake. The primary determinants of the quantitative interval between the UFO displays and the later alteration in earthquake activity would reflect: (1) the local geoarchitecture,

(2) the modes by which previous strain has been released, and (3) the upper limit for these mechanisms to alleviate the most recent strain.

The model further demands that such luminosities be coupled primarily with low-level earthquakes. Weak earthquakes, for example less than IV-V MM (Modified Mercalli), would be less likely than more intense events to destroy (by fracturing) the appropriate architecture within which the strain processes associated with luminosity production exists. These processes would be negligible relative to more conspicuous geophysical events but of sufficient magnitude to be influenced by lunar tides, influxes of different temperature (and weight) air masses, sudden commencements (geomagnetic storms), or the occasionally abrupt change in the velocity and density of the solar wind.

The actual mechanism or mechanisms by which the luminosities are generated from this strain process are more difficult to determine at present. One model, as developed by Brady[10], suggests that very intense and local strain or a minute fracture releases a very small plasma-like condition. When this plasma-ball reaches the surface, the surrounding air is ionized, thus producing a luminous display with an intense portion enveloped by a less-bright (even nebulous) but larger component.

As long as a charge source existed, such as an adjacent power line, the plasma ball could be maintained. Movement of the ball, possible rotation or spin, and varying degrees of opacity would be expected. If a charge source was removed or the ball approached a grounded conductor, the plasma would undergo a series of unstable sequences involving color changes, shape alterations and rapid or erratic movement. The moment of disappearance, which would appear "instantaneous" to the human observer, would be very energetic.

A second model developed by Persinger [2,8,9] argues that the luminosities are maintained within extremely dense electromagnetic columns or vortices generated by the transient piezoelectric and piezomagnetic fields within the earth's upper crust. As these statistical bouts of very localized and transient strain are relieved, either *through* the actual luminosity process or by readjustment of component forces, the fields and the luminosity would disappear.

Both models are not necessarily antagonistic and may be different components of the same source process. However, the second model predicts that in addition, transient (a few minutes), highly localized (within 100 meters) electromagnetic-like field displays tend to statistically cluster with greater frequency and intensity within larger areas (100 x 100 km) as the tectonic strain increases. Only the more intense displays would be sufficient to induce the luminosities.

Less intense electromagnetic columns would be sufficient to induce electrical oddities (power failures, power surges, alterations in radio/TV communication) in apparatus and sensations of "tingling," phosphenes and general uneasiness in human beings. More intense columns could induce significant electrical currents (and heat) within small conductors or induce spin (and movement) in some dielectrics. The most likely term used to describe these events would be "poltergeist activity."

Less frequently (statistically), very intense and localized current inductions would occur in the immediate vicinity of organic materials. Living systems, human or non-human, might be electrocuted or in extreme instances completely carbonized in a SHC-like manner. Such currents near regions (swamps, rivers, bogs) containing organic materials could release through routine electrolytic processes significant concentrations of sulfur compounds, including variants of dimethyl sulfur.

To further test this model, the New Madrid region was selected. This region was considered an optimal test-area since it has been typified by mid-level earthquakes and an unusually high frequency of Fortean events, including luminosities. Even historically, the connection between luminosities and earth shocks is evident in this area. Detailed tectonic data for this region is also now available[11].

On the basis of the present model, a number of predictions can be made: (1) numbers of luminosities or UFOs should precede and be significantly correlated with earthquake numbers within the New Madrid region, (2) UFO or luminosity reports should be most correlated with V intensity (MM, Modified Mercalli) or less earthquake events rather than intensity VI or greater, (3) reports of odd forces, such as poltergeist events, subdermal afflictions or animal mutilations should precede both luminosity and earthquake activity since these Fortean events reflect less energetic and non-luminous displays.

Method

Data Selection

All entries for the six states: Illinois, Indiana, Kentucky, Tennessee, Missouri, and Arkansas, surrounding the New Madrid Earthquake Region for the years 1943 to 1973 (end of the file) were selected from the major data source[12]. From these data, four general classes were formed: (1) multiple UFO reports (UFORs), (2) human or animal damage, (3) inorganic effects and (4) unusual animal occurrences.

These general classes were created by simply recoding the four-digit identification code (major category and minor category). Multiple UFOR or "UFO flaps" (not single reports) involved all of the various UFO categories discussed in *Space-Time Transients and Unusual Events*[2]. The human or animal damage class (PKORG) involved 8 separate categories that included: SHC reports, subdermal afflictions, and animal mutilations, while the object damage class (PKOBJ) included the odd force categories such as "poltergeist activity," object movements and small household explosions, (including "phantom snipper" cases). The unusual animal category (ANIMA) involved only the reports of unclassified feline and biped (Bigfoot) categories.

In order to prevent redundancies and spurious inflation from multiple reporting of the *same* event, the data pool was checked for repetitions. Repetitions of any category within the same month and within the same area were deleted. Consequently, any city or area could contain no more than 4 reports (one from each class) for a given month. The total numbers of events over the 31-year period according to the above criteria for the different classes of Fortean events and earthquakes were: UFORS (62), ANIMA (51), PKOBJ (15), and PKORG (12).

All Fortean cases had been obtained from *Fate* magazine (90%), newspaper reports (8%), and technical reports (2%). Inspection of author sources for the cases within the first three classes indicated no significant contribution from a single author. The animal data were heavily influenced, however, by the publications and research of Loren Coleman.

The earthquake data (also on file) had been obtained from the yearly earthquake publications in the U.S.A. from the Department of Commerce. After removing redundancies for

the same event within more than one state, the earthquake events (QUAKE) were recoded into low (LOWQU) and high intensity (HIGHQ) events. Low intensity events involved IV-V or less MM (Modified Mercalli) values while high intensity events involved values of VI or greater MM. The total numbers of events over the 31-year period for the different classes of earthquakes were QUAKE (143), LOWQU (107), and HIGHQ (36).

PROCEDURES

Using SPSS[13] software, the data pool was allocated according to 3-month, 6-month, and 1-year intervals. This was completed by recoding the month or year intervals so that the total numbers of events within a given class was calculated per appropriate interval[14]. Three-month intervals were January-March, April-June, July-September, and October-December of each year (124 cases) while 6-month intervals involved January-June and July-December groupings for each year (62 cases).

The selection of the appropriate time increment for analyses is a critical consideration. Analyses of the UFOCAT data[3] indicated that six-month intervals of analyses clearly enhanced the significant relationship between increased UFO reports and increased seismic activity (IV or less) during the consequent six-month increment. One-month and three-month intervals of analyses were less impressive. The effect also deteriorated when one-year increments were used.

To grasp further the importance of an optimal temporal window, one can consider the measurement of a neuronal action potential which lasts for about one millisecond. Temporal increments of one second would be too large to capture the precise details of the action potential pattern. Temporal increments of a nanosecond would be too small since at least 1 million increments must occur before a single action potential event can be contained. Analyses intervals of about 10 microseconds would allow both optimal resolution of details and tractable numbers for analyses.

The size of the spatial increment involved with the analysis can also determine the resolution of the problem. Whereas the selection of very small areas can enhance skewness in Fortean frequencies, the inclusion of very large areas can introduce multiple sources of variance. The New Madrid region, both in theory and from empirical observation, seems to occupy a space that is appropriate for the reliable sampling of a discriminable population of Fortean events.

Measurements of central tendency (means), variation (standard deviation), skewness and kurtosis were determined for the numbers of different events for each of the different intervals of analyses. Contrary to some opinions, the distribution of most classes of Fortean events is relatively normal across decades, especially when temporal increments of six months or 1 year are used. Smaller increments are prone to problems of nominal analyses (a temporal series of 0.1 occurrences) while larger increments are prone to problems of the obscuring average.

In those instances where skewness calculations or "extreme values" indicated potential data problems, the latter values were recoded to the value +1 that comprised the upper 95 percentile for the population. This always accommodated the occasional one or two extreme values within various classes. For example, in the UFO data, two non-adjacent six-month periods (during the 1950s) contained 7 and 10 reports while the range for all of the other 60 intervals ranged from 0 to 4 ($\overline{X}$ = 1.2). In this instance, the two extreme values were recoded to a value of 5 in order to attenuate potential complications from extreme values.

However, for *all* analyses, *both* the raw data and the recoded data were used. In this manner, comparisons were made between the two sets of analyses to determine the effects, if any, of the most extreme values upon the statistical results. (Previous experiments indicate that results from such recoding of the extreme upper 5% of the population can also be accommodated by more routine data transformations such as the computation of square roots). Although one prefers to work only with core data, such transformations are frequently required to evaluate whether or not a phenomenon is being rejected or accepted because of a few extreme values.

Kendall's correlations (for ordinal data) were completed between earthquake numbers and Fortean classes for the three-month increment data (because of the infrequent and 0,1 nature of the data) while Pearson Product Moment correlations between the numbers of events in each category and earthquake numbers were calculated for the 6-month and larger increments. Lag correlations were computed symmetrically for each Fortean class ± 0 to 4 years and for each earthquake class.

Stepwise multiple regression analyses were completed for the Fortean classes and each of the quake variables for the six-month and one-year interval data. Since the number of PKORG and PKOBJ events within the 6-month interval data ranged from 0 to 2 (with few 2s), these two classes were combined to form a composite variable: FORCE. The FORCE variable was used in both the six-month and one-year data; however, as a check for reliability, the FORCE variable was decomposed in the one-year interval data analyses into the PKORG and PKOBJ components (since the values for each of these variables ranged from 0 to 3 in the year-interval data).

To determine the consistency of relationships, two types of models were tested: one in which UFORs were predicted and one in which (each) of the quake class numbers were predicted. When UFORs was the dependent variable, the two Fortean classes: ANIMA and FORCE plus only one of the quake variables were entered as independent variables. When a quake measure was the dependent variable, all three Fortean variables were entered. All quake and Fortean combinations were completed.

The major design involved a symmetrical lag multiple regression[15]. With this procedure, equal numbers of lags before and after the reference series was entered for each variable. For example, if low-intensity earthquakes was the dependent variable, (using year-interval data), concurrent values plus those from each of the previous four years and for the consequent four years for each of the other three variables were allowed to enter the equation. This meant that a total of 9 lags (0 ± 4) by 3 (variables) or 27 total variables were in the potential pool for selection.

The lag that entered the equation first for each of the three independent variables was selected and then re-entered in a *separate* analysis using *only* those three variables. The contribution of each variable to the equation as well as the various parameters (slopes, standard errors of the means) were observed. As a check for possible loadings because of excessive serial correlations, Durbin-Watson tests were included for each equation.

Although the introduction of a variable with a lag of that variable into an equation must be very carefully evaluated, this technique is important if one assumes that the total variance associated with a phenomenon may involve more than

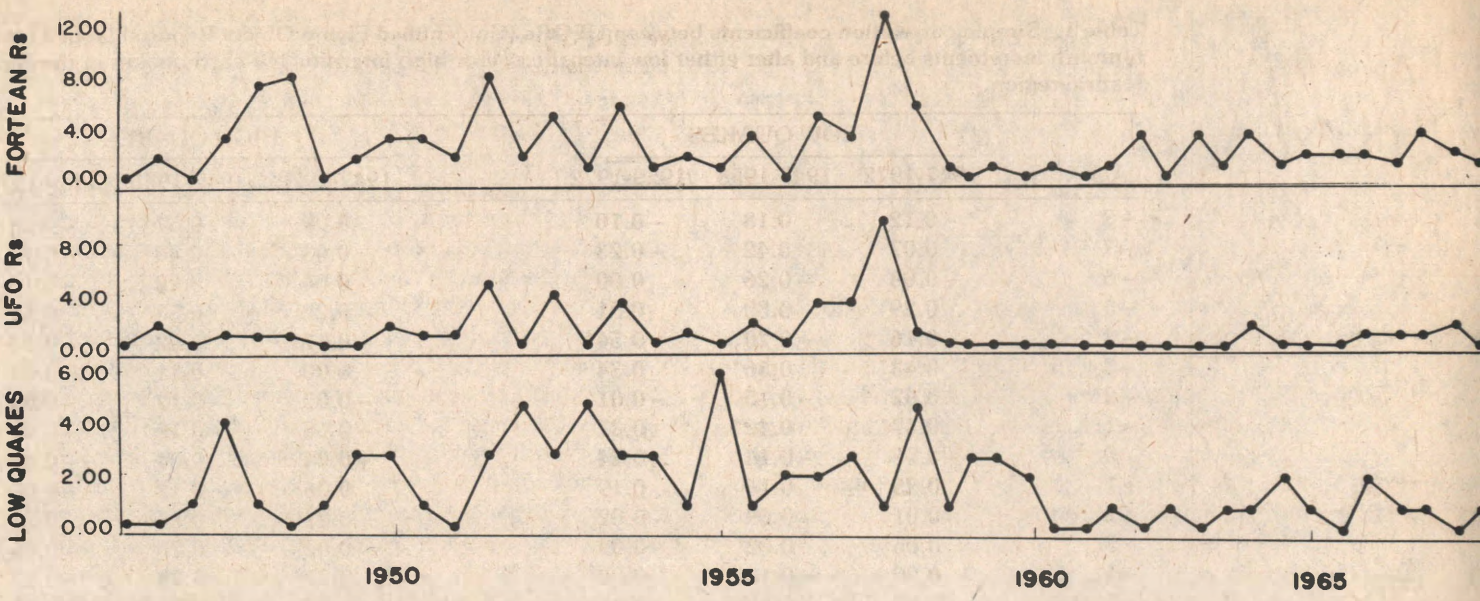


Figure 1. Total numbers of all Fortean events, UFORs (UFO reports) and low-intensity (V or less MM) 6-month period (January-June and July-December) in six states surrounding the New Madrid region for the

one interval. This would occur, if some class of Fortean events paired, for example, in a sinusoidal (or trigonometric) manner with a source process. In this situation, for example, two non-adjacent lags of the variable could be significantly associated with the process even though the two lags are themselves not highly intercorrelated.

To investigate this possibility, completely separate series of analyses (for both the 6-month and 1-year interval data) were concluded which involved six independent variables. The first two lags from each variable (either three Fortean variables when predicting quakes or two Fortean variables and one quake when predicting UFORs) were used to obtain the multiple r. The multiple rs from the six variable equations were compared with the multiple rs from the three variable equations to determine whether the addition of the extra lag from each variable significantly altered the amount of variability accounted for by the equation.

All multiple regressions were computed by the REGRESSION subprogram of SPSS. Residuals (to determine if any cases significantly deviated from the predicted values), Durbin-Watson tests and all relevant multiple regression data were calculated within this program. The correlation matrix of simple rs was used to determine the existence of any multicollinearity (high intercorrelations, e.g., 0.6 or greater among the independent variables in any of the equations).

As a control against the possible confounding contributions of temporal factors to numbers of earthquakes, three other earthquake categories were constructed: NUMMO, MAXMO and EPICE. NUMMO involved the maximum number of months within which at least one seismic event (of any intensity) occurred while MAXMO was a measure of the maximum number of seismic events within the most active month for that interval. EPICE was merely the number of seismic events that occurred within the New Madrid region since the outer fringes of the states (especially Kentucky and Tennessee, where the eastern portions may belong to another seismic region) were influenced by quakes from other sectors.

As an independent verification for optimal lags and variables to predict UFORs or earthquakes, discriminant analyses were calculated. The 15 intervals of the greatest earthquake or UFO activity and the 15 intervals of the least earthquake or UFOR were discriminated with all lags from the other variables in the calculation. Discriminant functions were then checked for conformity with the results from the multiple regression analyses.

To date, most serious researchers have used simple bivariate analyses. Even in more sophisticated instances, they have still used absolute measures. The possibility that more accurate predictions could be determined by analyzing variables that indicated change or percent alteration has not been pursued.

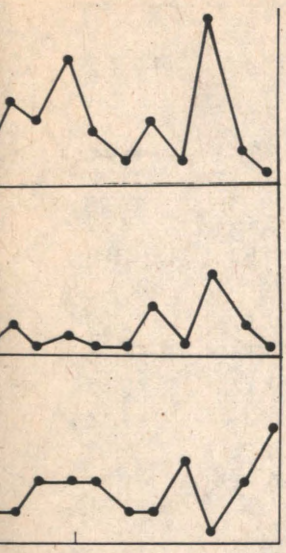
Consequently, using COMPUTE options within the SPSS software, two measures of change: (1) deviation from the mean of the population, and (2) percent alteration from the previous time increment, were calculated for UFORs and earthquakes only. (The other categories were considered to have too small a range for meaningful data.) A deviation from the mean category (AVUFOR) was used by subtracting each UFOR or quake measure from the mean of the total 62 months, divided by the mean of the total 62 months and then multiplied by 100. The measure of change in the time (UFORLA) was calculated by subtracting the given measure for a variable from its measure in the previous lag, dividing by the previous lag and multiplying by 100. This manipulation gives a measure (in percent) of the increase or decrease of UFORs or quakes with respect to the previous time increment.

Results

Both six-month and one-year interval analyses displayed reliable and powerful relationships between the Fortean classes and earthquake activity. Figure 1 displays the temporal stream, in six month intervals, for multiple UFO reports (UFORs), low-level (IV-V or less MM) earthquakes and total (TOTAL) Fortean events (the sum of all classes). Even visually, the relationship between earthquake numbers and UFORs is evident.

Bivariate Analyses

Table 1 shows the simple rs between $\leqslant$ IV-V and $\geqslant$ VI quakes when UFO numbers per 6 month increments are lagged 0 to 8 increments behind (4 years) and 0 to 8 increments after the earthquake sequence. As an internal check for consistency



1970

nquakes per
1946-1973.

Table 1. Simple correlation coefficients between UFORs (Unidentified Flying Object Reports) lagged for 8 6-month increments before and after either low intensity ≤V or high intensity >V earthquakes in the New Madrid region.

