THE JOURNAL OF THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

PURSUIT®

VOL. 12 No. 4 WHOLE No. 45

FALL 1979

THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

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

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

'SCIENCE IS THE PURSUIT OF THE UNEXPLAINED'

VOL. 12, No. 4
FALL, 1979

PURSUIT®

THE JOURNAL OF THE SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

FOUNDED BY IVAN T. SANDERSON

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SETTING THE RECORD STRAIGHT ON THE 'GABUN ORANGUTAN'

by Michael K. Diamond

ONE of the more intriguing passages that may be found in literature dealing with unknown hominoids occurs on page 186 of Ivan Sanderson's *Abominable Snowmen: Legend Come To Life*[1] in the chapter dealing with African mysteries. It is so brief that I can do no better than to reproduce it below.

> Then in 1955, a professional American animal-collector brought back parts of a preserved specimen of a small kind of ape from the Gabun that is now lodged in the museum in Zurich, Switzerland. He also had photographs of the animal when alive, and it was certainly the oddest-looking creature; like a tiny orangutan, with a high-domed forehead and quite unchimplike face, clothed in black hair, but *minus thumbs!* The collector insisted that the local natives know these animals well; that they are not chimps; and unlike chimps, they are completely arboreal, travel in parties of about 40, and never come to the ground. This specimen has been tentatively put down as an extremely abnormal baby chimp but it has a complete set of adult teeth!

It is immediately apparent that this report is very specific on some points and disturbingly vague on others. On the one hand Sanderson gives us details of the ape's appearance, mentions the existence of physical, photographic, and anecdotal evidence, and even contributes a line on the results of a scientific inquiry. On the other hand he fails to identify the museum where the specimen is housed and omits the name of the "American animal-collector." He also fails to provide any references.

The nebulous quality of this report seems to have rendered it suspect in the eyes of other researchers since a citation of it has never—as far as I know—appeared elsewhere in the ABSM literature.

It was because this tantalizing tidbit pointed to the possible existence of concrete evidence for a novel species of pongid—this in the midst of 500 pages of hearsay and 'soft' evidence—that I decided to initiate a follow-up investigation to see for myself if there was any substance behind Sanderson's account.

For most of its duration my quest produced only negative results. Bob Warth graciously contributed some of his time and enlisted the aid of Sabina Sanderson, but the two were unable to trace the origins of the report.[2] Dr. Bernard Heuvelmans was similarly tapped out; he in fact considered the story of the tiny ape a complete fabrication.[3] Finally, my sporadic library searches released an unrelenting stream of irrelevance.

Just when my hopes for resolving the mystery were dimming, the entire affair was solved at one stroke artfully applied by another correspondent, Dr. C. Claude, curator of mammals at the Zoological Museum of the University of Zurich.

I had written to the Zoological Museum because it seemed like the logical repository for collected animal specimens. In his initial reply to my letter of inquiry, Dr. Claude stated that his museum had no record of ever having received such a specimen as was described by Sanderson in the time period indicated, but that he would forward my letter to the Anthropological Institute of the University of Zurich which houses a large primate collection. Well, Dr. Claude's colleagues at the Institute not only located a specimen which is almost a dead ringer for our mystery ape but also provided a copy of a paper which constitutes the detailed examination of the cadaver (henceforth to be referred to by its catalog number, A.I.Z. 6624). This paper was moreover authored by the late Adolf H. Schultz, former director of the Institute and one of the greatest primatologists of the 20th century. Dr. Claude transmitted this copy to me, and to him and the staff at the Anthropological Institute I am indebted.

The rest of this paper will be a summary of Schultz's findings and a comparison with what simply appears to be Sanderson's badly distorted version of them.

The circumstances surrounding the capture and delivery of A.I.Z. 6624 were recounted by Schultz:[4]

> The chimpanzee to be discussed was obtained in August 1957 by Mr. Phillip J. Carroll of Yaounde, French Cameroon, who kindly sent the preserved body to the writer together with the following information: "I send you an embalmed body of a rare chimpanzee which I believe is a new species; he weighs 6 lb., has a full second set of teeth, has no thumbs and no big toes; I have seen about 100 of these in a group high in the trees, this one fell about 15 m. from a tree and was badly injured, died 3 weeks later." A snapshot-photograph of this little animal, also sent by Mr. Carroll, bears an inscription claiming that the entire large group of chimpanzees seems to have been composed of "very similar midgets, the largest not exceeding 40 lb." This is mentioned merely because the particular specimen to be described is actually very small for its age, even though it is a mere infant and has as yet no permanent teeth.
>
> *(Reprinted from "Acrocephalo-Oligodactylism in a Wild Chimpanzee" by Adolf H. Schultz* Journal of Anatomy *92 (4):568-79 by permission of Cambridge University Press © Anatomical Society of Great Britain and Ireland 1958.)*

Manifestly visible is the fact that Sanderson got both the year of capture and the country of origin wrong. He inserted Carroll's unqualified and erroneous assessment of the presence of "a full second set of teeth." He gave authority to Carroll's equally unqualified assertion that A.I.Z.

6624 is a representative of a new species by claiming knowledge of a corpus of native knowledge attesting to the same truth. Nothing of the kind is mentioned in Schultz's paper and I doubt that anything similar exists in the ethnographic or folklorist literature of the Cameroon region or in travelers' tales. Uncharacteristically—because he was never one to understate—Sanderson failed to take note of A.I.Z. 6624's lack of big toes and reduced the size of the troop Carroll saw from 100 animals to a modest 40.

It is the last point especially which makes me believe that Sanderson did not seek to intentionally deceive his readers. A reasonable scenario is that in the late 1950s Sanderson somehow got wind of the existence of Schultz's paper but did not record the details or context of his information. Then when he was writing *Abominable Snowmen* he relied on a faulty memory to reconstruct the facts and what came out was a garbled, sensationalized version.

Notwithstanding its recognized status as a specimen of the common chimpanzee *(Pan troglodytes)*, A.I.Z. 6624 is a unique and valuable item, as Schultz himself attests to.

At first glance A.I.Z. 6624 strikes one with its humanlike appearance, attributable to its high hairless forehead, small face, and relatively narrow nose. The protuberant eyes, noticeable in the photographs, highlight a somewhat comical appearance.

A.I.Z. 6624 is clothed in a typically black coat of hair and possesses the white tuft of anal hair which characterizes infant chimpanzees.

Where A.I.Z. 6624 departs from the usual chimpanzee condition is in its skin pigmentation. The cadaver has dark gray-brown skin on the face, ears, back, and lateral surfaces of the limbs. It is a lighter brown on the palms and soles, on the medial surface of the limbs, and on the ventral portion of the trunk. Throughout life, all common chimpanzees *(Pan troglodytes)* possess white skin on the body. Although the skin on the head darkens with age in many individuals—this being most apparent in the subspecies of chimpanzee that occurs in the Cameroon area, *P. t. verus*—all infant *P. troglodytes* have white skin on the face and ears. The dark butterfly-shaped patch of skin around the eyes of *P. t. verus* infants is not homologous to the coloration of A.I.Z. 6624. Pygmy chimpanzees *(Pan paniscus)*, a species which exists in an enclave south of the Zaire River, several hundred miles southeast of Cameroon, are uniformly black-skinned from birth except for some white areas around the lips and anus which mark the infant.[5]

A.I.Z. 6624 is estimated to be about twenty months old; this determined from the presence of a full set of deciduous teeth. For its age it is extremely small and weighs only 2.87 kg. This is well below the observed range of a mixed male-female sample (n = 20) of equivalent age that Schultz used for comparison. In keeping with its small scale, almost all raw measurements of the body and bones are absolutely smaller than those of sample specimens.

Our diminutive ape has normal body proportions in some areas but exhibits unusual proportions in the head, hands, and feet which are merely reflections of abnormalities present in the skeleton.

Upon dissection, Schultz found an abundance of unusual or unique features.

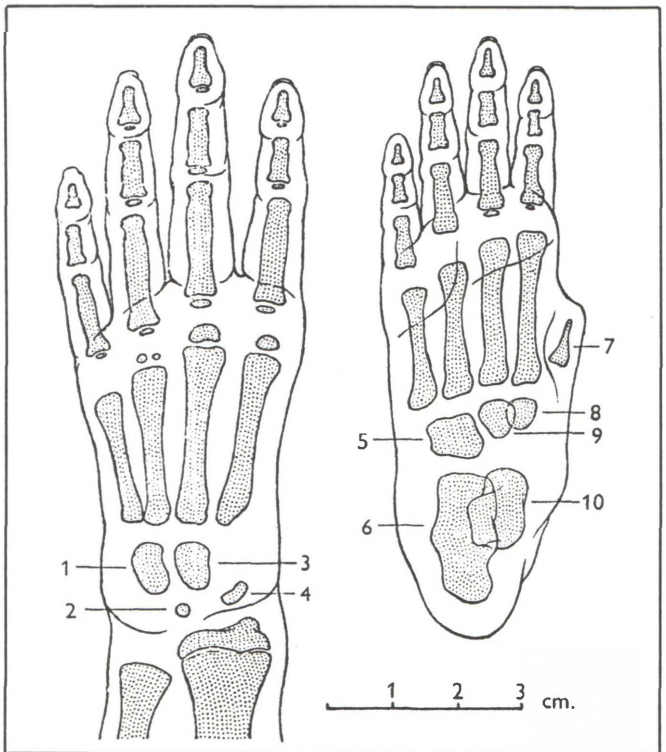

Fig. 1. View from below of the right hand (left) and the right foot (right) of A.I.Z. 6624. Traced from X-ray photographs. (Reprinted from "Acrocephalo-Oligodactylism in a Wild Chimpanzee" by Adolf H. Schultz Journal of Anatomy *92(4):568-79 by permission of Cambridge University Press © Anatomical Society of Great Britain and Ireland 1958.)*

Measurements of the defleshed hands and feet reveal that these are unusually small in relation to the rest of the body although they are attached to normally proportioned arms and legs. As we focus in upon these extremities, we see that the hands not only lack the two thumb bones but the entire first metacarpal as well. In the other primates which habitually lack the thumb, the spider monkeys *(Ateles sp.)* and the colobus monkeys *(Colobus sp.)*, the first metacarpal is always present.[4,6] Thus we are witness to an undoubtedly abnormal condition.

The feet of A.I.Z. 6624 lack big toes but here we see a vestigial remnant of the first metatarsal (Fig. 1) which in the undissected specimen resulted in a bulge on the medial side of each foot. There is no primate which normally lacks the big toe. The closest approach to this condition is seen in the orangutan which in 60% of collected specimens has only a reduced proximal phalanx.[6]

As aberrant as these omissions of digits are, it is nothing compared to the deformities which are exhibited in the skull.

The frontal bone of the cranium has retained the metopic suture long after it should have been obliterated (Fig. 2). This has resulted in additional lateral bone growth producing a broad forehead, widely placed eye orbits, a fused pair of unusually broad nasal bones, and a large minimum frontal (postorbital) breadth.