	LOW QUAKES			HIGH QUAKES		
LAG	1947-1972	1947-1958	1959-1972	1947-1972	1947-1958	1959-1972
-8	-0.12	0.18	-0.10	0.09	0.57*	-0.08
-7	0.07	0.42*	-0.23	0.03	0.40	-0.10
-6	-0.08	-0.26	0.00	0.04	0.20	-0.15
-5	0.29	0.30	0.31	0.22	0.53*	0.12
-4	0.16	-0.20	0.54*	-0.17	0.02	-0.13
-3	0.43*	0.56*	0.34	0.00	0.11	-0.04
-2	0.02	-0.15	-0.01	-0.07	-0.12	-0.07
-1	0.47*	0.42*	0.37	-0.16	-0.18	-0.09
0	-0.05	-0.14	-0.24	-0.04	0.01	-0.01
+1	0.25	0.16	0.19	0.06	0.12	0.09
+2	0.01	-0.09	-0.02	0.21	0.34	0.23
+3	0.06	0.02	-0.09	0.02	0.20	-0.06
+4	0.00	-0.12	-0.02	0.21	0.29	0.27
+5	0.28	0.33	0.01	0.03	0.36	-0.13
+6	-0.02	-0.15	0.01	-0.04	-0.00	0.04
+7	0.05	0.10	-0.24	0.13	0.41*	0.14
+8	0.07	0.21	-0.23	0.28	0.33	0.05

* $p < .01$

and to control for the gradual alteration in the absolute number of UFORs (population "drift") during the 1950s, separate correlations are reported for the intervals 1947-1958 and 1959 to 1972. The magnitude of the correlations did not change appreciably (not more than 0.05 for a given lag) when the raw data including extreme values were used.

As can be seen in Table 1, the majority of significant correlations occurred with negative lags, that is, with UFORs during intervals before low-intensity earthquake measures. Similar to the UFOCAT data[3], earthquake numbers within six-month increments increased following increased UFOR activity within the previous six-month intervals. In addition, the New Madrid area also showed significant correlations between earthquake numbers and the number of UFORs during the previous 3 or 4 lagged intervals, that is, 1.5 to 2.0 years before the observed seismic interval.

The higher intensity quakes (VI or greater) demonstrated less consistent correlations with UFORs. Only the earlier interval demonstrated significant bivariate correlations. Interestingly, these correlations involved UFORs during intervals that were even *before* the lags associated with lower intensity quakes.

Bivariate correlations (−8 to +8 lags) between the other Fortean classes and low or high magnitude earthquakes displayed less systematic variations. Both the PKOBJ and the PKORG classes showed highest correlations with lags −6 to −8 (3rd to 4th years) before the high intensity activity only. All correlations were positive and ranged from 0.45 to 0.60. (Kendall's Tau did not display coefficients that were disparate from those obtained by Pearson's r.)

The animal categories did not belong to the same variation pattern as the other three Fortean classes. Not only did the animal class occupy a separate factor (when factor analyses were completed in earlier studies), but the relationship with earthquake numbers is reversed in both time and polarity. Animal categories, even with a variety of data manipulations to accommodate the extreme values and cluster-effects, consistently demonstrated small (0.40) negative correlations with earthquake numbers for the six-month intervals before, during and after increased earthquake activity. The only positive correlations occurred when animal numbers were lagged two years after the increased activity. (Stated alternatively, as the tendency for earthquake numbers increased, the number of animal reports decreased, quite unlike the other three classes.)

Multiple Regression: Six-Month Intervals

The major results of the multiple regression analyses (both 3 and 6 variables) for predicting earthquakes or for predicting UFORs are shown in Tables 2 and 3, respectively. The numbers beside each of the variables in the equation, for example, UFOR-3, ANIMA-3, FORCE-3, refer to the direction and number of lags. In the former three instances, this indicates 3 lags before the occurrence of the quake series or (3 × 6 months per interval) one to 1.5 years before the low-intensity quake occurrences. Multiple r (MR), multiple r-squared or "explained" variance (RSQ), the change in RSQ given by each variable as it enters (RSQch), the simple correlation coefficient (r) for each variable, the slope (B), the standard error for B (S.E.B.) and the F value are also given.

To facilitate understanding, the first prediction (LOWQU) will be explained. According to this equation, the first variable to be selected in the stepwise procedure was UFORs-3 (that is, the number of UFORs 1.5 years before each temporal increment of the LOWQU numbers). The simple correlation (r) between LOWQU and UFORS-3 was +0.58, which is quite impressive considering the data. The B value or slope indicates that for every one change (increase or decrease) in one UFOR event reported, there is a change (increase or decrease, respectively) in 0.61 quakes 3 lags later (about 1.5 years later). Alternatively, one could say that for every 10 UFORs reported in a given 6-month increment, there should be an increase of 6.1, V or less intensity earthquakes within the next

Table 2. Summary of multiple regression analyses with six month interval data to predict low ($\leq$V) or high ($>$V) intensity earthquakes in the New Madrid region using optimal lags of three Fortean classes.

Dependent	Independent Variables	MR	RSQ	RSQch	r	B	SEB	F*
LOWQU	UFORS -3	0.58	0.33	0.33	0.58	0.61	0.14	18.77
	ANIMA -3	0.63	0.40	0.06	0.22	0.32	0.15	4.67
	FORCE -3	0.64	0.41	0.01	0.25	0.29	0.27	1.09
LOWQU	UFORS -3	0.58	0.33	0.33	0.58	0.26	0.14	3.08
	UFORS -1	0.66	0.44	0.10	0.52	0.56	0.13	18.25
	ANIMA -3	0.71	0.50	0.06	0.22	0.36	0.12	8.57
	FORCE -3	0.75	0.56	0.06	0.24	0.76	0.26	8.57
	ANIMA -5	0.79	0.62	0.06	-0.15	-0.28	0.12	5.03
	FORCE -1	0.80	0.63	0.01	0.27	0.28	0.24	1.32
HIGHQ	FORCE -7	0.40	0.16	0.16	0.40	0.55	0.14	14.70
	UFORS -5	0.56	0.31	0.15	0.30	0.20	0.07	7.15
	ANIMA +6	0.64	0.41	0.10	0.35	0.22	0.08	6.89
HIGHQ	FORCE -7	0.40	0.16	0.16	0.40	0.66	0.14	21.55
	UFORS -5	0.56	0.31	0.15	0.30	0.29	0.08	13.81
	ANIMA +6	0.64	0.41	0.10	0.35	0.24	0.07	9.34
	ANIMA +3	0.70	0.49	0.07	0.22	0.23	0.08	7.70
	UFORS -3	0.72	0.52	0.03	0.01	-0.15	0.07	3.90
	FORCE -6	0.74	0.56	0.04	0.10	-0.23	0.14	2.80

* F greater than 6.0, $p < .01$

Table 3. Summary of multiple regression analyses with six month interval data to predict UFORs (Unidentified Flying Object or Odd/Luminosity Reports) in the New Madrid region using optimal lags of either low or high intensity earthquakes and two Fortean classes.

Dependent	Independent Variables	MR	RSQ	RSQch	r	B	SEB	F*
UFORS	LOWQU +3	0.58	0.34	0.34	0.58	0.54	0.12	18.29
	FORCE -2	0.62	0.38	0.04	-0.23	-0.39	0.24	2.67
	ANIMA -4	0.62	0.38	0.00	0.20	0.29	0.15	0.04
UFORS	LOWQU +3	0.58	0.34	0.34	0.58	0.35	0.11	8.58
	LOWQU +1	0.67	0.45	0.11	0.52	0.48	0.11	17.00
	FORCE -2	0.74	0.55	0.10	-0.23	-0.63	0.21	8.92
	FORCE +8	0.75	0.57	0.02	-0.09	-0.25	0.21	1.30
	ANIMA -4	0.77	0.59	0.02	0.20	0.17	0.13	1.69
	ANIMA +6	0.78	0.60	0.00	-0.02	0.11	0.13	0.78
UFORS	FORCE +2	0.40	0.16	0.16	0.40	0.76	0.27	7.78
	HIGHQ +5	0.47	0.22	0.06	0.30	0.41	0.25	2.86
	ANIMA +4	0.51	0.27	0.04	-0.15	-0.27	0.18	2.22
UFORS	FORCE +2	0.40	0.16	0.16	0.40	0.10	0.26	14.22
	FORCE +0	0.49	0.24	0.08	0.21	0.47	0.24	3.65
	HIGHQ +5	0.55	0.30	0.06	0.31	0.48	0.24	4.00
	HIGHQ -4	0.60	0.36	0.06	0.16	0.42	0.24	2.85
	ANIMA +4	0.63	0.40	0.04	-0.15	-0.35	0.17	3.94
	ANIMA -5	0.66	0.44	0.04	-0.06	-0.24	0.15	2.40

* F greater than 6.0, $p < .01$

1.01 to 1.5 years, within the states surrounding the New Madrid region.

The standard error of B (S.E.B.) can be used by experienced researchers to determine the confidence intervals around the regression lines and prediction estimates; essentially, it is a measure of variability. The F value is a measure of the amount of variance accommodated by the variable with respect to the variance within the data. The asterisks refer to p values, that is, estimates that the F value could occur by chance. P values of less than .001 indicate that the probability is less than 1 in 1000 that the correlation (or F value) would occur by chance alone.

In the first equation, the contribution of UFORS-3 to predicting low-intensity earthquakes was very significant statistically ($F = 18.77$, $df = 1,40$). The 6% change in RSQ from ANIMA-3 is marginally significant ($F = 4.67$, $df = 2,39$) while the contribution of the FORCE variable was trivial. On the other hand, the FORCE variable contributed quite significantly to the equations predicting numbers of high-intensity quakes ($F = 14.70$ and 21.55, $df = 1,40$, for the 3 and 6 variable equations, respectively).

A number of clear patterns become obvious. First, even though equal polarities for each variable could have entered an equation, the predominant lags selected were negative for UFORs and FORCE variables. Only the ANIMA variable demonstrated significant lags after the occurrence of quakes. In summary, one can conclude that UFORs and FORCE events tend to occur before earthquakes.

The second obvious pattern is the difference between the intensity of the lags and the variable that entered first into the equation for each (intensity) class of earthquake. UFORs either 3 lags (1.5 years) or 1 lag (6 months) before the V or less quakes appear to be moderately powerful predictors of the later events. ANIMA and FORCE variables contributed much less than the UFORs to this prediction.

On the other hand, UFORs appear less important for the high-intensity quake equations. In both instances, FORCE lag -7 (-3.5 years before) was most correlated with later quake occurrences. When UFORs did enter the equation, they were lagged -5 (-2.5 years), much longer than for the low-intensity quakes, before the occurrence of the high-intensity quakes.

Quite clearly, by knowing the numbers of UFOR events, ANIMA observations and FORCE occurrences in the New Madrid region, one can account for between 41% to 63% of the variance in earthquake numbers during the next one or two years. The most powerful lag-variable for low-intensity quakes appeared one to 1.5 years before, although the statistical lag (6 months before) was introduced into the six variable equation.

Intercorrelations between independent variables in the equation were surprisingly low (0.4 or less). Even intercorrelation between lags of the same variable (e.g., UFOR -3 with UFOR $-1 = +0.39$) did not display excessive values. The Durbin-Watson tests for the four equations were: 1.77, 2.00, 1.67, and 1.47, respectively. Neither the substitution by NUMMO, MAXMO, nor EPICE appreciably altered the multiple r from those obtained by LOWQU (or HIGHQ where appropriate). (QUAKEs, loaded by LOWQUs, did not change the relationship appreciably.)

Predictions of UFORs from the two Fortean classes and numbers of either the low- or high-intensity quakes demonstrated a similar relationship (Table 3). Again the strongest relationship (highest F and largest RSQch values) occurred between the numbers of low-intensity quakes and numbers of UFORs. In both the 3 and 6 variable equations, only the LOWQU consistently contributed to the prediction of UFORs; neither the FORCE nor the ANIMA variables contributed to any large degree, although their contribution was significant at marginal statistical levels. Not surprisingly, the relationship between UFORs and LOWQU was the mirror image. UFORs were most correlated with quakes occurring either 1 or 3 lags later.

When LOWQUs were not in the equation but were replaced by HIGHQ, the selection of both FORCE and ANIMA lags was modified. As expected, HIGHQ did not really contribute in any significant manner to the prediction of UFORs. In fact, only the FORCE variable was the highest single contributor, although the lag for this variable is quite different than for the previous equations.

The limited multiple regressions for the change variables: (1) deviation (above or below) the mean for the population, (2) and percent alteration from the previous lag, were not impressive. These simple analyses did not account for more of the variance than the more detailed analyses involved with absolute numbers of observations. The optimal two lags to predict the AVLOW variable were AVUFOR-3 and AVUFOR-1, with multiple rs of 0.54 and 0.60, respectively. Other lags of this variable were not significant statistically. The slope coefficients indicated that for every unit deviation of UFORs around the mean (increase or decrease), the number of low-intensity earthquakes changed by 0.4 units 1 lag to 3 lags later.

The percent alteration involving lags was less productive. With the change (in percent) of earthquakes as the dependent variable, UFORLA-3 and UFORLA-2 were the first to enter the equation with a cumulative r of 0.37 and 0.38, respectively. Although both change variables entered UFORs at approximately the same lags and the same direction (always *before* the earthquakes), the amount of explained variance did not exceed the primary analyses.

About the Author

For Dr. Michael A. Persinger 1980 was a very good year. Almost coincident with his 35th birthday was his appointment as full professor of psychology at Laurentian University, Sudbury, Ontario, Canada. He had come there from Winnipeg in 1971, having taken his Ph.D. at the University of Manitoba. At Laurentian he had risen to associate from assistant professor of psychology in 1975.

Dr. Persinger is the author, co-author or editor of a number of books and more than 50 articles and papers published in various academic journals. Most widely quoted is a book he co-authored in 1977 with G. F. Lafreniere, *Space-time Transients and Unusual Events*, published by Nelson-Hall, Chicago. Also in 1977 Dr. Persinger completed a lecture series on experimental psychology for Canadian television's "University of the Air."

A member of SITU's Scientific Advisory Board since 1978, Dr. Persinger gained plaudits from readers for his authoritative "Prediction of Fortean Event Reports from Population and Earthquake Numbers," published in the Fall 1979 issue of *Pursuit* (Vol. 12, No. 4).

Table 4. Summary of multiple regression analyses with one year interval data to predict either UFORs (unidentified flying object/odd luminous displays) or low (V or less) or high (VI or more) intensity earthquakes using optimal lags from various combinations of Fortean or earthquake events within the New Madrid region for the years 1942 and 1972.

Dependent	Independent Variable	MR	RSQ	RSQch	r	B	SEB	F*
UFORS	LOWQU +2	0.76	0.57	0.57	0.76	0.40	0.08	25.10
	FORCE +1	0.84	0.71	0.13	0.63	0.76	0.17	20.00
	ANIMA +2	0.90	0.82	0.11	−0.32	−0.38	0.11	11.48
UFORS	FORCE +1	0.63	0.40	0.40	0.63	1.10	0.22	22.95
	ANIMA +2	0.76	0.58	0.18	−0.32	−0.54	0.17	10.42
	HIGHQ −1	0.78	0.61	0.03	0.11	0.23	0.18	1.64
LOWQU	UFORS −2	0.73	0.53	0.53	0.73	0.87	0.17	24.37
	FORCE (0)	0.78	0.60	0.07	0.42	0.80	0.29	7.73
	ANIMA +1	0.83	0.70	0.10	−0.23	−0.54	0.22	6.15
HIGHQ	FORCE −3	0.56	0.31	0.31	0.56	0.89	0.23	15.51
	ANIMA +1	0.66	0.44	0.12	0.07	0.42	0.18	5.11
	UFORS +1	0.68	0.46	0.02	0.11	0.12	0.13	0.80

* F greater than 7.0, $p < .01$

Multiple Regression: One-Year Intervals

Summaries of the results from the multiple regression analyses for the one-year increment data (23 years) are presented in Table 4. The optimal lag of each variable that best altered the multiple r^2 (the amount of variance explained) for the prediction of the dependent variable is also shown. For comparison, UFORs were the dependent variable in some analyses while the different intensity earthquake numbers were the dependent variables in other analyses.

For example, the first analyses of UFORs indicated that low-magnitude earthquakes (IV-V or less) two lags (two years) after the UFORs were the most powerful single bivariate correlate. The B or slope value indicated that for every one increase in earthquake number, there was an 0.40 increase in UFORs. The S.E.B. (standard error of B) was quite small resulting in a significant ($p < .001$) F value (25.10, df = 1,21).

The next variable to enter was FORCE events of the year after the UFORs. Although the change in r^2 is 13% compared to the low quakes' 56%, the F value is still significant. Since some of the bivariate correlation between UFORs and FORCE events ($r = 0.63$) was associated with a weak but significant correlation between FORCE events and low-magnitude earthquakes, the net increase in r^2 was not merely a simple addition.

Finally, the last variable to enter was ANIMA sightings two lags after the reference earthquake activity. This variable demonstrated a negative correlation with UFORs (a typical relationship for this measure), yet was still sufficient to increase the amount of explained variance in UFORs. Although the r^2 change was only 11%, the effect was statistically significant ($F = 11.48$).

The contribution of FORCE events and ANIMA sightings to UFORs is maintained when high-intensity quakes rather than low-intensity quakes are entered into the equation. Both FORCE events of the following year and animal events of the two years later can accommodate 58% of the variance in UFORs. High-intensity quakes did not contribute any significant effect.

Predicting earthquakes from the three classes of odd events, not surprising, projected a similar profile. Years with increased low magnitude earthquake numbers were preceded two years before (lag of −2) by increased UFORs (positive correlation and positive slope). Increased FORCE events were evident within years of increased seismic activity while a decrease in animal reports occurred the following years.

Since the higher magnitude quakes did not contribute in any significant manner to UFORs, one is not really surprised that the variance accounted for by the Fortean classes was not impressive (46%), compared to the other relationships. Although UFORs did not contribute, it is important to realize that FORCE events lagged by *three years* did contribute in a very significant manner.

Multicolinearity between the independent variables of each analysis was not apparent. All intercorrelations, except between force and low quakes (0.40) in the prediction of UFORs were less than 0.20. Durbin-Watson tests for serial correlation indicated that adjacent cases (time increments) approached independence. For the four equations demonstrated in Table 3: UFORS, UFORS, LOWQU, and HIGHQ, the quotients were: 1.76, 1.51, 1.47, and 2.49.

Decomposition of the FORCE variable to PKORG and PKOBJ (which in the year interval data range from 0 to 2 per interval), did not appreciably alter the results. PKORG tended to enter at earlier lags (before quakes) than did the PKOBJ data. However, the differences were usually only 1 lag. Inclusion of raw data or recodes for the extreme values did not statistically alter the order of variable entry or the amount of variance accommodated by the equations.

Although one can appreciate the theoretical importance of partitioning data into different classes[16] such as FORCE, ANIMA, and UFOR, in order to accommodate different optimal lags, simple summation of all Fortean events within the same interval could achieve comparable correlations with earthquake measures. As a test of this possibility, the most optimal and two most optimal lags for TOTAL (of all Fortean) events were introduced into equations in which LOWQU and

HIGHQ were the dependent measures. For the simple r model, LOWQU and TOTAL-2 were correlated +0.55 while HIGHQ and TOTAL-2 were correlated −0.38. For the two most appropriate lags, the results were LOWQU with TOTAL-2 and TOTAL-1 (multiple r of 0.75) and HIGHQ with TOTAL-1 and TOTAL +3 (multiple r of 0.45).

Discussion

The data analyses clearly demonstrated strong relationships between UFORs (unidentified flying object/odd luminous displays) and earthquake numbers within the New Madrid region between 1943 and 1973. In both the 6-month and one-year interval data, UFOR activity changed most consistently during the one- to two-year period *before* alterations in low-intensity earthquake (V or less MM) activity. Using the UFOR data only, one can account for between 30% and 57% of the variance in these earthquake numbers.

More precise analyses indicated that alterations in UFOR reports during the previous 6 month interval and 1.01 to 1.5 year interval were the best predictors of low-intensity earthquake activity. This basic relationship held for both the 6-month and one-year interval data. It was also evident when UFORs were used as the dependent (the predicted) variable rather than low earthquake intensities.

The asymmetric temporal relationship between UFORs and low-intensity earthquakes in the New Madrid region replicates patterns reported for a different data set[3] from all of the central and eastern U.S.A. Since an equal number of lags for UFORs occurring both before and after the reference quake intervals were evaluated, the potency of the relationship is emphasized. Increased UFORs reliably *preceded* increased low-intensity earthquake activity.

The actual time between the increase (or decrease) in UFOR reports and the increase (or decrease) in the frequency of low-intensity earthquakes must still be determined and is limited by the interval of analyses. For the 6 month analyses, one cannot differentiate estimates between a few days and six months. For the one year data, one can only estimate in orders of whole years.

In principle, however, the time between an increase in UFORs and the actual earthquake should reflect its potential intensity (and energy) with respect to the region's capacity to accommodate the accumulating strain. Fort's data are replete with instances of blinding glares in the sky followed a few seconds to minutes later by a very local shock. Other data[4] indicate the occurrence of UFO-like luminosities several days before local but more intense shocks.

If UFORs precede low-intensity quakes by a few months to about a year, then UFORs would be expected to precede higher intensity quakes by a longer period of time. The present analyses indicated that UFORs, when they were correlated with high-intensity quakes, preceded high-intensity quakes by more than 2 years (with the six month interval data). However, these time parameters should be viewed cautiously since they have been generated from intensity measures associated with damage rather than estimates of energy released (magnitude measurements).

Individually, the FORCE and ANIMA variables did not contribute as much understanding to the variance in UFOR numbers as did low-intensity earthquake numbers. Nonetheless, the addition of these variables to the equation allowed an 82% explanation of the UFOR events and a 70% explanation for the low-intensity earthquake events for the year interval data. The amount of variance accommodated by these variables using the 6 month interval ranged from 40% to 60%.

The association between the FORCE variable and UFORs or earthquakes was not as systematic as between the latter two variables. In the year data, FORCE events tended to increase concurrently with or after UFORs but before low-intensity quakes. With the 6 month interval data, FORCE events tended to precede or be concurrent with UFORs. In both instances, however, optimal FORCE lags preceded earthquake activity.

The high-intensity earthquakes (VI or greater MM) were associated with a different pattern. Except for the very long lags before increases in high-intensity quakes, UFORs were not significantly associated with these events. Interestingly, the FORCE variable was *most* correlated with the later occurrence of high-intensity quakes. In fact, when the FORCE variable was present, UFORs dropped out of the equations.

This association, as indicated by both simple correlation and multivariate analyses, supports (as do Fort's data patterns) the existence of a recondite interaction between poltergeist-like activities (especially) and UFO events. This analysis also indicated that both UFOR and FORCE variables, at least in the New Madrid region, are correlated with earthquake activity.

Reports of odd animals, primarily the "big cat" observations, did not correlate in a simple manner with earthquake intensity. Simple correlations were primarily negative and often lagged after the quake occurrence. However, especially in the year analyses, they did contribute in a consistently significant (although complicated) way to the variance associated with either UFO reports or earthquake activity.

A most conspicuous characteristic of the FORCE variable with high-intensity quakes was the very long lag. In both the 6 month and one year interval data, the increase in FORCE events preceded the increased high-intensity quakes by *three to four* years! Since four-year lags were the maximum considered in the present analysis, one must still consider the possibility of still longer lags.

Resolution of this discrepancy between the variables involved with the low-intensity and high-intensity quakes cannot be completed with the present analysis. If UFORs precede increased bouts of FORCE events, for example, then UFORs in this region would optimally precede VI or greater quakes by more than three or four years. The occasionally weak correlations with UFORs would only be secondary effects.

An earthquake intensity-dependent latency effect for optimal UFO lags may not be the only pattern by which the intensity of the consequent quake could be indicated. In the present analysis, the possible relationship between the intensity of UFO displays and the intensity of the quakes along some energetic scale was not investigated. Measurements of UFO intensity, such as peak frequencies or spatial densities, were not considered.

In principle, depending upon the local geoarchitecture, one could also expect the *six* month period preceding very large quakes to be characterized by marked, increased frequencies of strong UFO phenomena over much larger areas. An event observed by people in dozens of cities and several adjacent states or countries, such as the recent June (1980) display over several countries in South America, could be considered an antecedent to an especially large seismic event. Such dynamics must still be resolved.

The present study is limited by the nature of the absolute values of the data. Although the density and distribution of the data are acceptable to the analytical techniques selected, the results cannot be generalized outside the sample. Since one assumes that the *Fate* reports did not saturate the total number of reports that did occur, one cannot use the absolute in UFOR numbers as precise predictors of the number of earthquakes when using other sets of UFOR data that contain different sampling procedures.

Alternative forms of UFOR data are preferable. Reliable estimates of the change (in percent) of UFORs (or any other Fortean measure) with respect to change (in percent) in local earthquake measures would allow a more general application of the relationship. One could then apply these functional equations to a given region after accommodating the "constants" of that region. If the model is reliable, this application should be a matter of computer time.

The physical characteristics of the tectonic-coupled energies and the geometry within which they are applied are still not clear. Routine electric and electromagnetic forms of energy do comprise a significant portion of UFOR and FORCE events, for example, but they do not accommodate all of the variance. If the source energy is coupled with accumulating strain, we must still determine by what mechanisms household objects move, organisms are peculiarly damaged, or the odd lights are maintained in context of these energies.

Direct effects of these stimuli upon the human brain will remain a serious confounding variable. Since memory, perception, and even thinking are coupled closely with relatively weak but complex electrical patterns in the brain, direct assault by intense and complex electromagnetic-like fields would distort these operations. Consequent experiences would be expected to be as varied and as unusual as the potential combinations of electrical patterns that compose brain activity.

Since the person uses brain processes to determine environmental events, changes in these processes would not be discriminable unless a permanent objective referent was available, such as a photograph. The person would not be lying in a technical sense. He or she would be responding to the patterns of electrical inputs that had been modified by the external electromagnetic-like field. Unless knocked unconscious by crude and intense currents, the details of the perception and/or the memory would be considered unusual but true.

Exclusion of Fortean or UFOR data on the basis of observational artifacts (directly induced by unspecified EM-like fields) or by more conventional correlates (belief, faith, abnormal behavior) would not be justified on a data basis at this time. Even though people of the same culture share labels that tend to mask the variation in daily stimulus details, there is still cross-cultural and historical evidence for the occurrence of Fortean events. They protrude, often in an embarrassing manner, from verbal data.

By using a multivariate approach to Fortean events, one can obtain sufficient data resolution to specifically test hypotheses generated from tractable theories. With this approach, one can actually support or negate systematic extrapolations from well-developed, internally consistent models. In this manner, the more fruitful approaches can be discriminated from the plethora of pseudotheories.

Explanations such as "other dimensions" or "hyperspace" or some related "neither-world" concept are not testable theories; they are empty entities that cannot be refuted or supported. Like the words "hell" or "heaven" they do not display characteristics that can be verified by direct or indirect challenge. Unfortunately, most support of these pseudotheories is by negation, an odd kind of default: "if any available theory cannot explain the phenomenon, then therefore, the pseudotheory has to be true."

The study of those events we call Fortean is at the most critical stage of its history. They can remain in the cherished reservoirs of unrestricted fantasy and undisciplined speculation, or they can be subjected to the detail and the precision of numerical analysis. The data available in many agencies are now sufficient in number and temporal-spatial density to allow reliable and valid results to be obtained. With present software for statistical packages and time-sharing computer options, even the young scientist has access to a field that is replete with potential discoveries.

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12. The source data included the 6,000 plus reports used for *Space-time Transients.* This source file contains all the events reported by Fort (in the four books) plus the modern organ of unusual events: *Fate.* (The excellent collections by Corliss are still in the coding process.) There is a clear hiatus of reports between 1930 (when Fort's data began to dwindle) and 1947, when *Fate* became a systematic data source of unusual events. The data were initially loaded on 80-column cards, but have now been dumped onto disk space of a DECSYSTEM 2020 computer. The basic format of each case is hour, day, month, year, city/county, state (if U.S.A.) or country (if elsewhere), continent, and a four-digit category code. The remaining 44 columns allow verbal identifications and the reference source. For example,

```
0408101857ST LOUIS MO USA      1302  LUMINOUS OBJECT SEEN/QUAKE      F406
0007081869MATTOON ILL USA      1204  OBJECTS SEEN PASSING MOON       F417
0004041948ALTON ILL USA        0613  GIANT BIRD REPORTED             FA2506
```

The first case indicates that between 0400 and 0500 hours on 8 October 1857 from St. Louis, Missouri, U.S.A., a luminous object was seen in the sky (of classification "unusual comet", "meteorite" variety, the label of the period) as reported on page 406 of Fort. The second case indicates that at some unspecified hour on 7th of August, 1869 in Mattoon, Illinois, U.S.A., objects were seen passing the moon using astronomical measurements, according to Fort, page 417. The third case indicates that at some unspecified time on the 4th of

ATLANTIS: Lost and Found Again

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Part III

As the 1970s began, so did a new age in Atlantis research. Most orthodox archeologists seemed to accept the theory that the volcanic eruption and the subsequent destruction of a Minoan Cretan city at Thera-Santorini Island in the Aegean Sea about 1450 B.C. was the source of the Atlantis legend. But a resolute minority of independent researchers continued to insist that the "real" Atlantis was in the Atlantic. Still another group felt that sunken stone structures, apparently great ruins, were evidence of an Atlantis-type civilization or colony in the Caribbean and in the Lesser Antilles.

Evidence for the third conclusion was reportedly found under shallow water off the western coast of the Bahamian island of Andros, and also at Bimini and other islands in the same archipelago, as previously discussed. In Part II of this article I told of the discovery of a large rectangular structure submerged off Andros Island, by Bob Brush and Trigg Adams in 1968. Brush, Adams and Professor J. Manson Valentine of Miami, Florida, also found two similar stone structures underwater near the first one, the smaller being 90 by 50 feet and the larger 75 by 100 feet. Later, another marine archeologist, Robert Marx, visited Andros to see if he could find similar buildings after he had visited the original sites found by Adams, Brush and Valentine.

Marx dove around the western shore of Andros and discovered not one but as many as *twelve* sunken stone structures! In his article in *Argosy* magazine Marx concluded that these structures were living quarters, but he did not offer specific evidence for such a conclusion. In 1971 Marx returned to Andros Island and reached one of the submerged buildings he claims he found there. He dug by hand for as much as seven feet into the mud and still did not reach the base of the stone wall. Even more interesting is his claim that he found artifacts that included the ceramic face of a man, a piece of carved marble, and more than twelve potsherds. He sent copies of photographs of these objects to unnamed experts. Their verdict was that the objects were not of ancient American origin but appeared to bear some resemblance to ancient Mediterranean artifacts.

A similar story was told by Alan and Sally Landsburg in their book, *In Search of Ancient Gods*. At one site west of Andros an unnamed diver found several submerged ruined buildings, according to the report. Some of the structures were a couple of hundred yards apart, others separated by

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April, 1948, near Alton, Illinois, a large (reptile-like) bird was seen according to *Fate* report 2506. The particulars of the four-digit code both complement and add details to the verbal descriptors.

13. Norman H. Nie, C. H. Hull, J. G. Jenkins, K. Steinbrenner, and D. H. Brent, *SPSS* (Statistical Packages for the Social Sciences), (New York: McGraw-Hill, 1975, 2nd edition).

14. For those interested in the technology of the data selection, SPSS software, which is a very versatile system for Fortean data analysis, was used. After the appropriate categories were recoded to allow class pooling, the data were selected from the major file and arranged temporally by using the SORT subprogram and written onto a separate file using WRITE. (Since each case contains fixed alphanumeric data, *Information* can be selected according to days, months, years, and category, recoded for state, country, continent, and still have the verbal descriptors in the remaining 44 columns to allow checks for details.) After the redundant cases had been deleted by visual inspection, the data were grouped into the various time increments. For the month intervals, for example, this was done simply by recoding the month columns (ranging from 1 to 12) so that 1, 2, 3 (January, February, March) = 1; 4, 5, 6 (April, May, June) = 2, etc. Then the CROSSTABS subprogram was used to give the occurrence-frequency of the different classes for each temporal interval for all years. These data were then placed manually (the slowest part of the operation) from these outputs onto a separate file. Routine checks for errors, etc., were always employed.

15. With this technique, one can determine the explained variance and the number of variables occurring before or after the key sequence. If the New Madrid data are like previous reports[3], then a step-wise regression model should demonstrate a preference for UFORs occurring in lags *before* the alterations in earthquake numbers. The symmetrical analysis also allows the simultaneous control for the possible small contribution, if any, from other class lags occurring after the dependent variable.

The gymnastics of the procedure are simple. Since SPSS lags only in one direction, the dependent (predicted) variable must also be lagged to allow "temporally symmetrical analyses." For example, if one is predicting UFOR4 (lagged 4 time increments from the original series), then correlation with lag = 0 to lag = 8 of QUAKES allows coefficients to be calculated for the four increments before UFOR4 (QUAKE5 to QUAKE8), the one concurrent increment (QUAKE4) *and* the four increments that come after the series (QUAKE0 to QUAKE3), for each case.

SPSS constructs lags as new variables by inserting 0s at the beginning of the case list for a variable and shifting the series of data forward by those number of 0s. Consequently, if one asks for a lag 2 of UFORs for the following series of observations (cases) of UFORs per 6 month interval: 6, 4, 12, 1, 2, 5, 5, then the new variable created (i.e., UFORs lagged 2) is 0, 0, 6, 4, 12, 1, 2, 5, and 5. When one is computing correlations with lag variables, there is (obviously) some point where the actual data terminate and the 0s are entered into the analyses. To prevent this, one merely uses the SELECT IF option to analyze only those time increments (6 months, 1 year, etc.) that do not contain the artifactual zeros. For very long lags, such as 1 to 16, one must effectively eliminate 16 cases (time increments of data). As a result, the number of feasible lags are limited by the total numbers of cases.

16. M. A. Persinger, "Prediction of Fortean Event Reports from Population and Earthquake Numbers," *Pursuit*, Fall 1979 Vol. 12, No. 4, pp. 162-174.



as much as five miles. One was 240 feet long and 80 feet wide. It was divided into three rooms with no detectable windows. Although he couldn't find the floor, which apparently was buried under the sand, the diver insisted that the limestone blocks of which the walls were composed were too big and too well fitted together to be modern Bahamian turtle pens. He added that he had dug several holes near the largest building and had found artifacts such as pottery and ceramic figures. Experts failed to identify the objects from photos sent to them by the diver, so he had the artifacts dated by chemical tests which put their age at 5000-3000 B.C. The conflict has not been resolved.

Other rectangular stone structures have been found south of Bimini. Charles Berlitz has a photograph of one in *The Bermuda Triangle.* Berlitz theorized that the submerged structure was a temple platform or dock. It is covered with marine vegetation.[5]

Stone enclosures of circular as well as rectangular configuration have been found underwater in the Bahamas. Professor Valentine wrote about a hexagonal structure near the north coast of Andros Island and included a photograph in an article in the periodical *Muse News.*[6]

Berlitz has photographs of several circular formations. In *Mysteries from Forgotten Worlds,* opposite page 134, an odd formation shaped like the number 9 is shown. It was photographed from a plane flying 500 feet over the Great Bahama Bank.

Andros Island has its share of circular enclosures. The photograph of a small circular formation appears in Berlitz's *Without a Trace.*[8] In the same book there is another photograph of a much larger circular structure composed of three concentric stone rings. If this is not a man-made formation it must be a very odd reef indeed. The same kind of stone structure was found underwater near Andros Island by Robert Brush, co-discoverer of the controversial "temple" mentioned earlier. Brush made his discovery in 1973 but it wasn't publicized until 1978 when Egerton Sykes published a drawing of it in his journal called *New World Antiquity.*[9] There is a second, smaller ring-shaped enclosure southwest of the larger one. The first has three walls of stones on one side while the second has only one ring. The drawing of the structures on the back of the magazine is based on a photograph taken from a plane flying at 1200 feet above the ocean.

One of the most exciting aspects of the sunken-ruins enigma is the possible existence of sunken pyramids in the Bahamas and adjacent regions. A stone structure may be a natural reef or a construction by indian hands, but sunken pyramids suggest two possibilities: that an ancient pre-Columbian civilization flourished in the Bahamas earlier than the earliest-known Meso-American civilizations, or that an Old World civilization related to ancient Egypt or Mesopotamia had significant contact with the Bahamas. Moreover, pyramids offer surer clues to the origin of the sunken stone structures. Though circular and rectangular stone shapes abound, they have no clear relatives in either the Old or New Worlds, but pyramids are like members of one family no matter where you find them.

I first read of the sunken-pyramid mystery in Berlitz's *Mysteries from Forgotten Worlds.*[10] On page 94 there is an account of a "step pyramid" found by a charter-boat captain at a depth of 12 fathoms. On page 95 of the same work there is an account of another sunken pyramid on the Great Bahama Bank. It is described as being flat-topped and measuring 180 x 140 feet. This pyramid is also mentioned in *The Bermuda Triangle,* but in his book Berlitz puts the location in the vicinity of Bimini. He said there were several other pyramids nearby but gave no details.