The broad, manlike forehead surmounts a relatively small face. The orbits, though widely separated, are small and shallow (producing the bulging eyes): upper facial

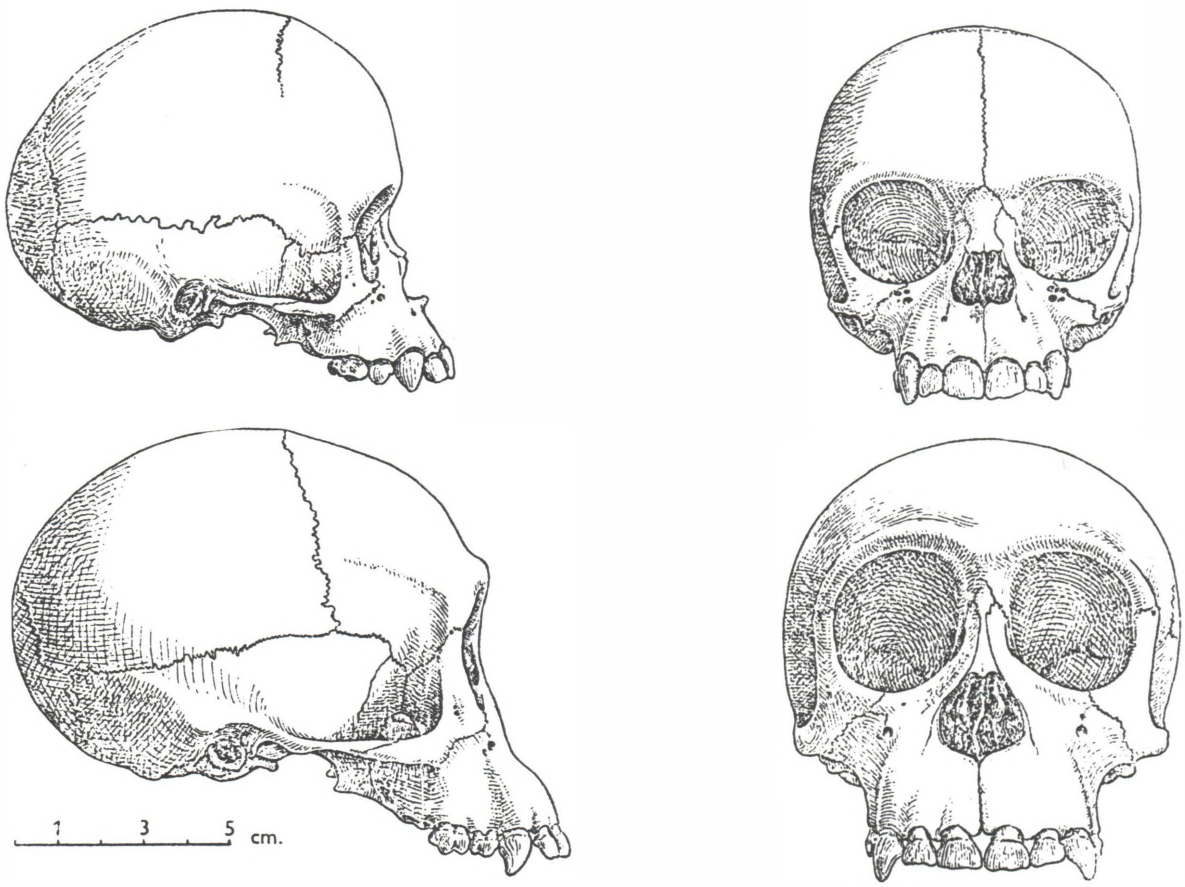

Fig. 2 Side and front view of the skull of A.I.Z. 6624 (top) and that of a normal chimp of corresponding age (bottom). Both are drawn to the same scale. (Reprinted from "Acrocephalo-Oligodactylism in a Wild Chimpanzee" by Adolf H. Schultz Journal of Anatomy *92(4):568-79 by permission of Cambridge University Press © Anatomical Society of Great Britain and Ireland 1958.)*

height and facial breadth are disproportionately undersized; small too is the size of the upper and lower jaws and this has created crowding of the normal-sized teeth.

Elsewhere on the skull vault we see that the coronal suture has been obliterated on its lateral margins. This has prevented bone growth in an antero-posterior direction and so the skull is short front to back. In order to accommodate a normal-sized brain, the cranial bones have had to grow vertically and it is this compensatory growth which has resulted in the elevated forehead and the great height of the cranium as a whole.

Other noteworthy features of the A.I.Z. 6624 cranium are the total facial prognathism, the projecting nasal bones, the presence of a nasal spine at the lower border of the nasal aperture, a bilateral extension of the intermaxillary suture past the lower border of the nasal opening, a uniquely situated foramen acting as the termination point of each extension, and finally the absence of the ethmoid bone in the medial orbital wall.

In reviewing all he has written on the case I must agree with Schultz and pronounce my astonishment at the fact that this youngster, so sorely afflicted with a multitude of deformities, was able to survive as long as it did in the wild.

There are some questions remaining in this affair and all are raised in Carroll's short notes to Schultz. The collector made two observations which are difficult to square with known facts of chimpanzee behavior and morphology. Carroll said that he saw a group of about 100 animals high in the trees. Schultz is quite right when he says he "cannot believe that anywhere near such numbers of chimpanzees travel in groups." The common chimpanzee *(P. troglodytes)* moves in bands containing no more than thirty individuals and as may be expected such congregations are exceedingly rare.[7] The pygmy chimpanzee *(P. paniscus)* is said by natives to travel in bands of from 15 to 40 individuals[8] and if recent observations by field-workers are to be trusted, the numbers are much less than that.[9]

Carroll estimates that the largest individual in the troop of 100 weighed no more than 40 lbs (18.2 kg). As we ponder this estimate we must recognize the fact that guesses about size and weight and numbers of individuals are difficult to make when observer and object are separated by both substantial vertical distance and a barrier of leaves and branches. As it stands, Carroll's appraisal falls below the observed range for either species of chimpanzee. *P. troglodytes* adults vary from 25 to 60 kg with an aver-

age of about 42 kg and with males slightly heavier than females. *P. paniscus* adults vary from 25 to 48 kg with an average of 35.5 kg and again with males somewhat heavier than females.[10,11]

Once again we are back to the question, is A.I.Z. 6624 a representative of a new species? The specimen itself is useless for determining taxonomic status because it is both deformed and infantile. Carroll's comments must be placed in the suspense account since there is no corroborative evidence and we know nothing of the collector's character. One more thing: what do *you* think the probability is that the very first specimen of a new species would turn out to be a magnificently misshapen baby? All things considered, I must take the prudent course and agree with the designation for A.I.Z. 6624 of *Pan troglodytes.*

ACKNOWLEDGEMENTS

I wish to thank Cambridge University Press for allowing me to reprint selected passages and line drawings from Schultz's article. To Dr. C. Claude and his colleagues at the University of Zurich I owe a great debt, for without their aid this paper would not have been possible.

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S(L)AVED BY THE EXPERTS

by Robert Barrow

SEASONED Forteans who heard the cry a few months ago should instantly have recognized its urgency as music to their ears.

The place was Three Mile Island in Pennsylvania, and the "cry," of course, was the oft-repeated scream of area and national people who, fearful of becoming contaminated by radiation from a damaged nuclear plant, shouted "Where are the *experts?* How could the *experts* let this happen?"

One might expect, logically, that the next step would be for the outraged and angered of our population to come to their long-suppressed senses and realize that there *aren't* any experts, and there never were. Instead, the definitive meaning of this grand experience—the ultimate evidence that nobody knows what the hell they're doing—melted down and seeped away into the usual bureaucratic "investigations," thoroughly absorbed and made as bland as yesterday's ... oops ... *today's* newspaper.

And, actually, there's no "win or lose" aspect to the Three Mile Island frolics because, for every "expert" whose competency is questioned, several other experts have and will come forward to *explain* what *really* went wrong, thus making themselves *and* the Mystic Cult of the Experts look good and, once again, blameless in the process. Superman lives, in theory anyway, and it's abundantly easier to put our faith in experts than to take responsibility for our own lives.

Darned skeptical of these experts, I am. I felt that way as a teenage UFO researcher, and became overwhelmed with skepticism after spending four years in the Air Force during the Vietnam war. Oh, I never actually *went* to Nam, but one didn't *have* to go there ... its influence was everywhere.

In the military, and as a civilian, I worked for several years in physical therapy, serving in modern, beautifully equipped hospitals. Usually, I preferred to treat patients with my hands, but it was often so much more convenient to use machines. There was, for instance, something called a *diathermy,* a deep-heating machine which projected, depending on the model, either microwave or shortwave energy far into a patient's muscle tissues, creating heat where surface thermotherapeutic methods could not reach.

The problem with diathermy is that it penetrates so far into tissues that the patient's surface nerve endings don't usually feel more than *minimal* heat, and invariably the patient will complain, "Hey, is this thing working right? I don't feel anything..." However, it was easy enough to convince them of the diathermy's potency; all I had to do was hold a common fluorescent light bulb near the machine and the energy field surrounding the device would immediately cause the bulb to glow just as though it were attached to electricity (which, of course, it was).

Some patients thought this was the neatest "trick" they had ever seen, while others would quickly dress and leave my clinic in fear. Frankly, I sometimes believe the latter group had more sense, preferring *not* to trust their health

with machines built by experts. Then, of course, there were the exquisitely dressed salesmen from the wealthy drug companies—the "pushers"—who regularly paraded in and out of the hospitals, selling every "wonder drug" they could to the pharmacies, pills *expertly* designed to relieve every ill and, who knows, maybe even kill patients, ultimately...

But ... skeptical UFO experts—they're among my favorites. Oh, you know the feeling; having spent considerable time reviewing evidence that supports the theory that UFOs, whatever they are, are real, you're about to believe there exists an actual, legitimate phenomenon in need of solid research.

Suddenly, however, you have an encounter with an article by some skeptic who vehemently denounces UFOs with all the weight his scientific credentials can summon. Well, you consider, this person really has an impressive background—top degrees, years in his field, honors galore. This person, telling us the UFO subject is unworthy of serious attention, is a real expert. He must know what he's talking about. A familiar predicament.

Now, let's spend some time attempting to cure ourselves of any, even the smallest remnants, of *expertosis*—which is not in any dictionary, but if it were, would mean "the condition of being impressed with, afflicted with, or favorably affected by alleged statements or figures of authority." Certain people may know a good deal about their chosen subjects, but none of them knows *everything* of importance—though certain experts would have us believe their word is final on issues essential to everybody.

Me? I'm no expert. Nope, not even a UFO expert. After all, were I a UFO *expert,* I guess I'd know what the "damned" things are, wouldn't I? Now, to begin emergency treatment against further outbreaks of expertosis...

A few years ago, slowly pushing my way through crowds of people, I directed myself toward a spacious, though jammed, lecture hall. The reason for this exercise in swarming humanity was the appearance of a man who was to lecture on UFOs. But not just any man, this—no, indeed, for the speaker was a high-ranking aeronautical engineer, employed by and holding a key position in an international corporation which handles a fair amount of defense contracts for Uncle Sam.

But I had doubts. Advance checking with an out-of-state UFO researcher served to warn me that the speaker, originally very open about UFOs, was now a skeptic, perhaps at the urging of his corporation, which would be only too eager to please the U.S. government and keep those cherished defense contracts by downplaying UFOs, much to the government's delight. Further, the speaker was supposedly willing to dismiss UFO investigators as readily as the UFOs. The warnings were particularly unsettling because my contact knew the engineer personally.

The speaker arrived and stepped to the podium, his appearance impeccable and his speech qualities polished to perfection. He started with a brief slide show, describing the history of UFOs. Only after the slides did rumor become fact.

The open mind, the objectivity so prevalent during the slides, vaporized. The engineer criticized civilian UFO agencies with a vengeance, and high on his mind was the former director of the National Investigations Committee on Aerial Phenomena, Maj. Donald Keyhoe (USMC, ret.). He referred to Keyhoe as "just a writer," though he should have been aware of Keyhoe's solid background in military aviation and his past position as chief of information for the Civil Aeronautics Branch of the U.S. Department of Commerce. He also incorrectly criticized the major's UFO articles.

In reference to a case from the early sixties, where Keyhoe related how radar tracking a Polaris missile automatically locked on to both the missile and a large UFO apparently in close pursuit of the flaming projectile, the lecturer dismissed the incident. "This just didn't happen," he shrugged.

Unfortunately for the audience in the packed hall, they had no way to know that, indeed, the Polaris incident was *real,* and that a copy of the Cape Canaveral tracking log of January 10, 1961, detailing the event, was on file at NICAP.

This "expert" lecturer spent most of the evening discussing crackpot cases and far-fetched sightings; during a short question-and-answer session, he wasted his time on screwball questions. And if this authority was as eminently familiar with UFO literature as he should have been, he wouldn't have misquoted the title of the late Capt. Edward J. Ruppelt's (a former Air Force Project Blue Book chief) book, *The Report on Unidentified Flying Objects* as *The Report on Unidentified Flying Saucers.* He also mistitled the well-known book by the late Frank Edwards, *Flying Saucers: Serious Business,* as *Flying Saucers are Serious.*

On and on this expert continued with fictional accounts of the truth, enchanting his unsuspecting audience with his own version of UFO research.

Ironically, a part of the engineer's speech admonished those who would set themselves up as self-proclaimed UFO authorities!

Finally, the meeting ended, the engineer received generous and undeserved applause, and I left in disgust. What the man had said didn't bother me half as much as the knowledge that a good share of his listeners—many of them scientists—were now convinced the UFO topic was laughable. This fiasco occurred about 12 years ago, and taught me one of my earliest lessons about the Myth of the Expert.

Other examples pointing out the incompetency of authorities are as close as the files of the defunct USAF UFO investigation. Unlike the NBC-TV series, "Project UFO," which portrayed Project Blue Book's work as intricately scientific and thorough, the real project was a disaster, privately and publicly. We can be especially certain of this now that several researchers and even the National Archives, drawing upon declassified USAF files, are providing clues to Blue Book's sad lack of scientific inquiry.

The government's overwhelming desire to authoritatively explain away UFOs as fast as possible was evidenced to me during a warm July in the early sixties. The fun began when four teenage boys in New York State decided to take advantage of ideal weather and sleep out overnight in a back yard. Still awake and gazing skyward at about 2:30 a.m., the four suddenly observed three objects overhead. Described as being "very high," the

things "zigzagged and circled around." Each object possessed a single red light.

The boys immediately phoned their local police, who referred their call to a nearby Air Force installation. Speaking with a colonel whose name they did not recall, the teenagers gave him the details.

Later in the morning, just in time to face anxious newsmen, the Air Force declared it had checked and discovered there was indeed a flying object in the sky: "...one of the numerous satellites still orbiting the earth." I couldn't believe it. The press bought the explanation without hesitation, despite the discrepancies. Unanswered were: How did the Air Force ponder *three* objects and come up with *one* satellite? Which satellite (not identified) did the boys see? How does the Air Force account for the single red light seen on *each* of the objects? What is the name of the colonel to whom the boys spoke?

I contacted the Air Force unit concerned, only to be denied any information whatsoever. The base public information officer quoted AF regulations to me, including the section in the now-deleted AFR 200-2, which states that information about a UFO sighting may be released "to the press or the general public only after positive identification of the sighting as a familiar or known object." The officer's refusal to answer my questions struck me as odd because the Air Force *had* explained the boys' sighting as a "familiar or known object." So what was the problem? Apparently, there was a big problem, somewhere, for, in its haste to quench public curiosity about the incident, the USAF blew its *expert analysis* image but good.

Where are the experts, then? Another time, I talked with people who, one summer's night, watched a high, star-like thing traverse the skies from north to south, then south to north, and this continued, back and forth, *for four hours.*

The Air Force, jumping right on the annoying case, explained it in a flash. What a number of witnesses had observed, said the USAF, was probably a satellite! Of course, the officials cautioned that they weren't sure *which* satellite. Obviously, it pushes one to the brink of outrage to realize that no satellite stays in one area of the sky for four hours, and they certainly don't make to-and-fro motions.

How do we refute the experts? How do we tell skeptical, credential-laden UFO experts that their degrees and background are irrelevant to their anti-UFO pronouncements? Simple. Match them with *other* experts whose brilliant revelations proved to be in great error. Fortean literature, and the "normal" stuff, of course, abounds with examples.

Perhaps the most widely quoted example of an expert who didn't know what he was talking about was Lord Kelvin, the famous 19th century physicist. Kelvin *deplored* the theory that the sun's energy was capable of altering the earth's magnetic field, but he was wrong.[1] He saw only limited use for the newly invented radio; and when X-rays were discovered, Kelvin laughed off the announcement as a hoax. In 1896, this expert stated he "had not the slightest faith in aerial navigation other than balloons."[2]

The late, renowned astronomer, Dr. Harlow Shapeley, who long refused to believe in the existence of interplanetary dust around all the galaxies, had a stubborn attitude that helped perpetuate our ignorance of the universe's great expanse.[3] More recently, Thomas Gold, director of the Greenwich Observatory, said in 1956, "...observational research has *proved* that a layer of dust up to 6,000 feet thick covers the moon. The moon dust is so loosely packed that no traveler would be able to walk on it."[4] If this is so, NASA must have lost a good many astronauts up there that they aren't talking about!

The English poet, William Cowper, said something back in 1789 that seems to reflect the disgust that UFO skeptics have towards researchers who accept UFO reality, although he was referring to flight: "Were I an absolute legislator, I would make it the death penalty for anyone convicted of flying—a bullet sent through his head or his carriage would not be murder."[5]

George Simon Ohm, developer of the theory of electricity, found his 1827 book, *The Galvanic Chain, Mathematically Worked Out,* termed "a web of naked fancies" by experts who *knew* Ohm must be wrong. One detractor wrote, "...he who looks on the world with the eye of reverence must turn aside from this book as the result of an incurable delusion, whose sole effort is to detract from the dignity of nature."

"A physicist who professed such heresies," advised the German minister of education in agreement, "was unworthy to teach science."[6]

The experts are no different a century and a half later. Dr. J. Allen Hynek recalls a 1968 astronomers' conference featuring several hundred scientists. At one point during the evening's proceedings, the meeting was interrupted by reports that strange lights—UFOs—were visible in the sky outside. Hundreds of scientists immediately responded with laughter and ridicule, Hynek states, but "not one astronomer ventured outside in the summer night to see for himself."[7] Science at work? Hopefully not ... and scientists are supposed to be *experts,* mind you.

Early in the 1940s, President Truman's chief of staff was Admiral William Leahy, and in response to inquiries about the untested atom bomb, Leahy pronounced, "The A-bomb is the biggest fool thing we have ever done—the bomb will never go off.

"And I speak as an expert on explosives."[8] Famous last words?

In 1945, Vannevar Bush, World War II scientific advisor to the President, announced, "There has been a great deal said about a 3,000 mile high-angle rocket. In my opinion, such a thing is not possible for many years...it will not be done for a very long period of time to come."[9] Soon afterward, the ICBM became a reality. If a 1945 presidential advisor can be this far off the track on issues dealing with defense, we may be sure that more recent advisors have the potential to be equally short-sighted.

In 1926, a Professor A. W. Bickerton, who undoubtedly prided himself on doing his homework, projected his expertise towards the *absurd* idea that man could visit the moon: "This foolish idea of shooting at the moon is an example of the absurd length to which vicious specialization will carry scientists.

"To escape the earth's gravitation," Bickerton continued, "a projectile needs velocity of seven miles per

second. The thermal energy at this speed is 15,180 calories. Hence, the proposition appears to be basically impossible."[10]

Equally, we can assume that on the subject of UFOs and other Forteana, the skeptical experts are stumbling over their own words.

Dr. F. R. Moulton, 1935—a statement on space flight:

"There flit through the imaginations of these individuals vague visions of airships or rocket cars capable of making journies through interplanetary space. To every suggestion of difficulties, they make reply that the seemingly impossible has often been accomplished.

"Yet, in all fairness to those who by training are *not* prepared to evaluate the fundamental difficulties of going from one planet to another, or even from the earth to the moon, it must be stated that there is not the slightest possibility of such journeys..."[11]

With similar fervor, Simon Newcomb declared in 1906 that the impossibility of being able to produce a machine to fly long distances through the air "seems to the writer as complete as it is possible for the demonstration of any physical fact to be."[12]

No less an expert than Dr. Lee DeForest, the father of electronics and inventor of the vacuum tube, said in 1957, "To place a man in a multistage rocket and project him into the controlling gravitational field of the moon, where the passengers can make scientific observations, perhaps land alive, and then return to earth—all that constitutes a wild dream worthy of Jules Verne.

"I am bold enough to say that such man-made voyages will never occur regardless of all future scientific advances."[13]

The next time somebody suggests UFOs and other Fortean phenomena can't exist because an impressive expert says they can't, keep these examples in mind. The complexity of the various enigmas we study dwarfs the experts even more than they confound the rest of us. Isn't it "Clarke's Law" that states, "When a distinguished... scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very possibly wrong."[14]

What the heck. In this day and age, an expert is usually just somebody who paid a lot more money for his education than the rest of us...and, unfortunately for all of us, tended to believe everything the sheepskin did for his ego. So, come back down to earth, fellows and ladies. You're just like us. Wondering what it's all about...

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THE TOMB OF KHUFU: MYSTERIES OF THE GREAT PYRAMID PART I

by Norman Gholson

EVEN though years of research and adventure have not given us the final truth about Egypt's greatest mystery—the purpose of the Great Pyramid of Giza—there is still a possibility that further research will discover the key to this most perplexing enigma.

Regardless of the centuries of explorers who have searched this pyramid for the fabulous treasure of King Khufu, there may still be chance that the mummy of the pyramid's building, Khufu,* remains hidden somewhere in or very near this pyramid's structure. It is a well-known fact that the Egyptian pharoahs furnished their tombs lavishly with food, jewelry, weapons, and statuettes of servants—thought by the Egyptians to serve the king in an afterlife. The many objects in the tomb of Tutankhamon are a good example. Tut, however, was only a minor king. If an insignificant pharoah was buried with such splendor and wealth, the great Khufu's tomb must have contained treasures of unimaginable value.