No photographs of sunken pyramids are available, but the "picture" of one came into view, quite by accident, in 1977 (see illustration, page 81). First reproduced in Berlitz's *Without a Trace,* the picture was a sonargraph "profile" drawn by a device commonly carried aboard fishing boats to find schools of fish. Much to the amazement of Capt. Don Henry, his sonar traced the outline of a huge pyramidal structure that had a base of 540 feet and a height of 420 feet. The height, Berlitz noted, was only 60 feet less than that of Egypt's Great Pyramid of Giza.

In 1975 I participated as research assistant on the Poseidia '75 expedition of Dr. David Zink to the Bimini Road. On that expedition I heard a story about a sunken pyramid from which an artifact shaped like a crystal ball was alleged to have been taken. The pyramid was said to be pointed at the top in the Egyptian style rather than flat-topped as are the Mesopotamian and Meso-American pyramids.

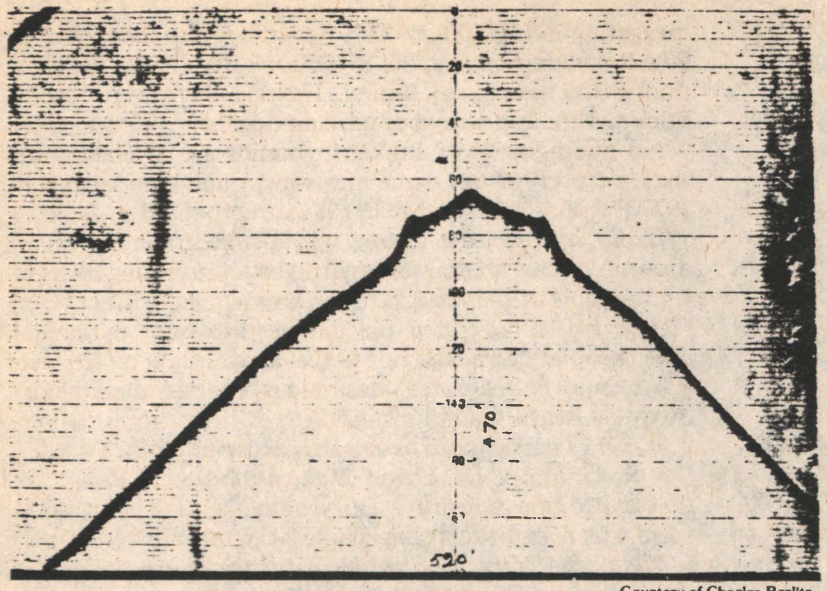
The fantastic story of Dr. Ray Brown and his pyramid must have unfolded about the same time the Zink expedition was returning from the Caribbean, although I was unaware of Dr. Brown and his discovery until I read a reprint in *The New Atlantean Journal* of an article first published in that periodical in 1975. Brown and his team of divers were at first looking for Spanish shipwrecks, the usual incentive that attracts divers and marine archeologists to the Bahamas. After poring over old manuscripts for clues to sites of sunken treasure galleons, they pinpointed a likely location, proceeded thence and dove in 130 feet of water. On the surface the visibility had been poor and it did not improve underwater; indeed, clouds of sediment seemed to have been churned up by some sort of turbulence.[11]

Suddenly there were sunbeams streaming down, not from the ocean surface but from the top of a 90-foot-tall pyramid, an Egyptian-style structure that should not have been there, yet it was! The divers swam close to investigate the incredible discovery. They found the construction to be of a marble-like stone, and it was completely bare of the coral incrustations and other marine life that usually conceal submerged objects.

Brown swam three times around the pyramid, just below the "bluish" top. The third time around he spotted a doorway. He swam through, and found himself inside a chamber with walls that rose to a peaked ceiling. Swastikas, of a kind often used by ancient peoples as religious symbols, were inscribed on the surrounding stonework. There were seven chairs, like thrones, one raised slightly above the others as if to provide for a leader. Seats ranged along the sides of the room and a shaft extended from the ceiling to some waist-high objects mounted on a pedestal. These were a pair of arms of a metallic substance and a pair of hands which held a globular object of crystalline appearance.

Thinking that he was being watched, Brown grew fearful. He felt certain the opening through which he had entered might close again, for he had not seen it on his first two tours around the outside. On the spur of the moment he plucked the crystal from the hands that held it, and swam out of the chamber. The other divers meanwhile collected various odd artifacts, some of which they thought looked like "electrical devices."

Back on their boat the divers decided to keep the tale



Courtesy of Charles Berlitz

Capt. Don Henry's "pyramid" sonargraph

secret. They were uncertain as to how the local authorities might react to their salvaging activities. Brown felt that some sort of "curse" afflicted the site and he never returned to it. Three of his divers went back on their own and it may have been their final adventure, for their boats were found drifting but no human remains were ever recovered.

Brown made his story public in March, 1975, and showed the salvaged "crystal" to the editors of *The New Atlantean Journal*. I was unable to find a sequel to this tale or any evidence of follow-up or attempt to rediscover the mysterious super-pyramid. Until investigation reopens and more evidence is produced, this chapter will remain one of the most fascinating, and most incredible, in the annals of the Atlantis search.

The pyramid stories are as intriguing as they are elusive. Even more so are stories of sunken cities. The authentication of just one would disengage some of the beach rock controversy, and it surely would change a lot of ancient history. If a sunken city were discovered anywhere in the Atlantic, geologists as well as historians would have to rewrite a good many textbooks.

In previous parts of this article I referred to the 1940s rumors of sunken cities in the Atlantic and to still earlier reports of enigmatic ruins on volcanic islands which apparently rose from the waves, then sank again. The latter were at Begames Island in the Caribbean; and near the Azores the ship *Jesmond* logged a sighting of odd ruins.

In the 1970s new reports suggested that there might be more sunken cities. One site was said to be just north of Cuba. In *Mysteries from Forgotten Worlds*[12] Berlitz wrote that a sunken citadel of marble stonework was located near Cuba, just south of the Bahamas. It covered four or five acres and there were roads leading from it into the depths. There are brief reports of sunken cities in the Caribbean. One off the coast of Haiti and another under a lake are noted without descriptive details in Berlitz's *The Mystery of Atlantis*.[13] In *Without a Trace* the same author wrote that artifacts such as statuary had been found by divers in the Bermuda area; and pilots of submarine craft had seen sunken cities there.[14]

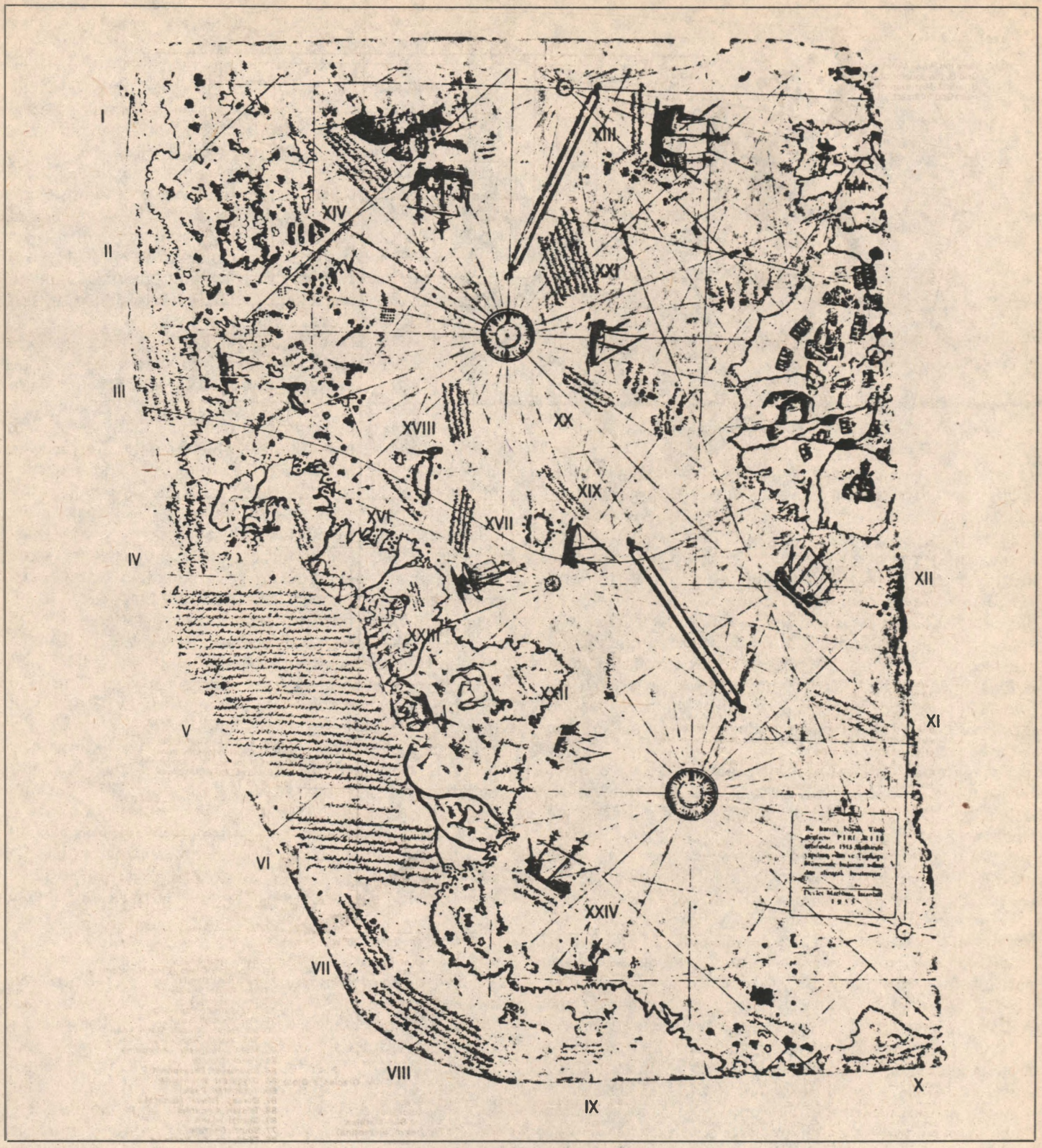
Pino Turolla, the marine archeologist, reported on arrays of pillars, some still upright, underwater in the Bahamas. These, he felt,belonged to temples or ancient cities of an Atlantis-type culture. The best-known pillar group is off Bimini Island.

But W. Harris countered, in the British scientific journal *Nature*, that the pillar array was either ballast or cargo dumped from a relatively recent shipwreck. He theorized that when the ship sank, its cargo of cement and marble fell to the sea bottom; eventually the wooden hull rotted away, leaving the stones. Harris said these were construction materials. Chemical tests of the "pillars" showed that they were composed of marble, a stone which was not native to the Bahamas but probably was quarried in Georgia or Vermont and taken aboard as cargo or ballast. The cement, also tested, was of a kind not used earlier than c. 1800.[15]

The Scientific Exploration and Archaeological Society (SEAS), an organization founded by John Gifford, Talbot Lindstrom and Steve Proctor, sponsored expeditions to Bimini in 1971, 1972 and 1979. They, too, contended that the pillars were cargo from a shipwreck of the 1800s. In an effort to gain evidence for their contention the group searched the records of Lloyds of London but found no report of any ship carrying such cargo having been wrecked in Bahamian waters during the early years of the 19th century.[16]

Pino Turolla claimed to have found other pillars, some still standing upright. One group of pillars, in a circular arrangement, was found in July 1969. It consisted of forty-four marble columns with diameters ranging from three to six feet, and three to fourteen feet in length. Dimitri Rebikoff claimed that he, too, found sunken pillars near Bimini, some sixteen feet high and still upright. The 1970 North American Rockwell expedition tried but failed to find these columns. Rebikoff then said the pillars were really somewhere else. Marx had a photograph of what was supposed to be a fallen column, but there's no telling whether it pictures an ancient artifact or a cargo item from the suppositious shipwreck.[17] Turolla advised authors Ferro and Grumley that several pillars he had found during expeditions in July-November 1969 were not cement but natural stone apparently carved by human hand. The stone was of a type found in South America and not native to the Bahama Islands.[18]

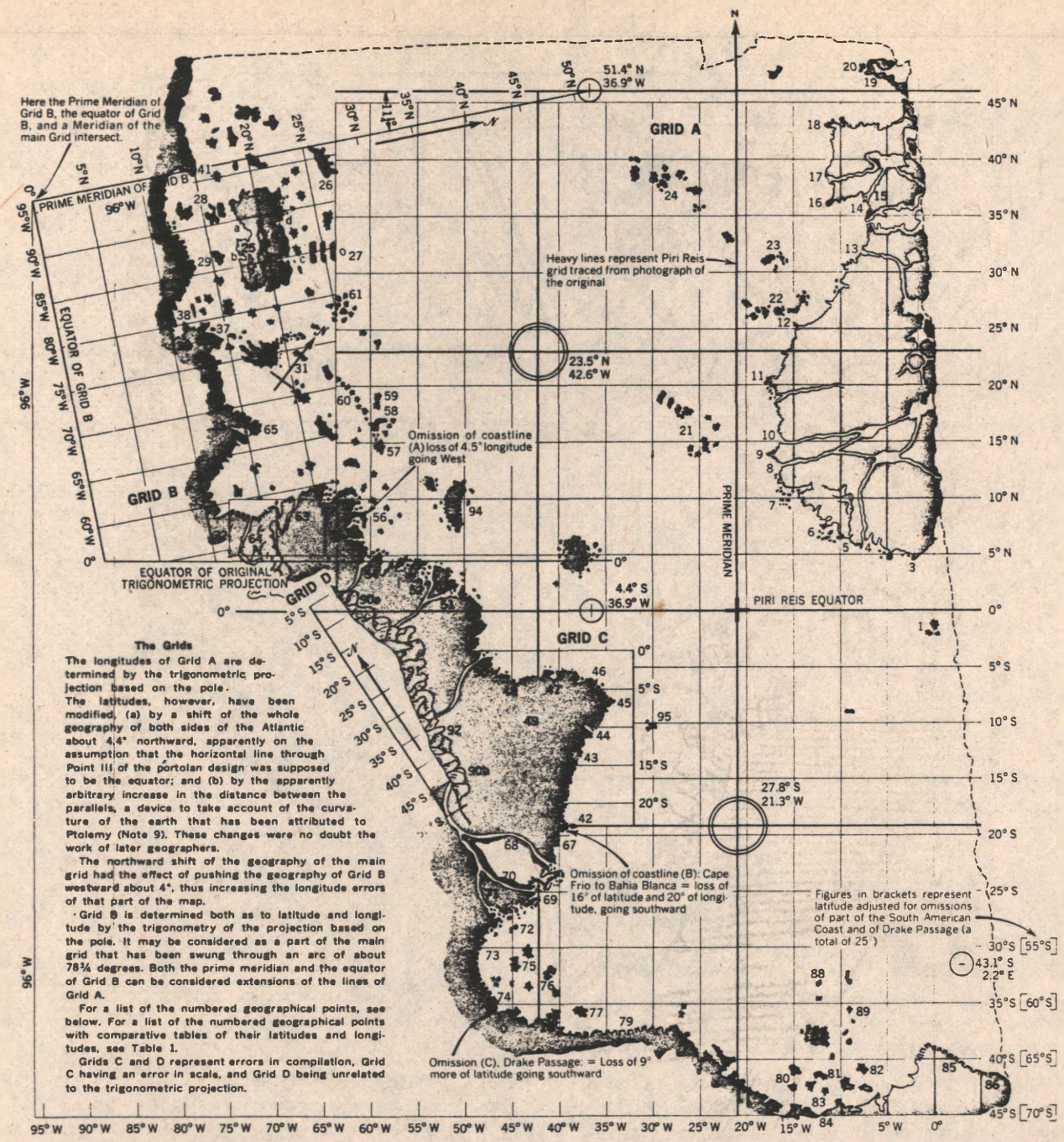
A variety of artifacts have been found underwater in the vicinity of the sunken stone structures. Besides the two large stone statues he reported were stolen by divers, Robert Marx discovered, or claimed to have discovered, pottery and a ceramic of a man's face from an underwater ruin off Andros Island. On Poseidia '75's expedition to the Bahamas Dr. Zink spotted a squarish stone block with a groove cut around its edge. This was definitely a man-made object, three inches thick and about thirty centimeters across. It was not at all like anything carved by the Lucayan Indians of the Bahamas. Six days after this find, one of the divers, Gary Varney, found another carved block which vaguely resembled an animal head. It turned out to be of marble, another example of stone which could only have come from a region far distant from the Bahamas. The block lay twenty feet underwater and was estimated to weigh about two hundred pounds. It was left on the sea bottom until lifting equipment could be obtained. During the Poseidia '77 expedition this artifact was brought to the surface by Zink and his team



The Piri Re'is map. Reproduced from *Maps of the Ancient Sea Kings* by Charles Hapgood by kind permission of Turnstone Press Limited, Wellingborough, Northamptonshire, England.

who took it to Bahamian officials for safekeeping.[19] Still, a skeptical archeologist stayed with his original contention, that the Poseidia discoveries were indeed artifactual—the remains of a shipwreck and in no way evidential of ancient construction.[20]

Speculation was diverted to a different kind of odd find when a Phoenician coin was picked up on the beach at Bimini by a fisherman who gave it to Robert Marx. The coin was bronze and dated to the fifth century B.C. There wasn't much doubt that the coin was genuine and that it had been washed up by a storm. But who knows whether the storm pulled it from some ancient site, or plucked it from the