The Great Pyramid, largely because of size, has inspired enough speculation to fill volumes. This pyramid covers thirteen acres, is 481 feet high, and is 755 wide at the base. During its construction it is estimated that workers transported around 2,300,000 granite and limestone blocks weighing about 2½ tons each from quarries up to 700 miles away. A number of recent speculators on this mystery are assuming the Egyptians could not possibly

* There is still a sizable doubt as to whether Khufu was really the builder of the Great Pyramid. Erich von Däniken, for instance, suggests that the cartouches of Khufu found at several places on the Great Pyramid may have been graffiti on a much earlier pyramid by a later king. This speculation, however, falls through when we discover that the cartouches of Khufu were found in a place which could not possibly have been visited by a later pharoah—the construction chambers above the King's Chamber—where the hieroglyphs are upside down—thus indicating that these hieroglyphs were *painted on the blocks at the stone quarry*.

have built the Great Pyramid without help from alien visitors from outer space. To this writer, it seems that these people are underestimating the abilities of the ancients, and overestimating the chances that Earth was once visited by aliens. Much of such speculation stems from the huge amount of labor required in building the Great Pyramid, as well as several curious facts about its dimensions. One such fact is that the pyramid's meridian line divides the surface of the earth in two equal halves—as do all the other pyramids of Egypt. Then, there are the facts that the area of its base divided by twice its height gives the figure pi; and its height multiplied by a billion gives the distance of the earth from the sun.

These figures are only approximate but still close enough to challenge explanation. Are these facts merely coincidental to the principles of orientation and proportion as consciously applied by the Egyptians? This writer believes that they are—largely because when dealing with such a structure as large as the Great Pyramid, where many figures are involved, it is only a matter of probability that a few coincidences will appear. Rather than contribute to vain speculations leading nowhere for need of specifics, this writer proposes that a more fruitful approach consists in better analysis and interpretation of tangible data, and that is the intent of this article.

THE GREAT PYRAMID

The outside of the Great Pyramid is presently crumbling, eroded, and worn down by time. When erected 4500 years ago, it was sheathed in polished limestone which might still cover the pyramid today had the Arabs not removed it as a building material for Cairo. Then this pyramid's locality was once used as a quarry, and nearly all the casing stones were missing except those at its foot. These stones were later found when removing rubble at the pyramid's base. Also, the temples and the causeway, which were once a part of this pyramid's complex, have long since vanished from the site. Only the core masonry of the causeway remains, and the pavement around the pyramid and related structures has all but disappeared. Originally this pyramid had a capstone, but this, too, was probably removed as building stone or perhaps wore away by erosion.

While the outside of the Great Pyramid has changed markedly from its ancient appearance, the inside has remained virtually intact. The only damage to the passageways and chambers is that done by treasure-hunters and archaeologists and the stone chippings from the coffer of the King's Chamber (and several other places) by tourists as souvenirs.

There are many passages in the Great Pyramid, and it would have taken considerable time to excavate them. One of these passages, the Grand Gallery, stands out among all others. Unlike the cramped size of the other galleries, the Grand Gallery has a ceiling that towers above one's head. Several passages branch from this gallery, one leading to the King's Chamber and another to the Queen's Chamber. The entrance area of the Grand Gallery contains an opening to a mysterious Well Shaft. The only finished chambers in the pyramid, the King's Chamber and the Queen's, were found empty and (presumably) undisturbed by the first Arab explorations of 820 A.D. In the King's Chamber lies the "coffer"—a solitary granite sarcophagus. When these first Arab explorers entered the King's Chamber, they found the coffer—but no lid and no trace of a mummy. There are grooves where the lid should be, but no lid was ever found. A corner of the sarcophagus has now been chipped off by centuries of tourists searching for souvenirs. Archaeologists tend to believe this is where King Khufu was buried.

The Queen's Chamber was likewise found deserted, but a suspicious looking niche on one of the walls attracted the Arab explorers' attention. When they dug into the wall behind the niche, however, the wall proved to be solid.

The King's Chamber is connected to the outside of the Great Pyramid by two airshafts. These shafts are far too small for a man to crawl through, and so didn't serve as passageways. Their purpose, whether for ventilation, religious significance, or perhaps even for communication with the outside world from the King's Chamber, is not known.

The Great Pyramid has only one entrance and from this, deep into the heart of the underlying bedrock, sinks the Descending Passage. This passage ends 600 feet below the summit of the pyramid (120 feet into the ground) and terminates in a subterranean chamber which was also found empty.

Other chambers have been discovered above the King's Chamber. These are of very low construction and apparently built to protect the ceiling of the King's Chamber from the extreme pressure of the many blocks above it.

The Ascending Passage (leading from the Descending Passage to the Grand Gallery) had been blocked with granite plugs at the time of the pyramid's construction to keep people from entering the King and Queen Chambers. There is much controversy over the method used for sliding these plugs into place. Some researchers think the granite plugs were built inside the pyramid, while others speculate that the plugs were lowered by some unknown means from the Grand Gallery. The Arabs cut around these plugs to enter the Ascending Passage and gain access to the King and Queen Chambers.

KING KHUFU'S TOMB

Assuming that the Great Pyramid was actually "empty" as recorded when the Arabs explored it in 820 A.D., there are three possibilities regarding the enigma of Khufu's burial:

1) That Khufu was never buried in the Great Pyramid (in other words, that the pyramid was never used as a tomb).
2) That Khufu's mummy and treasure had been previously found and looted.
3) That Khufu and his treasure still remain hidden somewhere in the Great Pyramid today.

Considering that both the King and Queen Chambers were found empty, one could conclude that this pyramid was never intended to be used as a tomb, but there is no good evidence that it was ever used for some other purpose. Even so, there exist various speculations as to other

possible uses. Some Egyptologists and other speculators have presented interesting theories, but unfortunately, there has never been enough evidence to establish absolute proof. The most popular theories as to other uses include: a library in stone of ancient Egypt's knowledge, an astronomical observatory, Joseph's graneries, and a temple for secret initiations (which seems unlikely, since if the Great Pyramid was intended to be visited there would have been no need for granite plugs), and finally—per recent speculation—that it was constructed as a space base for ancient astronauts.

If Khufu was never buried here, there is little likelihood that sufficient evidence will ever be found to prove that, considering the difficulty of proving a negative. Many scientists think that Khufu was originally buried in this pyramid but that his entire treasure, along with his mummy, were stolen sometime prior to the Arab explorations. If true, this looting probably occurred before the Persians conquered Egypt in 525 B.C. The reason for this assumption is that from the time of the Persians to 820 A.D., the upper galleries are believed to have been unknown. (This is where most archaeologists think the mummy and treasure lay before the violation of Khufu's tomb.) Certainly the first Arab explorers could not have stolen anything since they found these upper galleries empty. Thereafter, no one could have robbed the tomb because there was nothing there to rob. As to looting, there are no known records of it over the entire 4,500 years during which this pyramid has stood.

If no one desecrated the burial chamber from the Persian domination of Egypt to the present, could the ancient Egyptians themselves have done it? Perhaps the most knowledgeable of the builders pillaged the tomb because they knew what it was designed to conceal. Such persons, however, would probably have been executed at Khufu's death because of their secret knowledge. Then, if the Great Pyramid was pillaged in the times of the ancient Egyptians, the entrance would certainly have remained open when Herodotus, the famous Greek historian, visited the Giza site sometime around 450 B.C. For these various reasons it appears that the Great Pyramid may never have been robbed.

LOST CHAMBERS OF THE GREAT PYRAMID

If the mummy of Khufu was originally buried in the Great Pyramid and never stolen, where is it today? Is it possible that the mummy and treasure are still hidden within? Explorers have searched everywhere in the hope of finding a secret burial chamber, but they have found nothing.

Strangely, even the use of modern day electronic technology has produced confusing results. A team of scientists recently tried bombarding the pyramid of Khafra* (Chephren) with high energy radiation in a way designed to reflect variations in structural content. When their data were computer processed, the results were so conflicting as to be virtually useless. Perhaps we may lightly conjecture that these odd results were caused by *pyramid power*—which is also allegedly capable of preserving dead animals as well as sharpening dull razor blades.

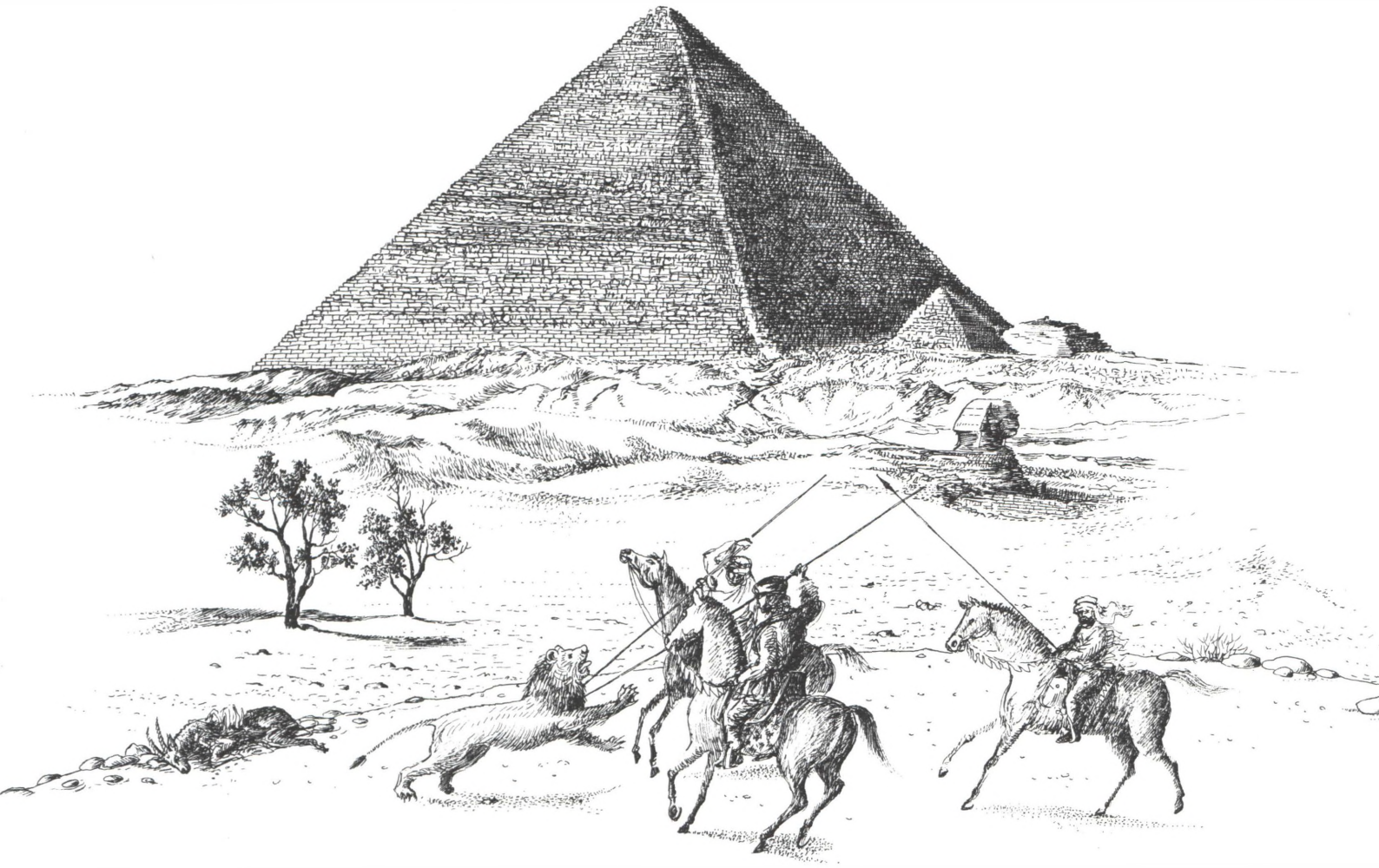
Although all attempts to find lost chambers within the Great Pyramid have thus far been futile, there is one location that deserves much more attention. This location is the subterranean chamber which is carved deep into the bedrock underneath the pyramid and at the end of the Descending Passage. The subterranean chamber is only roughly cut from the surrounding rock and the walls show slabs of rock protruding at different places. The floor of this chamber is cut in three or four rough levels, but the ceiling is smooth. Surprisingly, this chamber is the largest one in the entire pyramid, and the maximum ceiling height is over eleven feet.