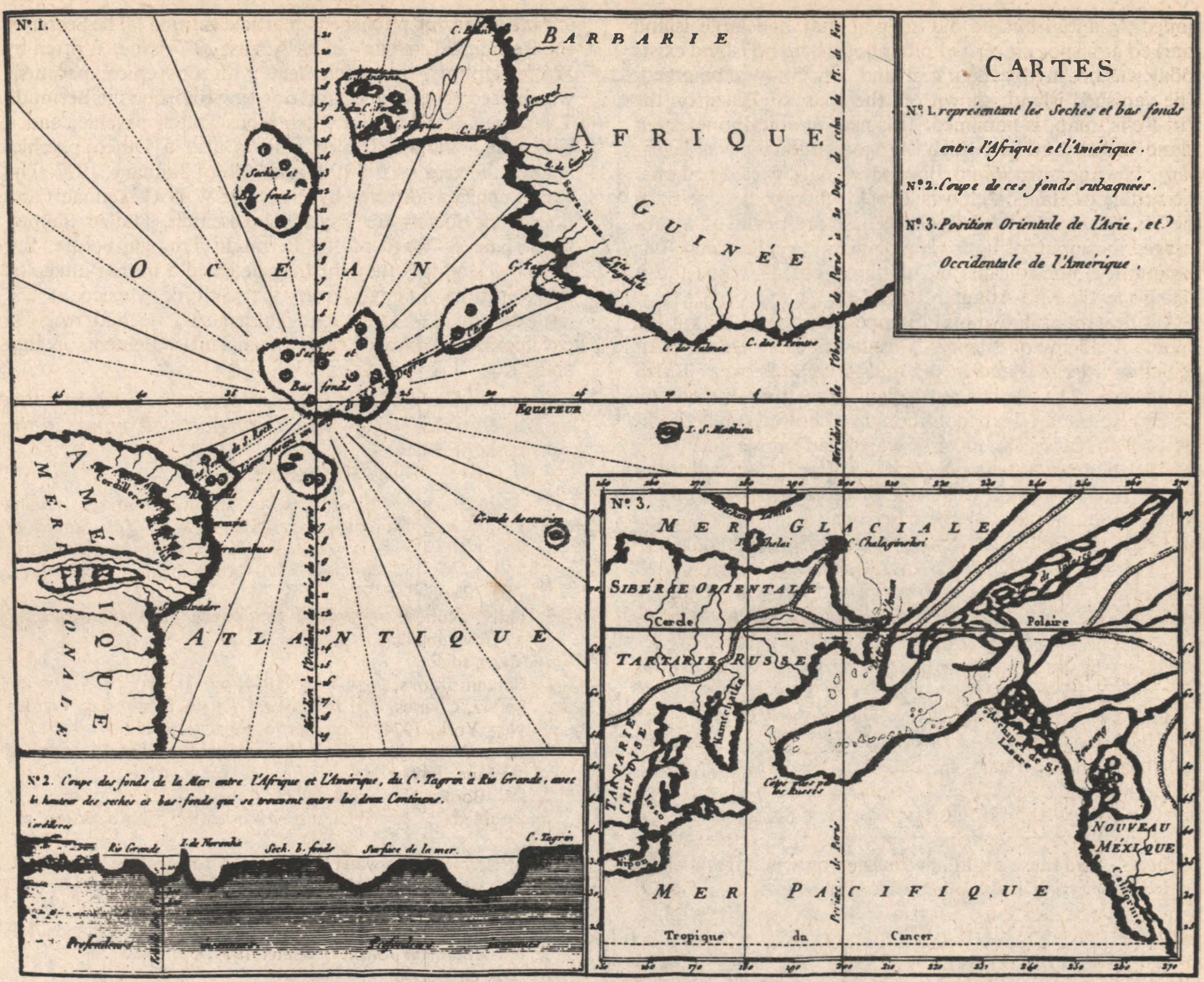


1. Annobon Islands
2. Cavally River
3. Cape Palmas
4. St. Paul River
5. Mano River
6. Freetown
7. Bijagos Islands
8. Gambia River
9. Dakar
10. Senegal River
11. Cape Blanc
12. Cape Juby
13. Sebu River
14. Gibraltar
15. Guadalquivir River
16. Cape St. Vincent
17. Tagus River
18. Cape Finisterre
19. Gironde River
20. Brest
21. Cape Verde Islands
22. The Canary Islands
23. Madeira Islands
24. The Azores
25. Cuba
(a) Gulf of Guacanayabo
(b) Guantanamo Bay
(c) Bahia de Nipe
(d) Bahia de la Gloria
(e) Camaguey Mountains
(f) Sierra Maestra Mountains
26. Andros Island
27. San Salvador (Watling)
28. Isle of Pines
29. Jamaica
30. Hispaniola (Santo Domingo, Haiti)
31. Puerto Rico
32. Rio Moroni
33. Corantijn River
34. Essequibo River
35. Orinoco River
36. Gulf of Venezuela
37. Pt. Gallinas
38. Magdalena River
39. Gulf of Uraba
40. Honduras (Cape Gracias a Dios)
41. Yucatan
42. Cape Frio
43. Salvador
44. San Francisco River
45. Recife (Pernambuco)
46. Cape Sao Rocque
47. Rio Parahyba
48. Bahia Sao Marcos
49. Serras de Gurupi, de Desordam, de Negro
50. The Amazon (No. 1) Para River
51. The Amazon (No. 2) Para River
52. The Amazon (No. 2) western mouth
53. Island of Marajo
54. Essequibo River
55. Mouths of the Orinoco
56. Peninsula of Paria
57. Martinique
58. Guadaloupe
59. Antigua
60. Leeward Islands
61. Virgin Islands
62. Gulf of Venezuela
63. Magdalena River
64. Atrato River
65. Honduras (Cape Gracias a Dios)
66. Yucatan
67. Bahia Blanca
68. Rio Colorado
69. Gulf of San Mathias
70. Rio Negro (Argentina)
71. Rio Chubua
72. Gulf of San Gorge
73. Bahia Grande
74. Cape San Diego (near the Horn)
75. Falkland Islands
76. The South Shetlands
77. South Georgia
78. The Palmer Peninsula
79. The Weddell Sea
80. Mt. Ropke, Queen Maud Land
81. The Regula Range
82. Muhlig-Hofmann Mountains
83. Penck Trough
84. Neumeyer Escarpment
85. Drygalski Mountains
86. Vorposten Peak
87. Boreas, Passat Nunataks
88. Tristan d'Acunha
89. Gough island
77. South Georgia
95. Fernando da Naronha

Grids of modern projection are laid over traced Piri Re'is map; numbers are keyed to a table to show location of significant features of terrain and ocean, and present-day population centers. Reproduced from *Maps of the Ancient Sea Kings* by Charles Hapgood by kind permission of Turnstone Press Limited, Wellingborough, Northamptonshire, England.

grave of a pre-Columbian wreck, or picked it out of a collection of ancient coins that went down with a modern ship? Who will ever know?[21]

During May, 1972 the SEAS expedition's diver Steve Proctor found a formation of large rocks extending at a sharp angle from rocky islets off the Rockwell property on Bimini to the shore, where discoloration patterns hinted at the possibility that in ancient times the "roadbed" con-



The Buache map of 1737. Reproduced from *Maps of the Ancient Sea Kings* by Charles Hapgood by kind permission of Turnstone Press Limited, Wellingborough, Northamptonshire, England.

tinued on land that is now deeply submerged beneath sand and water.[22] The SEAS people in 1979 restudied Proctor's Roadway, as the site was called. They found a worked stone with a hole in it, the hole also man-made. They noted that the roadway was composed of both large and small stones which appeared to have been shaped by men. SEAS divers Dick Goodwin and Don Gruenther found another exciting feature which cannot be dismissed as either a pile of ballast stones from a shipwreck or beach rock cracked by natural forces. This formation had stones uniquely arranged to resemble the body of a man lying prone: one large stone positioned as a head, several others in a chest-like configuration, one long horizontal stone resembling a belt, and two parallel rows of stones as legs. The feature was found in water between the Bimini Road and Proctor's Roadway, not more than three meters beneath the surface.[23]

Another peculiar type of artifact was found by Professor Valentine near a submerged stone enclosure off Andros Island. It consisted of a group of "hundreds" of stone disks or hexagons in straight lines or two parallel lines. Some of the disks were piled on the beach of a small islet, apparently by a storm. Others, still upright, went right up onto the beach, turned at right angles as if they were stone fences, and vanished into the jungle. Similar stone disks arranged in lines have been found in the Tarpon Springs area of western Florida.[24]

While some researchers thought they had found traces of Atlantis in the Bahamas and the Caribbean, others continued to look for Atlantis in the Atlantic. In 1966, for example, an Irish writer named W. G. Edwards suggested that the legendary Irish island of Tir na nOg (the Land of the Young) was related to Plato's Atlantis, and that it could have been near Madeira. He added that it had had mineral springs such as those described in Plato's account of Atlantis, and that it could have sunk in one of the earthquakes which occasionally occur at Madeira.[25]

Another interesting hypothesis was developed by Charles Hapgood. In his book, *Maps of the Ancient Sea Kings*,[26] he argued that certain medieval and Renaissance maps such as those copied by a 16th century Turkish admiral named Piri Re'is showed sunken lands and continents of the last Ice Age. The Piri Re'is maps were copies of earlier maps by Greeks or Phoenicians who themselves had copied maps from still earlier, unknown peoples. Hapgood scarcely men-

tioned Atlantis, but he did suggest that one large island marked at a spot on certain old maps where no island exists today was not mythical but real land, albeit now submerged. The vanished island, shown off the coast of Brazil on the Piri Re'is' map, is unnamed. It is near another nonexistent island called Antillia, which Hapgood thought was legendary. The unnamed island may indeed have been a real one. According to Hapgood it was located where today one finds the Sts. Peter and Paul Rocks. These are peaks of a submerged mountain rising from a plateau 1½ miles deep. The mountain is not volcanic but of the "folded" type, and it belongs to the Mid-Atlantic Ridge.

Another map, drawn by Phillippe Buache in 1737 for the French Academy of Sciences, was described by Hapgood as depicting a large island in the mid-Atlantic between Brazil and Africa. The isle has a different shape than the one on the Piri Re'is map. Hapgood thought it showed smaller remnants of the large isle, most of which had submerged. Thus the Buache map would be a copy of a map drawn later than the original version on which the Piri Re'is map was based. Near the central island on Buache's map were other islands, one coincidentally placed near the submerged mountain-range known as the Sierra Leone Rise. Hapgood suggested this wasn't coincidence but possibly evidence of a real sunken land. North of that is another large island, while the Cape Verde Islands are shown as a large peninsula connected to Africa. A fourth island was south of the central one and no longer exists.

Hapgood emphasized that these old maps were not proof of Atlantis or other sunken civilizations, but he cited the conclusion of a Belgian scientist, Rene Malaise, that parts of the Mid-Atlantic Ridge were above water ten to fifteen thousand years ago; Malaise noted that remnants of fresh-water diatom specimens had been dredged from the bottom of the sea, and these could have existed only in a fresh-water environment such as the inland lakes of former land-masses would provide. Although Hapgood did not mention sunken cities, the ancient maps showed what he described as sunken *lands* in the mid-Atlantic. In Part I of this article I alluded to the reports of World War II airmen who claimed they had caught glimpses of sunken cities while flying between Brazil and Dakar on the coast of West Africa. One of the reported sightings was near the Sts. Peter and Paul Rocks. Another was near the Cape Verde Islands. Both locations were in the middle of the Atlantic, within areas where evidence of sunken cities has been found, and both were marked on ancient maps as islands. Are these merely coincidences, or could they be clues that point toward eventual solution of the Atlantis mystery?

Appendix

A promotional pamphlet published by the Scientific Exploration and Archaeological Society (SEAS) describes an array of sunken columns studied by John Gifford and Talbot Lindstrom. These were located at Bimini and were investigated in 1971 by a SEAS expedition funded by the University of Miami and the National Geographic Society. The pamphlet reproduced the photograph of fluted marble pillars that were scattered about three quarters of a mile of seabed. It seems unlikely that the pillars came from a shipwreck; there were too many pillars spread over too much area. The pamphlet suggested the pillars were indeed of ancient European, probably Mediterranean, origin and perhaps dated to c. 3000 B.C.

Fate magazine published an article entitled "The Secret of the Bermuda Triangle" in its August 1977 issue. Written by Walter Uphoff, the article dealt with a psychic experiment which used clairvoyance and dowsing to probe the Bermuda Triangle. Girard Croiset, a famous Dutch psychic, and a colleague, Warner Tholen who is also a Dutch psychic, studied the area on the 10th and 20th of January, 1977. The experiment was directed by Professor W.H.C. Tenhaeff and the Dutch Society for Psychical Research. Tholen claimed he had never heard of the Bermuda Triangle before, but both investigators thought they detected a mirror-image of the Bermuda Triangle from the Gulf of Mexico at 26° latitude and 87° longitude. Tholen said he had received psychic impressions of ruins of ancient settlements in that area.

This is the third part of a four-part series on Atlantis written by Jon Douglas Singer. The fourth part will appear in the next issue of Pursuit.

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Books

PERPETUAL MOTION: THE HISTORY OF AN OBSESSION by Arthur W. J. G. Ord-Hume (St. Martin's Press, New York, 1980, 235 pp., biblio., index, illus., $5.95)

Reviewed by George W. Earley

This is the trade-paper edition of a book originally published in 1977. I missed it then and am glad to catch it this time around. It deals with one of mankind's oldest dreams: getting something for nothing. Until the advent of machinery, that dream had to be expressed by invoking magic: rain chants, love potions, hexes, etcetera were means whereby mankind hoped to gain unearned benefits.

But machines! Once they appeared, the tinkerers, the mechanicians and the proto-engineers all began designing machines that would run forever and also do useful work. A mill, for instance, whose water wheel not only turned the grindstone but also drove an Archimedean screw to lift the water back up to the millpond, whence it could once again be used to drive the wheel, is just one of the more common would-be perpetual motion machines described.

It was not only the relatively under-educated tinkerers who contrived these machines. Among those who designed, and in some cases tried to build, perpetual-motion machines were such science notables of their day as Sir William Congreve, John Bernoulli and Robert Boyle.

There were others . . . one of whom may have come as close to achieving perpetual motion as the laws of physics allow. James Cox, an ingenious clockmaker of 18th-century London, devised and built a large clock which had a winding mechanism actuated by the unfailing daily variations in atmospheric pressure. Had it not been moved (a task that involved removing some 150 pounds of mercury) Ord-Hume thinks it likely that Cox's device might still be running and "good for another few hundred years."

Other mechanicians resorted to trickery, being neither as talented nor as honest as James Cox but nonetheless eager to gain financial rewards as pioneer entrepreneurs of a new technology. One Charles Redheffer, in 1812, took a goodly sum from gullible Philadelphians with his perpetual-motion machine before hastily leaving town when there was displayed a similar device built specifically to demonstrate his trickery. But news traveled slowly in those days and Redheffer was able to resume his caper undisturbed for awhile in New York City. He was attracting good-paying crowds when steamboat-inventor Robert Fulton came, observed, and not only denounced the machine as a fake but tore away enough of its outer casing to reveal a concealed belt-drive extending to an adjoining room where an elderly man sat turning a crank. Redheffer's erstwhile suckers promptly demolished his machine and the "inventor" barely escaped with his skin intact.

Ord-Hume chronicles a great number of other frauds, among them the infamous John Keely whose machines, always on the brink of success, attracted enough greedy investors to provide him with a comfortable living for more than twenty years.

Keely's machines, quite large by comparison to most perpetual-motion devices, were run by compressed air, ingeniously supplied through pipes hidden in the apparently solid supports which held the apparatus. Compressed air gave his machines a power advantage over the others which were mostly powered by long-running clockwork concealed in their bases. Keely's fraud was exposed after his death. Had he survived much longer he could not have escaped lynching or imprisonment, the author asserts.

After reading this book, if anyone retains a nostalgic fondness for the chimera of perpetual motion, please get in touch with me. There's a bridge I'd like to sell.

PSI: SCIENTIFIC STUDIES OF THE PSYCHIC REALM by Charles P. Tart, New York, Dutton, 1977, pp. xii plus 241, $4.95 paper.

Reviewed by Morgan Eads

This book treats the reader to a casual and non-technical stroll through the domain of the parapsychologist. It is not a text meant to prove the existence of psi. Rather, it is a series of reflections of the general nature, and psychology, of psychic phenomena. If the reader desires more evidential material, Tart suggests he see the bibliography (over 200 entries), or the "more than 600 reports" of evidence for psi in the professional literature.

Tart covers some of his own routine work: with subjects of "out-of-the-body experiences" (OOBEs), precognition experiments, and his controversial feedback-training of ESP subjects. He also considers the sensitive problem of the psychology of the experimenter, and the serious problems that the scientist faces when he deals with phenomena beyond his world-view. He illustrates this latter problem with his own inability to face the experimental data for precognition on a deeply personal level.

One of the intriguing ideas in this book is Tart's concept of "trans-temporal inhibition." His hypothesis is that the mind focuses on the present by inhibiting data from the near-past and near-future. Similar to the Bergsonian "filter theory" of consciousness, this suggests that our sense of the present is only possible because we actively limit potential data signals from a segment of time on either side of the present. A slight change in our world-view through dreams, drugs, religious experiences, or other altered states, allows us to become aware of these time-signals surrounding the present, and thus we can experience precognition.

This book is not intended for the person who seeks quantitative proof of the topics covered. Instead, it is geared for those who already accept the phenomena. The book is delightful to read, and it qualifies Charles Tart as an authentic contributor to the parapsychological field.

THE ETHEREAN INVASION by John De Herrera (Hwong Publishing Co., 10353 Los Alamitos Blvd., Los Alamitos, California 90720. 1978, 157 pp., $2.95)

Reviewed by Robert Barrow

Quite noticeably, the world of UFO book publishing has embarked on a new trend. Not so long ago books which linked UFOs to psychic, religious, or *any* "paranormal" topics were

regarded as absolutely crazy and unworthy by conservative UFO researchers, who considered themselves far too sane for such (wild?) stories.

Times have changed! In 1980 respected UFO investigator Ann Druffel joined with noted parapsychologist D. Scott Rogo to present the bizarre story of *The Tujunga Canyon Contacts* (Prentice-Hall), a series of UFO-based encounters that ventured beyond the boundaries of physical evidence. Last year produced Raymond E. Fowler's acclaimed book about a UFO abduction with religious overtones, *The Andreasson Affair* (also Prentice-Hall).

A year earlier De Herrera's *The Etherean Invasion* appeared in print, and to simply hint that it possesses religious connotations is an understatement. The author offers the story in the form of a well-done investigative report, making use of taped interviews and other in-depth case information.

Etherean—which was unavailable for several months after its publication, for whatever reason—is as complex as the books mentioned above, but its primary direction seems to be in showing how one Brian Scott, alleged victim of a UFO abduction, continued to experience contact with his extraterrestrial visitors and eventually changed from an average person to a prophet who undeniably felt he had a mission to publicly disclose information and guidance passed to him by an alien entity.

A brief review cannot do justice to De Herrera's composition. The connection between UFOs and other mysteries, such as poltergeist activity, is just too strange to neatly tie together. We *can* affirm, though, since books of this nature are being written by an increasing number of serious researchers, it is indeed true that the UFO phenomenon takes many forms, each more eccentric than the last.

MYTHICAL CREATURES OF THE U.S.A. AND CANADA by Walker D. Wyman (University of Wyoming-River Falls Press, River Falls, WI 54022, 1978, $7.95 ppd., ill., x plus 105 pp.)

Reviewed by George W. Earley

Cryptozoologists should find this slender little hardcover book an interesting addition to their libraries of legendary creatures.

Compiler Wyman, whose book is a "revision and enlargement" of his earlier *Mythical Creatures of the North Country*, has attempted to provide readers with a reasonably accurate guide to the fascinating denizens of American folklore.

Says Wyman: "As the Americans moved across the continent, they found many mythical creatures that had not been known in Europe." These included Milking Snakes, Hoop Snakes, Wampus Cats, Upland Trout, the Whirling Whimpus, Distlefinks, Whickles, and a host of others. While not including all extant mythical beasties, Wyman does give us, in seven chapters, "ten mythical snakes, six insects, nineteen birds, fifteen fish and serpents, forty-three animals and monsters plus the Sasquatch, or nearly 100 creatures that never existed in the minds of men." The data he supplies on each ranges from a few lines to a page or more.

Now while I enjoy good folktales as well as the next Fortean, I object to the inclusion of the Bigfoot/Sasquatch, Lake Champlain's "Champ," and Lake Okanagan's "Ogopogo" in this compendium of purely "mythical creatures."

Wyman is either operating out of ignorance here, or prefers to willfully disregard what is known of these particular creatures. True, these "mystery monsters" have not yet been accepted by science, but I think *Pursuit's* readers will agree that they do *not* belong in the same company as the Kissing Bug, Rocky Mountain Rockabore, Whiffle-Whiffle Bird, or the Side Hill Gouger.

Leaving aside this one excursion into irrationalism, Walker Wyman's book is a fun piece, charmingly illustrated by his wife (she shows you what a Dingbat or a Sandhill Perch looks like) and is a welcome addition to my Fortean library.

Although the book was published in 1978, I bought my copy in mid-summer 1981, so it should still be in stock.

MEVS: CREATOR OF THE PYRAMIDS by Edgar D. Wilson (Astro-Research Publishing, 266 So. Glendora Ave., West Covina, CA 91790, 1979, 144 pp., illus., $7.95)

Reviewed by Jon Douglas Singer

This book seeks to prove a startling hypothesis, namely, that the Great Pyramids of Egypt were built by the ancient Egyptians under the direction of an extraterrestrial civilization. Moreover, the author is certain that the Pyramids were never intended to be used as tombs; the designers intended them to be gigantic stone records for the eternal preservation of information about space, the Earth, and physical principles.

The theory which suggests the possibility that the Pyramids were not built as tombs isn't new, nor is the theory that the Pyramids were built by ancient astronauts new. Erich von Daniken (*Chariots of the Gods?*, 1970) suggested that possibility, while an alternative theory that the Pyramids were built by people from Atlantis was popularized in books such as *Edgar Cayce on Atlantis*, published in 1968.

Wilson is convinced that the measurements of the Pyramids are symbolic, not accidental. According to his hypothesis, each group of measurements, such as the lengths or heights of rooms or corridors, yields data about astronomical phenomena. For example, the Giza group of Pyramids is a 1/47 scale model of the Sun, Mercury, Venus, the Earth, and the Moon. The orbital velocities of the Earth, Venus, and Mercury were given to a 1/47 scale; the areas of the pyramid bases represent the volumes of the three inner planets; and the five granite tiers of ceiling slabs in the King's Chamber represent the five inhabitable continents of Earth.

The theoretical speed necessary for an object to orbit the Earth at sea level is given to a 1/47 scale and the orbital velocity of the Moon is given to a 1/47 scale. The escape velocity from the surface of the Earth and from the Moon are given to a 1/47 scale. The velocity of light is used to establish the 1/47 scale of the Giza model. Again, the mass cubit is indicated. That gives a unit of measure derived from the Earth's gravitational acceleration at the North Pole to a 1/47 scale. The size of the Earth is given in a unit equivalent to English miles, and a unit of time is derived

from the radius of the Sun and the velocity of light (supposedly not known until the time of Einstein)!

If the number 47 seems to be repeated almost beyond endurance, it is by intent, not accident, according to Wilson. He claims that number 47 is the key to decoding the symbolism in the measurements of the Pyramids. He uses the key to open quite a sizable store of postulations. For example: Because the Pyramids were built 4700 years ago, it is possible that the putative astronauts will take 4700 years to return to their home planet; or, it will take them the same amount of time to send a second expedition to the Earth (assuming that the speed of light cannot be circumvented and that they are limited by that velocity). The author's method begins by noting that the scale of the Giza model is 47 to 1. The scale is relative to the radius of Earth and the velocity of light. The 1/47 of a second it takes light to travel along the radius of the Earth provides the basis of the number 47 which yields the astrophysical data.

One might ask, "How did the author arrive at the unusual name of MEVS?" This is a simple acronym for Mercury, Earth, Venus, Sun—a term of reference to the ancient astronauts who planned the Pyramids. Wilson does not question that pharaohs such as Mycerinus and Senefru directed the hoards of slaves and artisans who built the Giza group; but the siting and construction plans were set forth by the MEVS.

If we assume that the MEVS themselves evolved through an ancient-Egyptianlike culture, and spotted other cultures like the Nile's on other planets, it is not much more difficult to accept the idea that they built these "monuments" as signposts and chose mathematical symbolism to convey scientific knowledge as the only sure way to surmount the communications barriers of language and time.

Wilson identifies with the "pyramidologists," a hardy strain of parascience practitioners who see the Pyramids as symbolic structures and have to grow thick skins to deflect the brickbats of archeologists, who persist in their conventional references to "tombs of the pharaohs." Whatever the merits of either argument, it seems to me that skeptical readers may have more doubts about some of the author's premises than about his conclusions. There is the question of measurements. The Great Pyramid yielded its limestone covering to various plundering armies, including the Arabs who carried it away, stone by stone, to build Cairo's first mosques and palaces during the Middle Ages. The thefts considerably altered the original measurements; how much is hard to say, but the difference could cause significant inaccuracy when setting up a data base for calculation and extrapolation. Wilson mentions that Senefru's semi-collapsed Bent Pyramid is the only one with its limestone casing still intact. Then he notes that Senefru's name occurs in his pyramids while alien inscriptions are absent. However, Senefru's pyramids "belong to" the MEVS plan as does the Giza group, but the many other pyramids of Egypt apparently do not "belong" in the same class of alien supergeometry.

Edgar Wilson is an engineer and a machinist, according to the biographical summary on the jacket of *MEVS.* Egyptologists and mathematicians should check his data. If it is correct, we may already have some of those "alien artifacts" we keep wishing would turn up to answer our questions.

PSYCHIC NEXUS by Berthold Eric Schwarz, M.D. (Van Nostrand Reinhold Company, New York, 1980, 308 pp.)

Reviewed by D. Scott Rogo

In 1904, Sigmund Freud published his great book on the psychopathology of everyday life. Berthold Schwarz is a New Jersey psychiatrist who has been a long-time student of parapsychology, ufology, and other "borderline" studies. *Psychic Nexus,* subtitled "Psychic Phenomena in Psychiatry and Everyday Life," is a compilation of several papers already published, most having appeared in journals circulated among professionals in the mental health field.

The overriding theme of *Psychic Nexus* is that ESP and related psychic phenomena are natural outgrowths of person-to-person relationships. When ESP occurs between two people, Schwarz argues, it is not a random or meaningless event. It has occurred because there was a *need* for this level of communication to occur. In this respect *Psychic Nexus* often reads like a mystery novel. Dr. Schwarz cites many instances of ESP between himself and his children, with his patients, among the elderly, and so on. Then he investigates and tries to discover the reasons why the interchange took place and what significance the event had for the people concerned. Dr. Schwarz carefully shows how ESP occurs when a person cannot express his feelings in a conventional manner, or when a child or patient wishes to draw attention from a support figure, or even as a "reaching out" reaction to loneliness or physical impairment.

The chief virtue of Dr. Schwarz's approach to spontaneous ESP is that he shows these events to be meaningful: like dreams, they reveal a hidden side of ourselves which can be used as a means to self-discovery and, perhaps, self-growth.

Although the book is basically devoted to reporting cases of spontaneous ESP, a few sections relate to some of the many field investigations the author has engaged in over the years. Interspersed with papers that are oriented to workaday parapsychiatry are reports on the author's investigation of the "fire-handlers" of the Free Pentecostal Holiness Church in Kentucky who become immune to fire and poison during their religious celebrations; discussions of his own ESP picture-drawing tests; and a chapter on UFO-contactee Stella Lansing, who is also gifted with psychic ability.

Although *Psychic Nexus* is not a technical book, many of Dr. Schwarz's discussions will be most helpful to those readers who have some sort of background in clinical psychology and a basic understanding of psychiatry, the psychotherapeutic process, and personality theory. But the non-professionals need not feel slighted, for *Psychic Nexus* offers plenty of practical hints to better understanding of self, spouse, children, even that elusive being you hear so much about but never meet—the "average person."

Dr. Schwarz, consultant at the National Institute for Rehabilitation Engineering, Butler, New Jersey, is a member of SITU's Scientific Advisory Board.

Mr. Rogo currently serves on the parapsychology faculty of John F. Kennedy University at Orinda, California. It offers the only accredited graduate program in this field in the United States. Mr. Rogo makes his permanent home in Northridge, California.



SITUations

In this section mostly contemporary curious and unexplained events are reported. Members are urged to send in newsclippings and reports they deem responsible. Please be sure to include the source of reference (name of newspaper or periodical), city of publication, date of issue in which the article appeared, and your first initial and last name (or membership number only if you prefer to be credited in that way.)



Tiny Tendons

These are artifical tendons created in a laboratory at the University of North Carolina by a team of zoologists directed by Dr. Albert K. Harris.

But don't worry. These are not prototypes of parts for an imitation human body, nor are they suitable for use as transplants to replace human tissue that cannot be repaired. In fact, they don't even work.

But they are quite accurate simulants of human and animal tendons, and by studying them their creators are learning how muscles and tendons form in the earliest stages of development and why some wounds, including burns and radical surgical procedures, undergo severe contractions while healing.

Dr. Harris wanted to know more about the various cells of the human body, noting that most cells "are capable of a kind of crawling locomotion somewhat similar to the movement of amoebae." Extremely thin sheets of silicone rubber were used to simulate these forces and duplicate the wrinkle patterns which develop according to the direction and force of the of pull. Cells studied included white blood cells, fibroblasts, nerve cells and cancer cells. To their surprise, the researchers found that the cells that move the least are the strongest and have up to 1,000 times the pulling power of the more mobile cells.

Next phase of the study was to determine the effect of the pulling power when it is applied to the body's collagen. This tough, inelastic protein is the main supportive component of skin, bone, tendons, ligaments and connective tissue. Fibroblasts exceeded other cells in pulling power, so the Harris team placed blocks of fibroblasts in small dishes and immersed them in a collagen gel derived from cow hides and rat tails. The cells slowly pulled the collagen into bundles shaped remarkably like tendons.

Dr. Harris sees his experiments as providing evidence of some truth on both sides of a longstanding argument among medical researchers. Some scientists believe that the collagen must shrink; others say that the cells in the affected area shrink. Dr. Harris notes that "collagen is a non-contractile protein and the cells don't seem to get any shorter."

There is need to know. Good post-operative procedures are as important as good surgery; the treatment of deep burns always hazardous; scar tissue the plastic surgeon's worst enemy. Anything that causes contraction around the site of a wound delays healing, encourages infection, sometimes prevents recovery, and is never an aid to good looks.

SOURCE: *Durham (NC) Morning Herald*, 3/20/81. CREDIT: P. Thompson.

Kangaroo Rat

Officials at Utah's Hogle Zoo in Cedar Fort laughed when rancher Ray Ault called them to report the sighting of a kangaroo mixing with his sheep herd. But Ault claims he has seen the animal several times. He doesn't need it, doesn't want it and is hoping to locate the owner of the stray hopper.

Ault has been raising sheep in the desert range of Utah Lake for 50 years. He said he knew something was wrong when he saw an animal in his herd leap about six feet into the air. "I was checking the sheep up the canyon and off to the side of them I saw something jump straight up," he said. "I got closer and it looked me right in the eye. Then jump, jump, jump, and off it went."

The rancher said the beast looked like "a big, dark kangaroo rat, kind of yellowish with some dark on the ears." He had some trouble convincing even close friends that the encounter was not a figment of a lonely shepherd's imagination. "Of course they thought I was crazy and they said I'd been hanging around the sheep pen too long," he said. "But after I described everything, they finally believed me."

SOURCE: *The Salt Lake Tribune*, 6/12/81. CREDIT: L. Coleman.

No Place Like Home

Flamingos are native to Cuba, the Bahamas, and northern South America. Most of Florida's flamingos have been imported, to divert the customers at racetracks or amuse tourists attending "spectaculars" at Cypress Gardens and such. North of Florida flamingos never venture. Well, hardly ever.

About 6 a.m. on a Thursday in mid-June real estate agent Larry Mumley looked out on the waterfront of his home on North Hero Island in Lake Champlain. There, in the shallows near shore, a big, pink bird was moving stiffly about on crutchy legs, head and neck popping in and out of the water, obviously relishing the nice, fresh fish being self-served for breakfast. Mr. Mumley knew what he was seeing. He remembered flamingos he'd seen in Florida.

Word spread quickly. Neighbors came, some carrying binoculars. Two members of the Green Mountain Audubon Society brought a telescope. "Yes," said Audubon board member Mrs. Oliver Eastman, "there's no question but it's a flamingo." Reporters and photographers arrived in

force. The bird was most obliging, and stood quietly in the sun as shutters clicked and tape recorders whirred.

Back at the office, newspeople did the usual telephoning to official sources. "I think it's some type of joke," said Robert Candy of the Vermont Fish and Game Department. Or it could be a great white heron that became stained, he mused. "But people believed there were pirhana in the Connecticut River. They were small yellow perch," he laughingly told the caller from *The Burlington Free Press*—the day before it published a three-column telescopic closeup of the flamingo.

Roger Whitcomb, chief warden for the state Fish and Game Department, said he "couldn't imagine" how a flamingo could be brought north in captivity. "It's too big. I'd quicker believe it was blown in by a storm," he said. He added a stern warning: Flamingos are protected by state and federal laws, and if anything is to be done with the bird, it would be up to the resident U.S. fish and wildlife agent to decide.

The flamingo may have shared the warden's concern. It disappeared after a stay of 12 hours on Mr. Mumley's waterfront. There have been no reports of any other sighting.

SOURCE: *The Burlington* (Vermont) *Free Press*, 6/19,20/81. CREDIT: L. Coleman.

Disposable Coke?

Lightning struck a Boy Scout cabin in Manchester, New Hampshire, blew the pants off one boy, tore the sneakers off another, and sent 21 Scouts and their leader to hospitals. None was seriously hurt but recovery from their amazement may be slow.

"There was a flash and then an enormous bang," said Vincent Franceschini, leader of the troop. "Then my leg went numb and I felt like I was cooking all over. One of the boys had a full can of Coke with him. The Coke disappeared without making any holes in the can. It just happened."

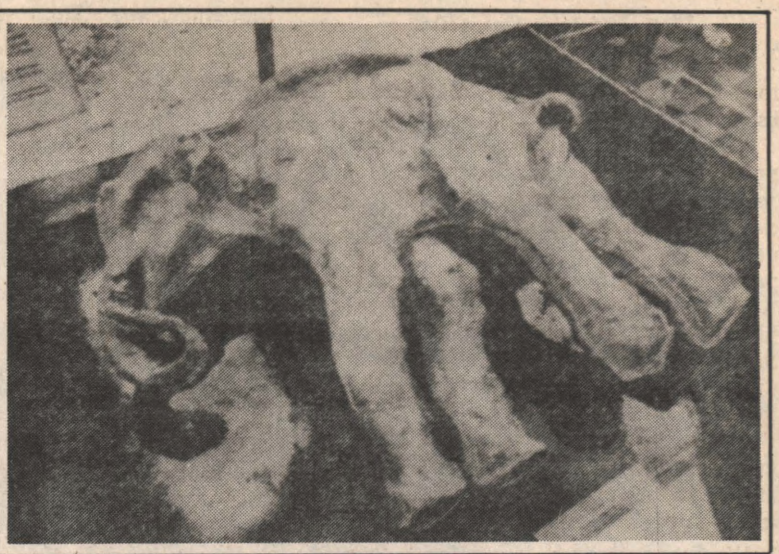
SOURCE: *The News American*, 7/16/81. CREDIT: D. Whitcomb.

Billion Years Younger

Don L. Anderson, geophysicist at California Institute of Technology, notes that the oldest rocks on Earth are about one billion years younger than the four-billion-year-old planet. He theorizes that Earth was once covered with a 300-mile-deep ocean of molten rock, that the older rocks sank in the molten lava and became part of the "lower mantle"—the layer between the planet's thin crust and its inner core.

SOURCE: AP dispatch, *The Morning News*, Wilmington, Del., 5/28/81. CREDIT: H. Hollander.

The baby mammoth of Magadan



Alexander Stelmakh/Moscow News

Newcomer from a Glacier

In the summer of 1977 a bulldozer operator, A. Logachev, found a baby mammoth in a layer of ice, broken stone and silt in the upper reaches of the northern river Kolyma (Magadan Region), near the stream Kirgilyakh. The baby mammoth was brought to Magadan and placed in a deep-freeze chamber. Scientists from Moscow and Leningrad made a preliminary study, selection and preservation of tissue samples, and extracted the internal organs. Then everything was measured, weighed, described and preserved. The carcass was put into a metallic box lined with a thick layer of foamed plastic and dispatched by air to Leningrad for further investigation.

There the baby mammoth was kept in a thermochamber, in a temperature of 15 degrees below zero Centigrade, then it was transferred to the laboratory of the Zoological Institute of the USSR Academy of Sciences for embalming.

Data about the baby mammoth was thoroughly studied and analyzed by Soviet researchers together with their colleagues in other countries. Soviet scientists photographed and x-rayed the animal. Then they studied the mammoth's brain, its skeleton and muscles of the right foot.