Extending out from the south wall of this chamber, there is a small passageway that terminates at a blind wall 53 feet away. The center of the chamber floor contains a cutout of a roughly rectangular pit. This pit is also cut in several levels like the chamber floor. In 1838, this pit measured twelve feet deep, but it was later deepened by explorer Howard-Vyse in his search for a lost chamber in the pyramid. After this explorer's futile search, it was immediately assumed that the pit held nothing of value. This conclusion, however, may have been overly presumptuous. The layers of refuse and stone that Howard-Vyse *did not excavate* could possibly conceal granite plugs blocking the entrance to another chamber—and possibly the true burial chamber of Khufu. Putting a huge stone slab over an entrance from above and filling the passage to the plug with rubble was a common Egyptian method of disguising tombs.

Archaeologists have entertained several reasons for not investigating the pit further, but careful analysis shows that these reasons are not infallible. For example, one of the most poignant reasons is the rough appearance of the subterranean chamber which would be the ante-chamber of Khufu's tomb if this writer's theory is correct. Because this chamber is so roughly cut, it suggests that excavations for it were never really completed, that it was deserted in the middle of building operations for another chamber such as the King's Chamber. That conclusion is not necessarily warranted, because the rough cut of this chamber may have been intentional. Khufu's true burial chamber may be concealed by this "unfinished" antechamber above it. This ploy would mislead the tomb-robbers into believing the chamber was only a blind. Khufu could also have directed that rubble be dumped into the shaft leading to his tomb.

One of the most important pieces of evidence in favor of lost chambers beneath the Great Pyramid comes from the ancient works of the Greek historian Herodotus. He wrote nine books of history covering virtually all the nations known to the Greeks in ancient times. In gathering material for his accounts of certain countries, Herodotus often traveled to these countries himself. Egypt, then under the rule of the Persians, was among the countries he visited. We are indebted to him for knowledge of Egyptian culture including his account of the mummification process. Among his many topics, he wrote the most detailed and best account of the pyramids of all that has survived from classical times. The famous Library of Alexandria (thought

* Khafra was believed to have reigned either directly after Khufu or at the death of Khufu's son, Dedefre.



to contain some 700,000 works) probably contained much valuable data on the pyramids, but the library was burned by religious fanatics in the 4th century A.D.

Herodotus mentions underground chambers beneath the Great Pyramid at three different places in his account. Could it be that he was referring to chambers that may exist beneath the pit in the subterranean chamber? The three passages that mention subterranean chambers are contained in Book II of *The History,* as translated by Harry Carter.*

After describing the building of a causeway from the Nile to the pyramids' sites, for the transport of stone building blocks, Herodotus writes:

> "Ten years, they say, were taken by this work (on the causeway) and the making of underground chambers for the king's burial in the hill on which the pyramids stand which he turned into an island by cutting a canal from the Nile."

And again, when figuring how much labor was expended on the Great Pyramid, Herodotus remarks that:

> ". . . the digging of the underground works took no little time."

Then once more, when Herodotus is comparing the pyramid of Khafra with that of Khufu, he remarks:

> "There are no underground chambers beneath it [Khafra's pyramid], nor has it any inflow of water from the Nile as the other [the Great Pyramid] has, where the water is led in through a passage in the building and surrounds an island in which, they say, Cheops lies."

If Herodotus was not fantasizing, we may have found valuable clues that the answer to the Khufu mystery lies beneath the subterranean chamber. However, Herodotus's passing mention of such chambers was long ago dismissed from serious consideration after it was once labeled as a "tall tale," and largely forgotten. The experts reasoned that the tale was probably pushed off on the unwitting Greeks by one of the priests Herodotus used as a source of information. In judging whether to accept this explanation, why not reconsider these passages both alone and in context with the rest of Herodotus's writings on the pyramids of Giza? *— To be continued*

* These passages are quoted from *The Histories of Herodotus* translated by Harry Carter, Heritage Press, New York, 1958.

ARE UFOS PSYCHIC PHENOMENA?

by Ivor Grattan-Guiness

INTRODUCTION

I shall not spend any time on arguing for the occurrence of UFO phenomena, although I shall refer to examples on occasion. Rather than deal with the view of those critics that *all* phenomena can be explained in terms of either some natural phenomena or an unethical claim by the witnesses, I shall ignore it. For me there is a significant residue of evidence which cannot be so explained away, and this is not the place to argue about particular cases. When I use phrases such as "UFO sighting" below, I refer only to this significant residue.

Description of particular cases is the principal preoccupation of the literature, especially the journals. Among the best journals in this field is the British *Flying Saucer Review*. I shall confine my journal references to it when mentioning particular sightings.[1] I shall also refer to some of the more worthwhile books and articles in the field, especially those which discuss the general questions about the field, which are my chief concern here.

UFOLOGY: ITS RECENT HISTORY AND CURRENT STATE

Ironically, the best known event of 1978 connected with UFOs is not a sighting but the film "Close Encounters of the Third Kind." This unlikely title is taken over from the classification of UFO sightings in J. A. Hynek's *The UFO Experience*, and covers cases where "the presence of 'occupants' in or about the UFO is reported."[2] Sometimes contact with these "occupants" is claimed, as happens in the film.

Since the film has been commercially successful, it is certain to have a successor. Often such films have uninspiring titles in the form "Son of _____ " or "_____ 2", but in this case both the title of a successor and its contents are obvious. I do not wish to provide free ideas for the dollar-laden servants of the film industry, but since the appearance of Hynek's book in 1972 the category of "Close encounters of the fourth kind" has been introduced by some students of the field. They are alleged abduction cases, whose details are apparently retrievable only by regression hypnosis. These cases provide some of the strangest data in this field,[3] and their cinematic possibilities are obvious.

Cases of this kind are among the reasons for a strong change in recent years away from orthodoxally technological explanations of UFOs as machines to an acceptance that UFO sightings, or at least a significant proportion of them, are not of objects in the normal sense of that term, but are psychic experiences of some kind. Hence the question in my title, which we shall explore in the sections below. Firstly, however, I must say more about the history of the "technological" period of explanations of UFO phenomena, for it has left its mark on the current state of the field in many ways.

Although sightings have been recorded apparently back into antiquity, the modern interest in the field started just after the last World War. At the time the authorities of both East and West were discovering the extent of the Germans' military war-time technology, and rapidly "acquiring" as many of the relevant personnel as possible. Then these reports of "flying saucers" (the vogue term of the time) were publicized in profusion, especially in the United States. Were people seeing the latest products of the talents of our/their/someone else's Germans? It is not impossible for a machine of that shape to be designed according to our technological principles, although the technical difficulties are immense, especially to achieve the sudden and large changes of speed and/or direction which are often reported by witnesses.[4]

Characteristically of this field, the question of whether or not witnesses were observing post-Nazi technology cannot be answered definitively. On the one hand, there are claims that the Germans tried to develop such a machine. For example, in an article under H. Oberth's name in an early issue of *Flying Saucer Review* there is information on the V7, a helicopter powered by circumferentially mounted engines. Apparently it *was* developed at the research centers in Prague and Vienna, although the technical difficulties were enormous and the project was not continued at Peenemünde.[5] Again, a friend of mine, himself not interested in UFOs, told me that a report on the Germans' achievements was written at the end of the war by a close acquaintance of his in British Military Intelligence. On the other hand, I have not been able to see any documents on the matter: the custodians of the relevant British, American and German archives deny that they possess such material, and authorities such as R. V. Jones have no knowledge of such developments.[6]

In recent years the social climate has eased. The Americans have released much of their information collected by their Air Force,[7] and some good television programs have been made there.[8] Again, the French Ministry of Defense admits that its ministry studies the phenomena.[9] By contrast, Britain remains the land of timidity in the face of anything that is possibly novel: the BBC programs on UFOs are usually rubbish, for example,[10] but "Close Encounters of the Third Kind" may help awaken the British. The *Daily Express* collected much information from a request for readers' letters,[11] and a UFO Investigation Network is now working well, nationwide, under the efficient organization of Jenny Randles[12] and reporting regularly in *Flying Saucer Review*.

I shall not say more on this situation and its history, but I do wish to point out the kind of atmosphere that has surrounded the subject, and still does. The military implications of UFOs, I am sure, have governed the desire of officialdom to disparage the subject. Hynek's *The UFO Experience* describes many cases of the most extraordinary carelessness with the evidence by his colleagues on various investigative committees; indeed, it was these attitudes that aroused his deeper curiosity.[13] D. M. Jacobs's excellent social history of *The UFO Controversy in America*

shows how widespread was the generation of controversy by fanatics on both sides.[14] This is our historical heritage, and we must attend carefully to it even if it evolved in the context of the assertion and rejection of technological explanations which now are not widely advocated.

SOME SIMILARITIES BETWEEN UFO AND PSYCHICAL PHENOMENA

The move away from technological to psychical explanations has occurred largely in the 1970s.[15] The causes include the continuing failure to produce convincing technological theories of craft design and motion, and the gradual realization that psychic phenomena are sometimes associated with, or follow, a UFO sighting (I give some examples below). C. G. Jung was a pioneer in this direction in as much as in his *Flying Saucers* of 1959 he regarded UFOs as God-images rather than machines,[16] although just before his death he thought that they were space-ships.[17]

I shall now address myself to the question posed in my title: are UFOs psychic phenomena? In the rest of this section I shall briefly survey nine respects in which UFOs and psychic phenomena display similarities. I cover not only the phenomena themselves but also theories about them and the attitudes that are held about both the phenomena and their study.

1. *Phenomena.* UFOs would appear (literally) to be most similar to apparitions and ghosts; but this similarity is less marked than it would seem. But UFOs can leave much more physical evidence behind, and more frequently, than is normal with apparitions or ghosts: broken branches, damaged crops, circular marks on the ground, and so on[18] In addition, ectoplasm hardly ever seems to occur at UFO sightings. The behavior of animals is often similar in both areas: dogs and cats run away with the same enthusiasm from UFOs as they do from various kinds of psychical phenomena. Animal deaths have also been discovered after UFO sightings.[19] Among specific cases where connections between UFO and psychic phenomena may be involved, I may mention Geller's claim of UFO contacts (the degree of your belief in them will depend on your belief in Geller);[20] the UFO sighting of 'Dr. X' in France which involved psychic healing and (later) levitation;[21] the sightings of Stella Lansing, who seems also to have the "thoughtographic" ability to cause images to appear on film in addition to those captured by the camera;[22] and the close encounter of the fourth kind experienced by Betty Hill, who has had other psychic experiences.[23]

However, despite these many points of similarity between the two areas, there is no obvious *pattern* of connection between them: one witness's "other things" might be poltergeists, another's thoughtography, and so on. This situation strengthens the *general* thesis of connections between UFOs and psychic phenomena, but makes the development of theories asserting *specific* connections very difficult.