"The permafrost grounds in the extreme northeast of Siberia and Alaska are like natural refrigerators. The frozen carcasses of animals which inhabited these places during the glacier age have been wonderfully preserved," said O. A. Skarlato, director of the Zoological Institute of the USSR Academy of Sciences. . . . It was a true scientific sensation when the Magadan baby mammoth was found. His age was estimated from the development of his teeth. In the mouth cavity the first lacteous grinding teeth were seen. The tusks had just started cutting through. Height in the front reached one meter. During the dissection of the body, drained and flattened internal organs were discovered, among them the heart, lungs, kidney, stomach and a part of the intestine."

A radiocarbon analysis has shown that this seven-month-old animal died about 40,000 years ago. The studies of the dust and the remains of wood from the layers in which the baby mammoth was found, show that the vegetation of that period was cold-resistant. The prevailing landscape was tundra and steppe vegetation with shrubs of dwarfed birches, and willows with larch forests.

As a result of investigations it was established that the exhausted infant animal perished when he got into a trap of silt from which he could not get out. The carcass was quickly covered with sand and silt. This is indicated by the fact that the corpse showed no damage by carnivorous animals. Eventually the place where the baby mammoth died was covered by snowslides that never thawed. This is what kept the remains from decomposing.

Comparing the 1977 find with other mammoth remains discovered in prior years, Professor Nikolai Vereschagin, chairman of the Committee for Mammoth Studies of the USSR Academy of Sciences, said: "This is the first time that science possesses such a completely preserved specimen. The samples known hitherto, including the famous Beryozova mammoth found in Siberia in 1902, were considerably damaged and could not give a complete idea of the external appearance and the structure of the animal's internal organs.

"The Magadan baby mammoth will probably serve as an object of study for scientists for a long time to come," Prof. Vereshchagin concluded. "It will provide science with new, interesting data, including the reasons why these powerful animals, although well adapted to the severe climate, disappeared from the earth."

SOURCE: *Moscow News*, English-language weekly published in the USSR, 1981. CREDIT: D. Bayanov.

The Tree that Cries

Thousands of people have been flocking to a rural site near Butler, Alabama, to listen to a crying tree.

A deputy sheriff of Choctaw County says the narrow dirt road leading to the Linnie Jenkins home has been jammed with cars ever since the family first heard the noise—similar to a puppy's whimper—emanating from a huge pecan tree on April 12. So far, there is no official explanation for the crying noise, only a theory the sheriff heard a local forester tell about, that it could be gases seeping from inside the tree.

A hole has been dug at the base of the tree and, for a 50-cent fee, anyone can put an ear to a pipe and listen to what the tree is saying—or crying about.

SOURCE: AP dispatch, *Asbury Park Press*, 5/10/81.
CREDIT: Member #432.



Regeneration of a Foot

A 16-year-old British schoolgirl lost half her heel in a motorcycle accident two years ago. Now, after self-hypnosis, she is growing a new heel and her crutches have been relegated to the attic.

Tracy Kitto was 14 when the accident occurred. Hospital doctors warned her parents that she might have to lose the foot. But after a series of operations the remaining half of the bone was saved. "When she came out of the hospital her foot looked just like a banana," said her father. "No shoes would fit her and she couldn't walk. She was on crutches for a year. Then we heard about Joseph Keeton."

Mr. Keeton is a hypnotist and teacher of hypnosis. He believes "it is wrong to make the patients dependent on a hypnotist so they can keep extracting money. The hypnotist must teach the patients to teach themselves."

The family M.D. was present to give moral support to Tracy during her initial experience under hypnosis. "I kept going deeper and deeper into her primeval past," said Mr. Keeton. "I told her to go down to the deepest part of her brain where the knowledge of regeneration is stored. In the womb, the whole of evolution from a single cell, multi-cell jellyfish, fish, reptile . . . has collapsed into nine months. And somewhere in that memory of what went before, we knew how to regenerate missing limbs."

Tracy was taught to put herself under hypnosis for a specified time so she could wake herself up. "Many patients fear hypnosis because they have seen people acting like idiots in stage shows. Such shows do a lot of harm," Mr. Keeton noted. He is emphatic that "at no time is there anyone else in control. All hypnosis is self-hypnosis. The hypnotist is just the guide."

Keeton's guidance has won high praise from the Kitto family. Tracy has won a lengthy battle with depression and has made up much of the schoolwork she missed. As her father sees it, "Her foot isn't perfect by any means, but it is a great deal better. The bone has grown, and the flesh has filled out, and her foot is getting more like a foot every day."

SOURCE: *Daily Express*, London, 4/7/81.
CREDIT: D. Mace.



Parting of the Waves

The Exodus story comes to a familiar climax in a "parting of the waves" to allow the Israelites to escape their life of slavery in Egypt: as the fugitives approach the water the waves pull back until the last Israelite has passed through, whereupon the waves swirl in to drown a whole army of Egyptian pursuers.

The Exodus is the central experience of Judaism. It is the second book of the Christian Old Testament. It is history re-lived by billions of devout people, and it has been immortalized in every form of art and literature, from stage to movies to TV, even in music.

Some scholars say the Exodus should be classed as fiction, not because they dislike its philosophy or resist the compulsion of its symbolism; they just haven't been able to find enough evidence to explain where and when and how such an event could have occurred.

But in early May a noted Egyptologist released an academic paper which described new and "solid historical evidence" fixing the date of the Exodus and offering a naturalistic version of the "parting of the waves" to parallel the theological view that divine intervention made good the Israelites' escape.

Dr. Hans Goedicke, chairman of the Near Eastern Studies department at Johns Hopkins University, says his hypothesis is based on 20 years of analysis of archeological sources, primarily a royal inscription from the reign of Hatshepsut, a female ruler who lived from 1490 to 1468 B.C. His interpretation dates the Exodus about 200 years earlier than others have supposed. He ascribes the "parting of the waves" to a powerful tidal wave generated by the same volcanic eruption on Thera that destroyed the Minoan civilization on Crete.

The "breakthrough evidence" to support his hypothesis, said Prof. Goedicke, is the royal inscription that was found years ago on a rock in Egypt above the entrance to a shrine. The meaning of the words has only recently been understood, he said, but the similarities between the inscription and the Exodus story "are so great that . . . we have here two accounts of the very same event."

SOURCE: NYT News Service feature and UPI dispatch in *The Washington Star*, 5/4/81.
CREDIT: F. Packard.

New Year's Fireball

In some places the arrival of the New Year is celebrated as if it were the Fourth of July: with fireworks. No one is quite sure what it was that fell out of the sky with a shuddering boom heard all over western Pennsylvania last New Year's Day. But it wasn't fireworks.

Pilots in two Boeing 727s, one flying at 31,000 feet, reported seeing a fireball falling somewhere northeast of Pittsburgh about 1:30 p.m. The noise rattled windows throughout the area, brought residents into streets and yards to peer skyward, and set off dozens of calls to police, civil defense officials and the news desks of regional and local media.

A spokesman for Buhl Planetarium in Pittsburgh said it could have been a meteor burning up as it plunged through the atmosphere. Harold Stamper, assistant chief at the FAA control center in Cleveland, would say only that "there's a lot of speculation going around, but that's all it is."

SOURCE: AP dispatch, *The Middlesex News* (Mass.) and *Nashville Tennesseean*, 1/2/81.
CREDIT: L. Coleman, H. Holland.



Boom Times

Next to earthquakes, the "boom-in-the-sky" mystery has plagued more people, alarmed more officials, puzzled more scientists and inspired more sensational reporting for a longer time than any other phenomenon. Mysterious booms were woven into the fabric of Seneca Indian mythology way back when the Europeans didn't even know there was an America. Charles Fort assiduously included a plethora of "mystery boom" reports in his notes from major publications of the 19th century, sometimes associating the noises with earthquakes or volcanos or great storms, at other times finding no relationship to other phenomena.

Earthquakes, volcanos and storms destroy life and property; study, prediction and eventual prevention are important socially and politically. By themselves, booms have never been known to kill anyone or damage real estate. Incentive (i.e., money) for serious, long-term investigation has therefore been lacking.

When jet propulsion revealed the new horizons for what florid writers call "man's conquest of the universe" it also produced lots of new booms, noisier and less mysterious than the Fortean kind. A jet aircraft flying faster than the speed of sound so compresses the air around it as to set off waves of sound that "explode" in conical formation and produce the shocking sound that's called "sonic boom."

Most sonic booms are caused by aircraft and almost all supersonic aircraft are military. But meteors, satellites entering the

atmosphere and rockets leaving the atmosphere also produce sonic boom. All that's needed is an object going faster than sound, and human ears to listen. Close to Earth the speed of sound is about 800 mph, but it varies according to the density of the air. An independent research firm tabulated almost 600 reports of booms along the North and South Carolina coasts in 1978. Supersonic aircraft caused 413 booms but did not cause 181.

The light of this and some other surveys has not shone too kindly on the efforts of modern Forteans to explain the booms that are caused by something other than meteors, satellites, rockets and jet propulsion. In fact, the sonic boom has been put up as a barrier on the road to serious investigation. This is how it works:

Newspapers in the Charlotte-Raleigh-Durham area of North Carolina reported a "mysterious boom" that "rocked" the region on June 24. "Theories about the origin of the tremendous explosion-like sound about 1:20 p.m. were plentiful," one reporter wrote. "But experts could offer no conclusive answers." The sound effects were indeed nerve-wracking:

—Charlotte police answered 200 phone calls on their emergency number in nine minutes.

—Police and firemen feared the worst for a large tank farm on the edge of the city where major oil companies store petroleum products. Firefighters manning several trucks, at least six ambulances and police cars rushed to the scene, to discover no sign of explosion.

—A Vietnam veteran working in a park told his buddy that he "still got scared when he heard a noise like that."

—A resident of another town telephoned to say "there must have been" a dynamite blast or cave-in at an abandoned mine nearby. But local police had no report of any mine explosion.

—About the same time, a commercial jet was bringing a load of passengers into the county airport when the pilot radioed about trouble in one engine. This brought 20 city firefighting units to the scene, but the plane landed safely and the passengers deplaned with no ill effects except fright.

—A few minutes after the boom the county fire headquarters received a report of a fire in an auto paint and body shop just outside the city limits. Firemen controlled the blaze within minutes. There was no explosion and no one was injured.

All this activity within a few minutes after the boom proceeded at a somewhat faster tempo and probably sold more newspapers than did the lengthier write-up of the investigation that followed:

—The U.S. Air Force base at Sumter, South Carolina, closest to the boom zone, was the first to be queried. "We fly our supersonic routes over the ocean, so theoretically there should not be any sonic booms audible," said a public information officer. "When I heard about it, I checked our aircraft schedule immediately."

—The chief air controller at the Federal Aviation Administration's regional center at Atlanta confirmed the Air Force statement. "We had no known traffic of that type under our control at that time," he said.

—At Langley, Virginia, home base for many advanced types of supersonic military aircraft, an official said that none of the planes was overflying Charlotte or vicinity on the day of the boom.

—The National Earthquake Information Center in Golden, Colorado, said no seismic activity was detected in the Charlotte area. Their instruments did record strip-mine blasts in West Virginia/Kentucky, but these occurred almost an hour before the Charlotte boom. Anyway, said a geophysicist at the center, "there's no way you could have felt that in Charlotte."

—A seismograph closer to the Charlotte area is at the University of South Carolina in Columbia; it showed no earthly disturbance on the day of the boom.

Four reporters were assigned to do a roundup story for one newspaper. After arranging in order several paragraphs of personal-impression quotes from "witnesses," one writer consulted Dr. Morris Davis, professor of astronomy at the University of North Carolina. Mindful of the "mystery booms" reported from all up and down the Carolina coasts in 1977 and 1978, Dr. Davis said those noises were caused by aircraft traveling at supersonic speeds "in other parts of the world."

The same writer consulted Dr. Edward Oberhofer, astronomy professor at University of North Carolina Central. Dr. Oberhofer provided a lucid explanation of sonic boom in general but nothing specific about the Charlotte boom except agreement that it had to be "sonic."

* * *

The Charlotte boom is a stereotype of many occurrences elsewhere throughout the 1970s. Also typical is the negative results obtained when an inquiring mind encounters disinterest and inertia.

Who is going to give some facts to wrap up the Case of the Mysterious Booms? What is the tourist behavior of sonic booms? Are they really capable of traveling hundreds or thousands of miles without impairment of their shocking power? If so, why are reports occasional and sporadic when supersonic flights are so frequent and usual all over our hemisphere?

And what about the storied booms of years and centuries before our time . . . when there were no jet engines, no rockets, no satellites? Was all that noise only meteors?

SOURCE: *The Charlotte News, The Charlotte Observer,* Raleigh *News and Observer,* 6/25/81, 7/3/81; *Durham Morning Herald,* 6/25/81 (All NC). CREDIT: P. Thompson.

Life on the Bottom

Deep within the Earth are deposits of gas that could not have been formed by the familiar heat, pressure and organic decay that produced the fossil fuels we use as energy. And in suboceanic fields as large as 250 by 500 feet are vents and geysers that provide the stuff of life for whole colonies of previously unknown creatures such as foot-wide red clams, six-foot, blood-red "tube worms," and monstrous crabs.

Evidence brought back from the East Pacific Rise off the coast of Bolivia confirms the long-held hypothesis of Cornell University scientist Dr. Thomas Gold and his followers, that extensive deposits of methane lie deep within the Earth. Another part of the Gold theory asserts that methane is released when major earthquakes open "escape channels" to the surface; and therein may lie a plausible explanation of the "earthquake lights" which often appear concurrently in areas of severe seismic disturbance.

The non-biological methane was found in water samples collected a few hundred feet above the crest of the East Pacific Rise, according to Dr. Harmon Craig, co-director of studies during a nine-month voyage by the research ship *Melville* completed in May. In the same area, underwater cameras lowered from the ship photographed the largest "geyser colony" of exotic sea creatures yet discovered, living within a water temperature system that ranges from 750° F. in the geyser mainstream to a life-supportive 35° F. in the surrounding area.

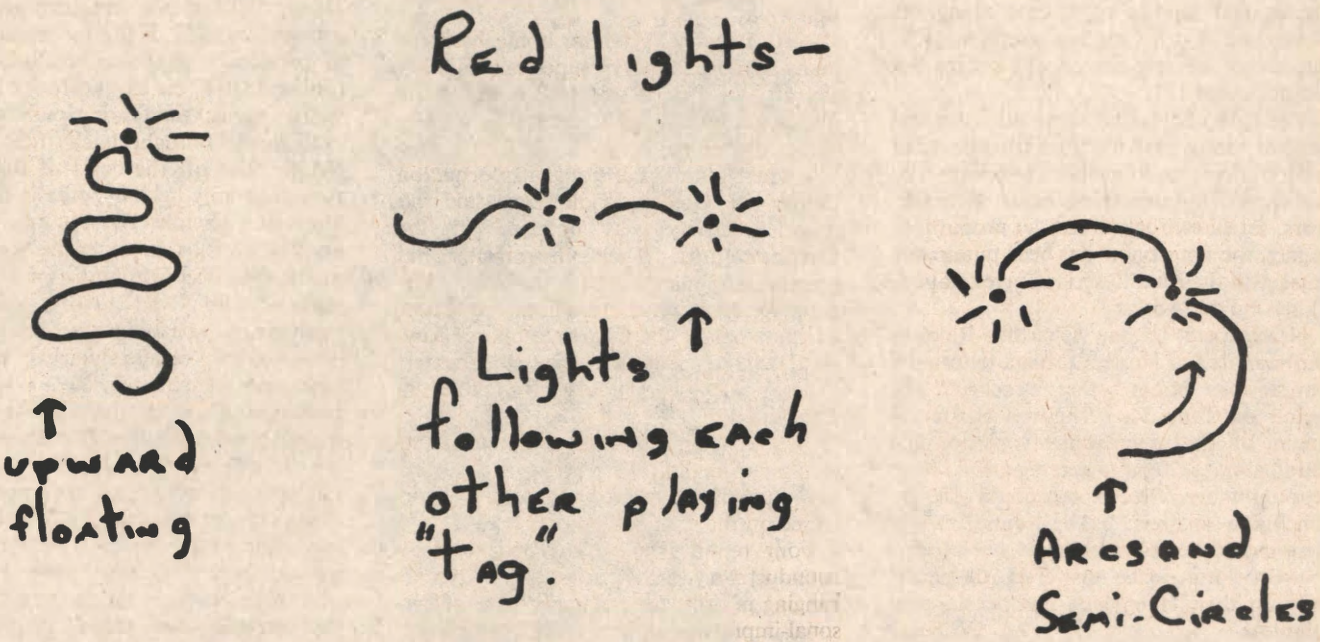
Evidence that not all of the world's deep sea floor is frigid and barren of life began to accumulate with the first camera-sighting of an "ocean-vent community" off the Galapagos Islands in 1977 and the somewhat later discovery of a similar colony in waters off Mexico. In 1979 the deep sea diving submarine *Alvin* collected the first deep-methane samples in an operation also along the Pacific Rise but more than 2,800 miles north of the *Melville's* explorations.

Such questions as What do the deep sea creatures eat? and How are the methane deposits formed? have yet to be answered. One theory is that the creatures take sustenance from the chemicals in the geyser water. As to the methane, Dr. John A. Welhan who is one of Dr. Craig's colleagues at the Scripps Institution of Oceanography, suggests it may be generated by very high temperature alteration of the rock when it pushes upward to the ocean floor and becomes a "rise" when it fills a gap created by the natural pulling apart of the bottom for a distance only inches wide but perhaps hundreds of miles long. Whether much or little methane is produced in the process is a subject for further study, now ongoing.

SOURCE: *Philadelphia Inquirer,* 5/17/81 and *The New York Times,* 5/28/81. CREDIT: H. Hollander, S. Sanderson.

Letters

The Watersmeet Light



While vacationing in the Upper Peninsula of Michigan in 1977 I heard for the first time about an interesting, unexplained phenomenon.

I believe SITU members are familiar with so-called "ghost lights." I would like to inform you of our ghost light in Michigan. As far as I have been able to find out, it has been there 50 years, probably more. I have talked with people who have lived in the area and viewed the light many times. They say it is there every night, rain or snow. It seems to remain in the approximate same area. (When I observed it, it seemed to move slightly at times.) It cannot be approached or it will "go out."