2. *Repeatability.* Both areas face great difficulties in this respect. For UFOs the most interesting case so far is perhaps Stella Lansing, who seems to see UFOs, and photograph them, at will. In addition, other people can see them with her: I myself have done so.[24]

3. *Residual categories.* Both UFOs and psychical phenomena are defined as residual categories of phenomena, those which are not in Respectable Category A, nor in Respectable B, nor . . . This has three important consequences. Firstly, to say that UFO phenomena are psychical phenomena really says very little: since both areas are so disparate, it is not surprising that some of one will correlate with some of the other. This leads to my second point. *Both UFO and psychic phenomena need classification, need a taxonomy; to search for the "nature" of either is a mistake.* Thirdly, connections between two areas might in fact *help* the construction of classifications in *both* of them.

4. *The situation over rationality.* Both UFO and psychic phenomena strain rationality by their apparent contradiction with established science. To me, however, the conclusion is: so much the worse for established science. My own work in the history of science (a topic about which scientists normally know nothing significant) has shown me very clearly that scientific progress over time affects the conception of rationality itself, especially the assessment of the legitimacy or otherwise for scientific study of a class of phenomena: yesterday's magic mutates into today's feasible problem, and tomorrow it will be demanding research posts and specialist journals. No argument for the eventual acceptability of either UFO or psychic phenomena thereby follows, but the more infantile forms of their rejection can be strongly criticized, especially when one brings in the historical fact that fringe sciences of a period help to mold the rationality of science as a whole.

The reason why such wholesale rejection of both these fields occurs is as follows. Scientists think that the cautious approach to strange phenomena is to reject their occurrence. But they are twice mistaken: firstly, in regarding science as a wholly cautious activity (Popper has demolished this view with regard to theory construction); and secondly, in thinking that rejection is the cautious approach anyway. On the contrary, the cautious view is to *accept* the phenomena, since no commitment to any particular *kind* of explanation is made, but the possibility of exploring various explanations is allowed. The "caution" of rejection is often a reckless and unthinking conservatism. A. Michel quotes Jean Cocteau as having once said to him: "What *would* be unbelievable is that they should NOT exist."[25]

In recent years science itself has become less "authoritarian" in its self-image: in particular, physics is no longer its queen. As an example, meetings between scientists and ufologists take place every now and then,[26] and serious journals are attempted.[27]

5. *The polarity of attitudes.* As I have intimated before, attitudes concerning UFO phenomena and their studies are often *strongly* in favor or against; hence another similarity with psychical phenomena leaps to the eye. I am sure that the polarity itself is worthy of study. Both areas seem to tap a deep-seated source of fear: fear for some that these phenomena actually occur, fear for others that they may actually be orthodoxally explicable. In this connection the asymmetry of publicity of the views of critics and of protagonists applies. Students of psychical research know well that critics are automatically sold as

experts, while well-argued defenses are ignored.[28] The same happens in ufology. For example, all the British newspapers were full recently of the story that Adamski's photographs of UFOs must in fact have been of the cover of a bottle cooler; but the report of its inventor that *he had been inspired to his design* by seeing Adamski's photographs was less widely circulated.[29] By such moves is the philosophy of reckless "caution" fortified.

6. *Minds, bodies and universes.* Both UFO and psychical phenomena have many consequences for the distinction between mind and body. The current situation over this distinction is in a curious state; most scientists (and also Popper) support some form of interacting dualism between mind and body, while philosophers think that they have reduced mental events to states of language behavior. UFO and psychic phenomena seem to speak against dualism to some extent, but in addition attempted linguistic reductions of mental events are irrelevant. In a thoughtful article on "The mind-matter interface," J. Eisenbud has made the pleasant suggestion that we regard a UFO as "an into-the-body experience," as a converse to psychical out-of-the-body experiences.[30] Perhaps we can go further and wonder if a UFO is an object at all, and if "it" is actually flying.

A related matter is the question of the space-time in which bodies exist. Part of the psychic explanation of UFOs is that they come from parallel universes, but I do not see what help this unfalsifiable hypothesis provides. In addition, it has no specific connection with UFO or psychic phenomena anyway. I can postulate the existence of as many parallel universes as I like around me without any difficulty, since their presence will be detected *only* when physical interaction with my universe occurs. *How* such interaction may occur is a good question, of course, and maybe some aspect of ufology or psychical research will be illuminated by an answer to it.

7. *Use of hypnosis.* Originally a psychical phenomenon itself, hypnosis is now a widely used technique in psychology and (sometimes) medicine; even though it is still not well understood theoretically, it is increasingly used in ufology, especially for close encounters of the fourth kind. However, the UFO experience itself does not normally appear to have any hypnotic or hallucinatory component to it; the UFO seems to enter the witness's experience in his normal state of consciousness and does not affect it, although it may well cause physiological effects (burns, eye-strain, headaches, and so on) and even death.[31]

8. *Use of statistics.* There is now enough data for statistical analysis of UFO sightings to be attempted.[32] The most detailed so far is in progress under Dr. D. Saunders, a member of Hynek's Center for UFO Studies in America, who has tens of thousands of sightings in his computer program. He told me some time ago that there seemed to be some kind of correlation emerging between the frequency of sightings and the sidereal time of their occurrence, with different distributions for different kinds of UFO encounter. Perhaps when more statistical work has been done, psychical researchers can find here some uses for statistics in their own work. However, the drawing of conclusions in these areas is even more perilous than in more orthodox fields. For example, I. Brand expresses the hope that the frequency distribution of UFO data will show whether UFO phenomena are physical or psychical phenomena,[33] though I cannot see how statistics alone could provide a suitable criterion.

9. *Use of photographs and films.* By and large the same problems of interpretation of photographs apply to both areas: UFO photographs seem to be rather easier to fake. Fortunately, there are many photographic experts in both fields who apply very rigorous tests and controls on photographic evidence. A UFO sighting of particular photographic interest was a sighting in 1967 over San José de Valderas in Spain, of a white saucer-shaped object with a black mark, rather like the Russian character called "zh," on its lower surface. There were several witnesses, including two who took clear photographs of the object from different positions.[34] I have already mentioned the case of Stella Lansing, which has photographic as well as ufological aspects.

SOME CONCLUSIONS

From the considerations above I shall proceed towards some conclusions.

Are UFOs psychic phenomena? The question is too simple. The two categories are too incoherent and disparate for the question to be worth asking in this form. We need to ask a series of questions of the form: "In which ways (if any) do UFO experiences of type X match up with psychic phenomena of type Y?" Although many individual connections have been noticed, no clear-cut *pattern* of connections has yet emerged. If UFOs do come under the umbrella of psychic phenomena, then they may well be among the most curious, and thus among the most difficult to study.

One reason for the lack of success may be that psychical explorations of UFO phenomena have only recently become fashionable, and ufologists have not yet become conversant with the details of psychical research. For example, J. Vallée has recently published *UFOs: The Psychic Solution*, but I must confess that I do not learn from it what the psychic solution actually is.[35]

Much information may be being lost because ufologists are not asking UFO witnesses relevant questions, or carrying out appropriate procedures. For example, the possibility of pre-cognition of UFO sightings is not usually explored. Again, the interview of witnesses is regarded only as a search for information and opinions: no attempt is made to recreate the possible psychic state of mind of the witness. Further, the location of the UFO sighting is carefully mapped; but it is usually correlated only with man-made artifacts such as power lines, and not with natural effects such as magnetic fault lines. (A. Michel's *Flying Saucers and the Straight Line Mystery* is something of an exception,[36] and the frequency of occurrence of sightings near mountains and/or lakes is widely noted.) Finally, the time of duration of the sighting is determined as accurately as possible, but the witnesses' astrological charts (both the birth and the progressed charts) are not prepared, to see if any tendencies or patterns are to be found from them.

I am inclined to wonder whether explanations of both UFO and psychic phenomena may have to draw on occult

doctrines. The most interesting essay published so far on possible occult aspects of UFO sightings is David Tansley's *Omens of Awareness.*[37] The stimulus for him to write the book came when "A sudden and inexplicably deep interest in UFOs occurred in January 1976 accompanied by peculiar synchronistic events." He read some of the technological explanations of UFOs,[38] but in a counterview he related UFOs to the "expanding consciousness of man" and to ancient Mystery Teachings about the world. For him UFOs are connected with spirit forces called "allies," which can appear in human and animal form, and perhaps even as UFOs. The colors in which UFOs sometimes appear are similar to those found in (alleged) manifestations of pranic energy. UFOs are appearing in order to make us realize the existence of the universal creative forces of nature, and to encourage us to control them. Tansley's book is dedicated to Brother Philip, of the Monastery of the Seven Rays in South America, the continent in which (for some reason) many of the best UFO sightings occur.[39] Brother Philip's *Secret of the Andes* is not a UFO book, but some of its message relates to UFOs in the way that Tansley outlines.[40]

We are obviously entering deep water here; but the shallower streams of technological and psychical explanations have so far been disappointing. And after all, why should fringe subjects not embrace their own fringes?

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WHAT IS OUR NORTHERN WETIKO?

The following article was sent to us by one of SITU's dearest and oldest friends shortly before his death in April of this year. We are printing it here, by kind permission of his widow, as a tribute to our friend.

by Kamil Pecher

WETIKO stories are quite common among the northern Algonquin Indians, and there have been many attempts made to explain them.

I got involved in this special anthropological problem in a quite roundabout way. It started on my solo kayak trip when I ran into a puzzling creature I couldn't identify at all—until I read about Sasquatch. My encounter on the Churchill River[1] not only scared me witless, but it also became a great challenge. I tried to prove to myself that other people had also seen such a creature in Saskatchewan or elsewhere. Much has been written about this puzzling enigma as can be seen in any public library, but except for Mr. Besborotko's encounter there wasn't much in Saskatchewan.

The question remained—were there any other encounters known on the Churchill River, and if not, why me? Was it because I was alone?

Whites rarely venture to the north alone; if they take fishing or hunting vacations, they usually travel with a party, often with noisy outboards or planes, shouting and talking along the way. I found you could see more wildlife when traveling alone. The old-time solitary trappers no longer roam the northern regions and except for a few Indian families, the Saskatchewan bush is more lonely now than in the previous century. Who is there to report a strange and shy creature that is supposed to be as intelligent as a human?

The obvious source for Sasquatch stories should be the Indians. Indeed, I read about a band of Hobbema Indians, from Alberta, who had left their reserve south of Edmonton to live in the wilderness in the "old way"; they reported seeing a Sasquatch at their campsite on the North Saskatchewan River west of Nordegg, and even told about their familiarity with the giant from their previous encounters on the Kootenay Plains.[3]

So I had asked many Cree friends to tell me any story about a giant resembling a monkey, but I didn't have much success. Oh, they told me funny stories about Wisagetchak the Trickster all right, but once we got into their legends that are considered sacred, they clammed up.

The problem seemed to be also in the name. The word Sasquatch is a distillation of several Indian names—See-ahtik, Wauk-Wauk, Te Samiel Soquwiam, Saskahevis—attributed to the hairy giant and commonly used by the Chehalis (or Salish) Indians of British Columbia's Frazer Valley, particularly around the area of the villages of Harrison and Agassiz.[4] The names are supposed to mean something like "Wild Man of the Woods."

If I could only find the equivalent Cree name for the creature, I reasoned, I might learn more of what they know about it—but I had no luck.

Then, reading by sheer coincidence a small red booklet entitled "The World of Wetiko,"[5] I got my clue word—Wetiko!