It is located by some power lines, shown in the photographs. I was told the power company investigated, and they said the light could not be caused by a power drain from the lines. I was told that the Michigan state police also investigated, and they felt it might be reflection from automobile headlights. My own observations rule this out.

The pictures enclosed [see cover of this issue] were taken with a Yashica 35mm GSN. I used Kodacolor film. The aperture was open at *f*1.7. They were taken at a distance of approximately one-half mile. I cannot give you the exposure time as I did not have a watch. I estimate between 30 seconds to 3 minutes. The film had an ASA number of 400.

Please note the pole in one of the photos and how the light illuminated it. The light itself when it was a brilliant white color appeared to split in two. The white light seemed to first appear as an amber light. These lights seemed to pulsate and flicker. There also were observed two red lights. These were considerably smaller than the other two. I believe these three colors are a phase of the same light. I did not observe them together.

The red lights were highly mobile within their location. Please forgive my drawings but these are some of the motions I observed.

Please keep the enclosed photographs. They were taken in May 1981. Thank you.

—William Kingsley
May 20, 1981

* * *

Thank you for responding to my letter. I will try to answer your questions as best I can.

As to why these are called the Watersmeet Light: They are located in Ontonagan county of the Upper Peninsula of Michigan about six miles north of the town of Watersmeet on U.S. 45; then you turn northwest on U.S. Forest Route 181. I do not know if they were located on private land or in the Ottawa National Forest. The locals refer to it as "the light" and it is taken for granted by the locals. It is possible there is more than one light.

As to your question about media reporting: Yes, it has been reported in the local papers and on local television. But I was told this by local people and did not see any local reports myself.

—William Kingsley
May 28, 1981

In a telephone interview in late June the chief of police of Watersmeet told Pursuit *that the light has long been famous throughout his area. He referred us to a thirty-year resident who asked not to be named but confirmed that the light is there. The longtime resident went on to say that there were many theories, all of them "controversial"—especially one that says the light comes from a railroad lantern, swung nightly by the ghostly hand of a brakeman who perished while attempting to avert a train wreck years ago. SITU will continue to investigate the Watersmeet Light in hopes of finding a credible explanation—or if one isn't available, we'll at least try to find out more about the apparitional brakeman.*

Our Mutual Defense of What is Valuable

Thank you for the author copies of your journal. It's the first time I have seen your publication and I like it. I like its exploratory spirit, its open-and-sobermindedness, its pursuit of the unexplained as well as defense of what is valuable in the explained or considered explained, as, for example, Neil M. Lorber's clever article on Darwinism. Congratulations!

Reading your journal I also thought that if in all spheres and at all levels Americans, Russians and Chinese could meet and discuss matters with the same amount of good will that is shown on the pages of the Fall 1980 issue of *Pursuit*, the world would be out of danger.

And, of course, I am very glad that you people come out in defense of animal rights, "even 'monster rights'," and that your Society is a champion of "Champie" of Lake Champlain. Good luck to you and to Champie.

—Dmitri Bayanov
Darwin Museum
Moscow

* * *

Camera Commits Fortean Forgery

Pursuit *published the photo at right in the First Quarter 1981 issue, page 45. It was taken by Erich Krug in the yard of his home in Calgary, Alberta, Canada, on November 22, 1980. "There were no clouds in the sky at the time," he noted, "nor was there anything visible to me when I took the picture." He surmised that his picture showed "one of the family of 'invisible critters' as photographed by Trevor Constable" and reproduced in* Pursuit *No. 49 (Winter 1980), pages 11-13. Mr. Krug wondered whether any reader could "offer some explanation for the entity" in his photograph. Meanwhile, in true SITUan spirit, he continued his own investigation with the help of competent technicians. His letter of May 22 describes the results.*

I sent the photograph to be computer-analyzed by an organization in Arizona which does work in this field of research. The organization is called Ground Saucer Watch and is located in Phoenix. Here is what they came up with in their report:

—"The photograph is not a hoax.

—"The UI (unidentified image) is tenuous in nature, therefore devoid of structure or substance.

—"Pixel (picture cell) distortion testing reveals that the image is extremely close to the lens system."

Conclusions: "Based on your processed photographic data and the fact that GSW has analyzed dozens of similar photographs, the UI represents a picture of your shutter opening. The pentagon shape of the UI on the film emulsion is the same as the physical shape of the shutter of your camera. By placing a camera to a 'good' position to a light source, and heavily filtering the lens which tends to 'enhance' the situation, a picture of the lens opening transpires. (Copyright GSW, Inc. 1981)"

I am personally willing to accept this explanation and I must therefore apologize for any inconvenience that I may have caused. But because I have a great belief in the work of Trevor J. Constable I will continue to use his techniques in the hope of capturing one of these "critters" on film.

—Erich Krug

* * *



Camera's secret revealed

Wilson et al. vs. Velikovsky et al.

Edgar Wilson stikes a blow against free speech when he avers that Harold Shapley was justified in trying to suppress the researches of I. Velikovsky. If what seems to turn out as true at some particular time justifies suppression of earlier theories, then much valuable thinking can be lost, because history is replete with views that have their day, lose out, and then have their day again. There seems to be a cyclical trend in the development of many subjects. In addition, if Wilson wishes to support Establishment thinking against heresies, he is not helping his own cause, which includes teaching that the ancient Egyptians knew the speed of light.

His idea that the three principal pyramids at Giza represent planets has obvious flaws. If the Egyptian builders had intended the model he supposes, they certainly would not have decided to double the length of the side of the base of the Pyramid of Mycerinus. Furthermore, the measurements given us of the bases of the pyramids vary from book to book. I. E. S. Edwards, in the hardcover Viking Press edition of *The Pyramids of Egypt*, gives the base of the smallest pyramid as 356 feet, six inches square (page 119). Kurt Mendelssohn, in *The Riddle of the Pyramids*, (1974, Praeger), gives 108 meters, or 351 feet, well over a meter difference. The eleventh edition of the Encyclopaedia Brittanica gives 4,153.6 inches (105.5 meters). The Egyptians, who supposedly measured the orbital velocities of the planets, could not square up their pyramids exactly, or face them precisely north, or even make two alike.

If Wilson wants to demolish the theory of Velikovsky he must give some explanation for the clear evidence of a certain cylinder seal from Uruk, the Sumerian hymns to Inan-

na, and the symbols used in writing, that identified the Morning/Evening Star as a comet in those days. (See illustrated article by Lynne E. Rose in *Kronos*, Winter 1977.) Similarly, of course, for much other evidence: One cannot negate a lifetime of research with a few observations.

Velikovsky postulated that Mars once occuped the position now held by Venus and was dislodged by the orbiting of the massive "comet." Also, there is the mysterious ring of asteroids. There is room for a theory that the three planets having orbital velocities represented by pyramids included some planet other than Venus.

—Harry E. Mongold

* * *

Applied Astronomy, 2700 B.C. Edition

[*This letter responds to the "Evidence for the Stability of the Solar System Since c. 2700 B.C." presented by Edgar Wilson in his article under that title in the Fall 1980 issue of* Pursuit, *Vol. 13, No. 4, No. 52.*]

Wilson implies that the architect of Giza laid out the three major pyramids according to the principles of astronomy that were known c. 2700 B.C. He has based his arguments on the assumption that both the velocity of light and the radius of the Earth were known. In an attempt to support this model, I shall endeavor to describe the techniques that any observer could use without the aid of mirrors or telescopes to attain the knowledge this ancient architect astronomer would have needed to build these pyramids in the geometric array Wilson has assumed for his model.

If mirrors did exist, perhaps some ingenious astronomer performed an experiment antecedent to that of Fizeau or Michelson to obtain the speed of light. If they did not, as I am assuming, then the only way left to measure the speed of light is aberration. Using the width of the Earth's orbit or a significantly large chord of it, the speed of light can be measured. This is done by observing an eclipse of a "fixed" star by a nearer body. If the distance to the nearer body were known accurately enough, and the time-lag between reappearances as observed at opposite ends of the chord were long enough, the change in separation distance between Earth and the nearer body divided by the time lag is a measure of the speed of light.

Prerequisite to the perception of this time-lag is the ability of the observer to determine the beginning and end of the loss of the star's light. This means the disk of the nearer body must be visible. Sagan and Leonard (1966) state that the unaided human eye fails to resolve less than one minute of arc.

Olaus Roemer measured the speed of light with the aid of a telescope by observing the predictable appearance of one of Jupiter's moons from opposite ends of Earth's orbit. Moore (1971) says that a really keen-sighted observer can catch sight of the four Galilean moons with the naked eye. Unfortunately, the maximum angle of arc of Jupiter is less than 50 seconds (after Mayall et al in 1959). In view of this and the fact that all four moons are less bright than Jupiter, it is impossible for anyone to use this system; which means we're back to getting a "fixed" star eclipse.

Venus is the only near body (whose disk can be seen by keen-sighted observers) that is far enough away to permit our ancient astronomer to measure a time-lag. At its best it is only 66 seconds of arc based on a closest approach of 25 million miles (Mayall et al 1959). Moore (1971) says that there is considerable evidence that keen-sighted people can make out the crescent phase of Venus. He adds that only on rare occasions does Venus pass in front of a star.

Mayall et al (1959) list the magnitude range for Venus as -4.4 to -3.3. Therein lies the difficulty in being aware of the beginning and end of the eclipse. Of the 25 brightest stars listed by Mayall et al, the brightest (excepting the sun) is Sirius with a magnitude of -1.4. It is exceedingly difficult, once the disk diameter of Venus is known, for any observer to resolve the disappearance of such a star even when Venus is in a gibbous phase or less. The start of the eclipse could be "off" as much as one minute of arc and the end of the eclipse could be "off" by the same amount. This would mean the speed of light could be incorrect by as much as a factor of 1½. An additional problem intervenes if the path of the eclipse is not diametrical. Presumably a very good observer taking many measurements over time would obtain a value approaching the known value.

To actually calculate the value of the speed of light, all the observer needs to know accurately is the distance to Venus during each eclipse. Before this distance can be calculated two requirements must be met: (1) the radius of the Earth must be calculated, and (2) the Keplerian view of the solar system must be deduced from observations as accurate as those of Tycho Brahe.

Eratostheres calculated the Earth's radius without a telescope (Ley 1966) as did the French in the time of Louis XIV (Thiel 1957). So it is possible that the Giza astronomer could have known the radius of the Earth. Using the same base line established to measure the Earth's radius, the distances to the planets can be calculated.

Since Johannes Kepler was able to deduce the elliptical orbits of the planets without the aid of a telescope, it is possible to imagine the astronomer of Giza doing so.

At this point we can conclude that the astronomer of Giza could have known the radius of the Earth, the speed of light, the radius of Venus, and the orbital velocities of Earth, Venus and Mercury.

Let us now observe the various techniques an unaided observer could use to determine the remaining major parameter of Wilson's model: the radius of Mercury. Its size in seconds of arc, based on distances of closest and farthest approach (Mayall et al 1959), ranges from 12 to 5. Since this is well below human resolution, Mercury's size could range from 1600 km to 16,000 km (an order of magnitude) without its disk being seen.

A transit of the sun cannot give its size as the astronomer David Fabricius pointed out to Kepler, who thought he had seen such a transit, because it is too small to be seen without a telescope, which by then had been used (Ley 1966). An idea of the impossibility of this approach can be obtained from a look at two photographs in Rudaux and Vaucouleurs (1959). The first, on page 182, shows Mercury in transit and the second, on page 265, shows the disk of the sun as seen by the naked eye.

A technique that uses the eye's ability to differentiate brightness can yield a disk diameter for Mercury. The Greek astronomer Hipparchus drew up a list of stars visible to the

naked eye and assigned a number to each one to indicate relative brightness. Jastrow and Thompson (1974) report, on page 124, what physiologists have found: When the eye observes a linear increase in brightness in a series of light sources, the measured increase in brightness turns out to be geometrical.

If the Giza astronomer was able to measure the geometrical nature of his eyes' receptivity to brightness, he may have deduced an equation like the following which relates the mean magnitude at opposition p_0 and the semi-major axis in astronomical units as

$$g = p_0 - 5 \log a(a-)$$

(Blanco and McCuskey 1961). With the absolute magnitudes g for the only objects in the solar system this astronomer could know the disk diameters by direct observation of the Sun, Venus and the Moon (see the following table),

Body	*g**	*diameter*	*log D*
Sun	−28.81	1.4×10^6	6.1461
Venus	−4.29	1.2×10^4	4.0791
Moon	+0.21	3.5×10^3	3.5440

*Harris (1961)

the following equation:

$$\log D(km) = Ag + B$$

can be arrived at. With these three bodies a diameter for Mercury of 4550 ± 640 km can be arrived at (g = 0.36*). With the Sun left out, the diameter is 4090 km.

The final method by which the Giza astronomer could know the diameter of Mercury is to use the velocity of light and observe an eclipse of a star. With Venus, a dimmer star could be used because keen-sighted observers are able to see its phases. Because Mercury is beyond unaided human-eye resolution, if an object of less than Mercury's brightness or equal to it were to be eclipsed by Mercury, every observer would see one point-source for a minute of arc (a diameter of some 16,000 km at closest approach) with no change of intensity.

The star selected for aberration must be brighter than Mercury. Mayall et al (1959) report the magnitude range of Mercury as −1.9 to +1.1. By comparing this to their list of the twenty-five brightest stars, only the top sixteen can be brighter than Mercury at some point in its orbit. They also say the angular separation of Mercury from the sun (plane of the ecliptic) is never more than 28°. This reduces the number of possibilities to four: Aldebaran, Betelgeuse, Procyon, and Capella.

If the observer's eyes are good to ±0.25 magnitude, and if sufficient observations can be made so that eventually the eclipse length approaches the diametrical eclipse length, then, with the orbital velocity of Mercury known and the speed of light known, it would take, say, one minute and forty seconds for the eclipse at its longest. This is based on a diameter for Mercury of 4850 km.

In summary, even the best observer is unlikely to be able to see the beginning and end of the eclipse of a star by Venus. Thus the speed of light may be measurable only to 50 percent accuracy, and that is highly optimistic. It means the diameter of Mercury is only good to 50 percent. Since I have not found any record of anyone in the last 400 years of astronomy who has measured the diameter of Mercury this way, or the speed of light using Venus, I can't say what actual diameter would be seen.

As to the various diameters of Mercury obtainable from eclipses or from brightness (4550 ± 640 km at best), it is demonstrably quite impossible for the value of Mercury's diameter to be known as accurately as Wilson needs for his model to be viable (4881 km). Even if the observer could use a star of a different color than the mixed color that Mercury appears to be or Venus appears to be when the objects are inside the one minute of arc, resolution may be too close to the planetary colors (from the eye's point of view) to clearly delineate the beginning and end of the eclipses.

Until experimental evidence can be presented which refutes what I've said above and gives Wilson the accuracy his model requires for the speed of light and the diameter of Mercury, it seems impossible that the ancient Giza architect designed these pyramids around any such model. One other minor point should be noted: Krupp (1957) states that the earliest known evidence for the Egyptians having discovered and named the planets is from the "astronomical ceiling" of the Tomb of Senmut which dates only to 1473 B.C.

It strongly appears that Wilson's article is in the same vein as Charles Piazzi Smyth's *Our Inheritance in the Great Pyramid* (1864). Smyth claimed that the Egyptians, by using the "pyramid meter," showed they knew the number of days in the year; dividing this meter by 25 gave the "pyramid inch" which was nearly the same as the English inch; multiplying this inch by 10^7 yielded the length of the polar axis of the Earth; and by expressing the height of the Pyramid of Cheops in pyramid inches and multiplying by 10^9 the distance of the Sun from the Earth was determined (Ley 1966).

It is fair to say Wilson's article supports the decision by Harlow Shapley to prevent *by all possible means* the spread of Velikovsky's ideas as much as Smyth's book does. And this ranks right up there with President James Garfield's support for the outlawing of the "atheist metric system" (Ley 1966).

—Henry A. Hoff

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ORIGINS OF SITU/PURSUIT

Zoologist, biologist, botanist and geologist Ivan T. Sanderson, F.L.S., F.R.G.S., F.Z.S., in association with a number of other distinguished authors, established in 1965 a "foundation" for the exposition and research of the paranormal—those "disquieting mysteries of the natural world" to which they had devoted much of their investigative lifetimes.

As a means of persuading other professionals, and non-professionals having interests similar to their own, to enlist in an uncommon cause, the steering group decided to publish a newsletter. The first issue came out in May 1967. The response, though not overwhelming, was sufficient to reassure the founding fathers that public interest in the what, why and where of their work would indeed survive them.

Newsletter No. 2, dated March 1968, announced new plans for the Sanderson foundation: a structure larger than its architects had first envisioned was to be built upon it, the whole to be called the Society for the Investigation of The Unexplained, as set forth in documents filed with the New Jersey Secretary of State. The choice of name was prophetic, for Dr. Sanderson titled one of the last of his two-dozen books "Investigating the Unexplained," published in 1972 and dedicated to the Society.

Another publication was issued in June 1968, but "newsletter" was now a subtitle; above it the name *Pursuit* was displayed for the first time. Vol. 1, No. 4 in September 1968 ("incorporating the fourth Society newsletter") noted that "the abbreviation SITU has now been formally adopted as the designation of our Society." Issue number 4 moreover introduced the Scientific Advisory Board, listing the names and affiliations of the advisors. Administrative matters no longer dominated the contents; these were relegated to the last four of the twenty pages. Most of the issue was given over to investigative reporting on phenomena such as "a great armadillo (6 feet long, 3 feet high) said to have been captured in Argentina"—the instant transportation of solid objects "from one place to another and even through solids"—the attack on the famed University of Colorado UFO Project headed by Dr. Edward U. Condon—and some updated information about "ringing rocks" and "stone spheres."

Thus SITU was born, and thus *Pursuit* began to chronicle our Investigation of The Unexplained.

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The Mystery Light at Watersmeet

glows through the night like an oncoming train, but there's neither track nor train nor any sound, and if you approach, the light 'goes out'

SITU member William Kingsley took these photographs during a May, 1981 vacation trip to the Upper Peninsula of Michigan. For details about the light and how it looked to Mr. Kingsley, see Letters to *Pursuit*, page 93.



Sequenced photographs show progress of the light as it moves from the beginning of a sighting (left), suffuses a power pole (center), turns and starts to bobble, comes back on course and (at bottom) concludes in a final bobble within a halo of near-perfect symmetry.