Why didn't I think of that before! I knew several Wetiko stories, but had never thought of them in connection with Sasquatch. I began to read again all the Wetiko stories with extra attention to details.

Wetiko stories are a rather complex matter. I made my way through many, and eventually I gained the impression that the name "Wetiko" covers events of several different individuals or entities. Sometimes they were merely descriptions of cases of human starvation that caused cannibalism, and for northern Indians cannibalism was a horrifying, strictly enforced taboo—one punishable by death. Hence some scientists try to explain the Wetiko stories as descriptions of nutritional deficiencies—and some even suggest a cure with megavitamin dose treatments.[6]

In other cases, the Wetiko stories describe mentally sick people,[7] which again gave material for a score of anthropologists and psychologists to try to explain or psychoanalyze the Wetiko phenomenon as a sort of psychosis.[8]

Lastly, I also received a private explanation from the Cree mythology: of ghosts, soul-possessing spirits and other supernatural matters.[9] Needless to say, most stories contained the last.

But in spite of all the theories, none of the explanations could fully explain every Wetiko story, even though each one could find a certain number of stories to support it.

After analyzing the stories, I dare say one of the sources for the Wetiko stories represent encounters with the "wild man" we tentatively call "Sasquatch." To explain why Indians apply one word for several different things is difficult. When you keep in mind that the stories are passed down from generation to generation, from band to band, you can understand changes. Also, people tend to explain any unusual event by their previous experience.

Sasquatch is a puzzling phenomenon even for modern researchers, who also begin to consider the supernatural or parapsychological features of the creature.[10] The fact remains, that after twenty years of hunting, nobody has ever caught a Sasquatch, although our culture first encountered the phenomenon more than a hundred years ago.

The first written record of Sasquatch was supposed to be by a Spaniard, Joseph Mariano Mozino, in 1792,[11] followed by the well-known fur trader and explorer, David Thompson, in 1811,[12] and then by artist Paul Kane.[13] Since that time other encounters with a Sasquatch occurred, as recorded by modern researchers—from Alaska to the tip of South America.[14] Up to the year 1972, over 300 eyewitness reports are known to exist,[15] and every year new ones are made. And although the monster seems to be seen mostly in the area of the West Coast, there are reports from many inland sites as well.[16]

Keeping in mind that some Wetiko stories are remarkably similar to the modern reports on Sasquatch, I found many quotes to support my assumption; some of which deserve mention here.

The fur trader Kemp says, in his *Northern Trader:*[17]

> "I have heard it [the Wetiko] described... as having the face of a man and the jaws of a wolf. The only Indian I ever found who had any acquaintance with the creature claimed that the Weetigo had no mouth at all. That, for a beast supposed to have cannibalistic instincts, struck me as somewhat peculiar."

At another point, Kemp mentions how

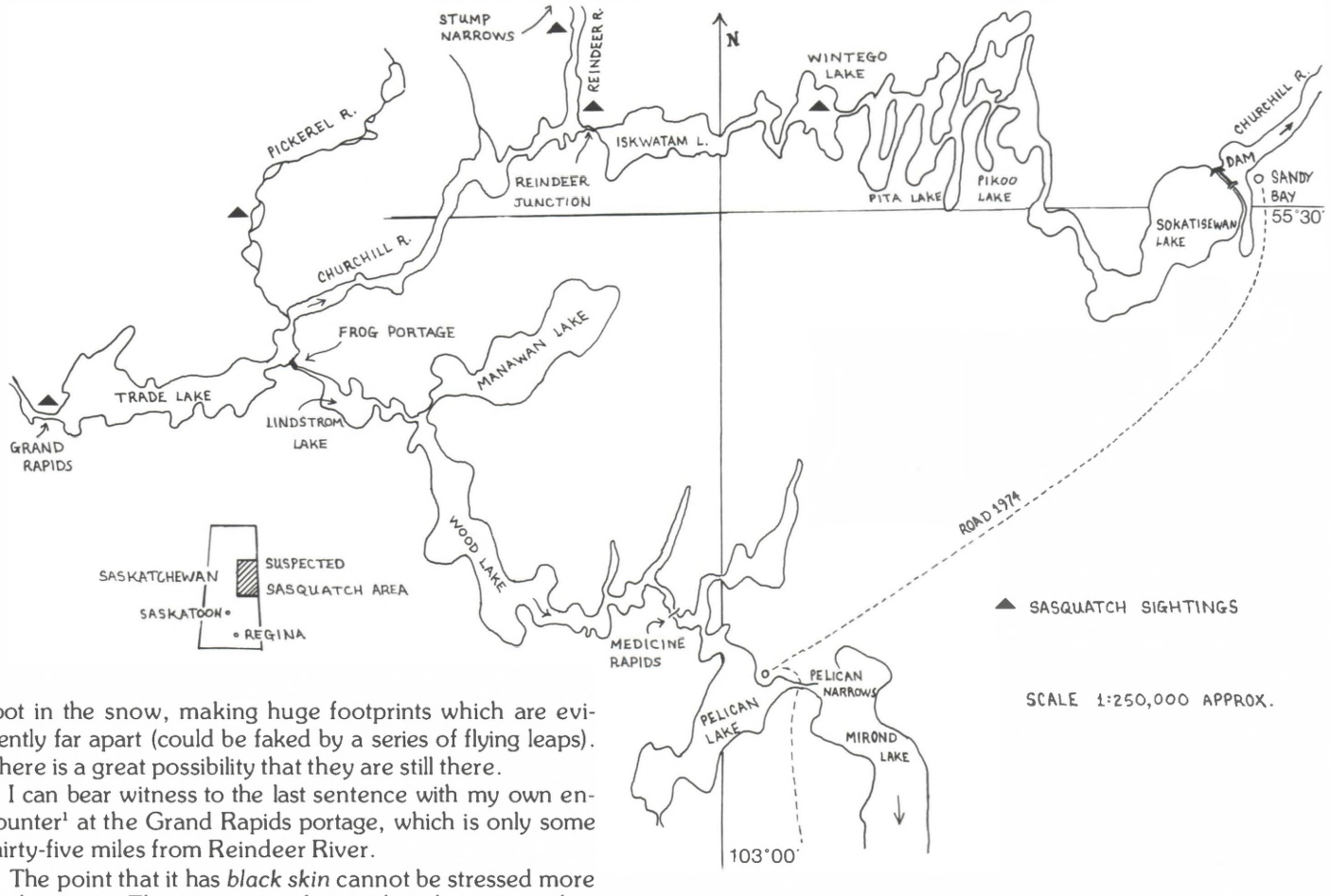
> ". . . I knew a white man and an Indian woman, who being somewhat less handsome, earned the nickname of Weetigo."

I will return to the problem of the mouth later.

Another writer who describes Wetiko is P. G. Downes in his *Sleeping Island.*[18] I was unable to find a biography of the author, but the book indicates that Mr. Downes was an American teacher who traveled several times in Saskatchewan around 1940, and that he was on friendly terms with some Cree families in the area of Pelican Narrows. He seems to be well informed even about sacred matters that the Cree don't readily reveal to whites, and so his narrative is probably as close as possible to what the Cree thought: [emphasis by K. Pecher]

> "The Reindeer is known as a particularly favoured route for weetigos, and in fact there is a *great possibility that weetigos are still there.*
>
> The weetigo is the Cree embodiment of all the fear, all the horror, all the starvation and misery and terrible cold of the North. The weetigo is a man, yes, but a man who is a cannibal. He is a man who has eaten human flesh and thus has taken unto himself not only the flesh of another being but also his spirit power, and thus has become supernatural. . .
>
> Descriptions by those who have seen weetigos differ only in minor detail. Certain features are always more or less evident. The weetigo *is a man.* He is usually *naked.* His *face* is more often than not *almost black* with frostbite. His *eyes* are *glaring and staring, protruberant,* and of *ghoulish ferocity.* He has *long, fang-like teeth,* and occasionally his *lips are entirely eaten away.* With the changing of summer to winter the weetigo gradually begins to assert his true character. By middle winter, weetigos are haunting the forest looking for human victims to devour.
>
> Tradition has it that a weetigo lived on Reindeer River. *In the summer* he would appear *with several children. He came from the east* and usually *late in* the season. . .
>
> Though a number of people affirm either that they have seen a weetigo, or preferably that some friend of theirs has seen one, it is impossible to find anyone who has had much actual contact with these creatures. Obviously the only thing to do is hide or run away when anything like a weetigo appears.
>
> Some years ago, a Cree at Reindeer Lake found that some other Indians were camping a little too close to his own trapping grounds. During the *night* he went *barefoot in the snow* and made a *series of flying leaps.* The next morning the Indians discovering *huge barefoot footprints* around their camp, hastily moved off to a less weetigo-infested area. . .
>
> My old companion Solomon (Cree), had a harrowing experience when he went out to civilization for an appendectomy. For the first time in his life he travelled on a train, and he *mistook the negro chef for a weetigo.* Fortunately his attempts to leap from the train were unsuccessful, but the shock of the experience was frightful."

From this description, anybody can summarize a nice report for a Sasquatch file, which would fit exactly with other records: Wetiko is a man, who runs naked, has black skin, glaring and staring eyes with a ghoulish ferocity. Has long, fang-like teeth (jaws of a wolf?/Kemp) lips are eaten away (mouth missing?/Kemp). It lived on the Reindeer River, would appear in summer with several children, coming from the east. In the winter it haunts the bush looking for human victims to devour. It goes bare-



foot in the snow, making huge footprints which are evidently far apart (could be faked by a series of flying leaps). There is a great possibility that they are still there.

I can bear witness to the last sentence with my own encounter[1] at the Grand Rapids portage, which is only some thirty-five miles from Reindeer River.

The point that it has *black skin* cannot be stressed more in the story. The interesting fact is that there are other reports concerning the same feature. In 1969, a man near Oroville, California, described a Sasquatch: "the face was like that of a Negro, the skin almost black."[19] In Russia, Boris Porshnev recorded a captured Alma, a wild woman of the Caucasus, who had "dark skin covered with reddish-brown hair," who evidently had children by her captor. Her children and grandchildren also had dark skin and "slightly negroid" features.[20]

The staring and glaring eyes were also described in many reports,[21] and even explained.[22]

The missing mouth and fang-like teeth puzzle can be explained in the light of other reports: ". . . it had fangs, two coming down from the top jaw and two coming up from the bottom. Its nose was flat like negroid. . ."[23] in other reports, ". . . the mouth appeared to be little more than a slit."[24] Probably what the Cree eyewitnesses wanted to say was that the creature didn't have full lips ("lips are entirely eaten away") like a normal human but more like a monkey?

Other features, such as big barefoot prints, are so typical that they need no comment.

Another important source on Sasquatch in Saskatchewan is *The World of Wetiko,*[5] which is, by coincidence, about the same area as the previous book. The stories were narrated in Cree by the translator's grandmother, Mrs. Marie Merasty, a member of the Peter Ballentyne band which lives in Prince Albert, from her own recollections.

Some of the Wetiko stories are so typical of Sasquatch behavior that I'll quote from them. For example, "The Blind Woman's Stand" (p. 7)

> "Not so long ago, when Isabel and Nancy were children, they were left in the care of their blind grandmother at a place called Piskwatsewapasek (Stump Narrows). Their mother was known as Petheses (Bird). One day while the little girls were playing by the river, they noticed someone swimming across towards them, holding something in front of himself to act as camouflage. They ran up to their grandmother and told her what they had just seen.
>
> 'Get into the house!' she ordered as she took hold of an axe. 'I used to think that when I saw one of them, I would not allow it to make me back down, that perhaps I'd kill it. I guess it must be a Wetiko who is coming, someone insane. A sane person would not be crossing the river holding reeds in front of him and in such cold water.' There was still some ice floating in the river.
>
> So the old lady started towards the shoreline and the moment the Wetiko saw her—just as it was about to wade ashore—back it went into the river in the direction from which it had come. It retreated, thrashing the water with such energy that the wake looked like a rapids behind it. The old woman stood ready, and the children watched, as the Wetiko, upon reaching the opposite bank, seemed to slip under the brush and out of view."

I can only add that Sasquatch is often known to swim in winter across the river [25,26] and also is often observed while watching children.[27]

The next story, "A Race for Life," describes how a man called Wetsoonesaw was chased by a Wetiko, and how he and his wife escaped with their canoe on a lake. Typically, the Wetiko, as well as Sasquatch, can run so fast that people are amazed. In the words of the storyteller (p. 9), "It was as if the things along the path of the Wetiko were being tossed, it was rushing so fast." A couple of policemen were amazed at the speed of Sasquatch at Cold Springs.[28]

In "A Double Victory," two Wetikos, interested in small Cree boys, have their heads chopped off with an axe. A strange death for a spirit!

Another Wetiko is disposed of in the same way in "The Hunters Hunted," after chasing two hunters into camp. An interesting point is that one hunter, and almost all the women in the camp as well, fainted. The translator even added (p. 14) an explanation (in italics) that "most people were rendered helpless just by sighting it"—which is confirmed by white Sasquatch hunters.[29] Some even think that Sasquatch might possess hypnotic capabilities,[30] which could explain many mythical events.

In "A Narrow Victory," two more Wetikos are dispatched by Wapaskookimow, or Whitebear Chief, who had supernatural help but who nevertheless was also injured in the fight. "The place where the Wetiko's hand had scratched him discolored and turned blue." (p. 23)

An interesting point is that in the above legends we do not hear about an anonymous ancestor lost in the far away past; all the heroes here have names and are known by the Cree in the area—or in some cases, even by whites. For example, Whitebear Chief mentioned above was a well-known personality. Father Thiboutot, O.M.I., the missionary at Sandy Bay for the last thirty years, said: "In Sandy Bay, there are several families with the surname 'Bear.' Their ancestor is Wapaskookimow (Whitebear Chief) whose father was Apakooses (Mouse)... Whitebear Chief had five wives. He used to stay here at Sandy Bay during the winter. He had his camp where Jim Ripley's store stands now, down by the point. What we know about him is that he practiced a lot of sorcery..." (p. 27-28)

Another story, called "Wetiko," describes (p. 28) in fact three separate encounters "that was not very long ago." In one, the narrator, Mrs. Marie Merasty and her brother-in-law, Thomas, were camped at Atekonstawak or Reindeer Junction. All one evening and the following night their dogs behaved very strangely (another feature comparable to modern accounts).[31] At about the same time, Korees and Mrs. Merasty's brother, Baptiste, were at Kanesustikweyak or Two Rivers, and they somehow became separated.

"Korees heard someone coming. He was glad because he thought it was his companion. 'He came toward me,' he related, 'with *nothing where the lips were supposed to be*. . .' [Here the narrator added the explanation that the lips were eaten away, to fit the mythological requirements, but evidently Korees didn't say that.] 'I felt as if my whole face had been seized by cramps,' he said, 'and as if I were slipping into unconsciousness.' [And that is again comparable to accounts in Slate's book.[30]]

"Korees and Baptiste came across each other and fled downstream in their boat. Korees didn't seem to be well, as if he were not totally sane after having been so badly frightened by the sight of that man." (p. 30)

The third encounter (which is probably not complete) is about two men, Etsits and Etienne who went upstream to Ookawisepi (Pickerel Creek), where something badly scared them:

"I don't know if they actually saw something or someone that passed nearby, but likely they did, though not clearly. Whatever happened caused them to break camp and sneak home under what cover they could make use of. Instead of portaging, they risked their lives shooting the rapids, and finally reached Athekisekipitsikewinek (Frog Portage) across from where Pickerel Creek empties into the lake!" (p. 30)

At the Cold Springs encounter,[28] both policemen "were scared to death. . ." My own 1972 encounter at Grand Rapids portage[1] ended in the same way, and had there been any rapids, I would not have hesitated to run them. Probably I should stress that Grand Rapids is only twelve miles from Pickerel Creek. . .

The translator's footnote (p. 28) crowns the stories:

> "In the early decades of the twentieth century, Wetiko experiences still occurred. Philip McCallum of Sandy Bay used to tell about the time he was invited to see the skeleton of a Wetiko which his uncle had killed."

What all Sasquatch hunters are missing so far is a body or skeleton to prove the existence of Sasquatch. I believe the above quotation may send them rushing to Sandy Bay to try to get that skeleton.

Diligent Sasquatch researchers could certainly find more in the Indian stories and legends. Any "Wetiko" story should be checked, and any places named Wetiko (and because the spelling of the name varies considerably, all lakes named Wetiko, Wintego, Wichtigo, etc.) may represent a potential location for Sasquatch encounters.

As one old Salish Indian said to a Sasquatch hunter, "so the white man has finally got around to that, has he."[32]

Unfortunately, until Sasquatch is caught and brought in for the scientific community to examine, no orthodox anthropologist will consider my Wetiko explanation seriously.

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SOME REFLECTIONS ON ASTRO-ANTHROPOLOGY

by Dr. Stuart W. Greenwood

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WHITHER the Ancient Astronaut movement? It is now a little more than ten years since Erich von Däniken jolted both popular and scholarly thought with his startling and provoking book on extraterrestrial contact in prehistoric and early historic times: *Chariots of the Gods?* While it was not the first work of its kind, it must be rated one of the most significant texts of our times, for it acted as catalyst for extensive media activity and has indeed led to the formation of a society for study and research in the field—the Ancient Astronaut Society.*

Charles Fort liked to tweak the noses of the scientific establishment of his day, and in his 1919 publication, *The Book of the Damned*, offered the tongue-in-cheek opinion: "I think we're property." If we are (or were), it seems that the world of scholarship has paid remarkably little attention to the fact. While the Ancient Astronaut Society and various Fortean and UFO type journals continue to publish fresh material on extraterrestrial contact to augment the steady output of books on the subject, scholars appear to be satisfied with occasional (and usually only partly informed) attacks on individuals or on the concept itself. There are at least six books on the market devoted largely to criticisms of *Chariots of the Gods?* and its author.

A present danger is that interest in the subject may become polarized, and that supporters will be transformed into "believers," and opponents into "non-believers." Perhaps the time is ripe for recognition that we are here considering a hypothesis—a proposition calling for further inquiry and study. Since academics in particular (and I have been one) like terms that can be applied to a "discipline," I hereby offer them one. Astronautics is the science of space flight, and Anthropology is the science of the origins and customs of humankind. Let us combine the two, and come up with Astro-anthropology, the science of prior extraterrestrial contact. One can almost visualize the associated course offerings: "Astro-anthropology I," "Selected Topics in Astro-anthropology," "Astro-anthropology and its Impact on Sociology," etc. It might even attract more students, a hard prospect to resist at the administrative level. Other Fortean topics have become respectable, so why not this one?

Astro-anthropology presents to us a fresh way of looking at things in the past. It may help us understand a great deal, or very little, or nothing of any consequence. We shall not find out until we try. For generations, the concept that we are a special creation held sway, to be partly superseded by the concept of evolution. We seem to be suspended in a rather murky mental and spiritual state in which it is possible to live out our lives while adopting our own amalgam of beliefs, selecting something of everything that suits our taste. Any concept offering at least the appearance of substance deserves our attention. Astro-anthropology requires us to consider the implications of ancient myths, artifacts, rock carvings, and other art work in the context of extraterrestrial contact. Of course it may lead us in other directions than we at first anticipated. That is the nature of science as it should be pursued.

Let me give you an example. The French explorer Henri Lhote gave the name "The Great Martian God" to a giant eighteen foot high figure discovered on the Tassili Plateau in the Sahara Desert. The Soviet physicist Agrest was intrigued by this rock painting, and included it in his speculations regarding evidence of extraterrestrial

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contact. It has been widely reproduced elsewhere, and is interpreted by some as an ancient astronaut in a space suit. It is arresting in that it has a double oval, or "eye," in the middle of the face, and what appears to be a smaller eye to one side and set lower in the face. The figure has U-shaped loops on top of the head where one would expect to see a representation of hair. It is noteworthy that another of the Tassili paintings, "The Great God with Praying Women," shows women with a single central eye and the U-shaped loops in the hair region. There does appear to be an intention to distinguish these creatures from others represented in the paintings. But is there another explanation to the extraterrestrial one?

One is reminded immediately of the legend of the cyclopes. According to the Encyclopaedia Brittanica for 1972, the cyclopes, according to Homer, were "one-eyed cannibal giants living a rude pastoral life in a distant land (traditionally identified with Sicily) having no social unit larger than the family." Lhote studied the probable routes taken by Roman Legions that are known to have penetrated deep into the Sahara, and suggests a chariot track once existed between the Tassili Plateau and present-day Tripoli. Tripoli lies immediately across the Mediterranean from Sicily. "The Great Martian God" may have been an artist's rendition of a cyclops. Lhote had science fiction, not Astro-anthropology, in mind when he dubbed his painting, but the truth may have been almost as strange as his fantasy.

Now we will consider a way in which our burgeoning technology may be catching up with the past. Among his prolific contributions to interpretation of the strange, Ivan T. Sanderson gripped the attention of readers with his speculations on gold castings from Colombia, South America that he called "Little Gold Airplanes." Dating from about 400-1200 A.D., these artifacts seem even more recognizable today. While many of them do indeed appear similar in many respects to high speed aircraft, those with particularly blunt noses are more suggestive of space shuttles. The apparent absence of a recognizable propulsion system to propel the craft into orbit may indicate that they were one-way vehicles intended only to land on our planet. Shades of Pizzaro, who burned his ships so that his crews would have to take root where they arrived and forget about turning back for a while. These artifacts are viewed daily in our great museums of anthropology, but who stops to consider their meaning?

Carelessness with source data has been a familiar criticism of many opponents of the concept of the Bermuda Triangle, but that hardly alters the fact that there are mysteries there as everywhere else. The great minds in science have always been attracted to the mysterious. We can confidently aver that the frontiers of true knowledge will continually recede. I started to develop an interest in the Triangle when I noted that water depths just to the east of Florida were around 500 fathoms. The speculations triggered by this appreciation may turn out to be pure froth, or they may have staggering implications for our understanding of our place in nature. Either way, I'll be satisfied that I tried.

The pressure in sea water at such depths corresponds to that at the surface of the planet Venus, as measured by Soviet and American space probes in recent years. This correlation is actually remarked on, in reverse, in a current advertisement by the Hughes Aircraft Company, who worked with NASA on the American probes to Venus. But is anyone exploring whether the two items are connected? To contemplate the almost inconceivable, could there be bases operated by extraterrestrials from Venus in the depths off the Eastern coast of Florida?

I was wondering if there was anything about the area that could possibly tie in with the mythology of extraterrestrial contact, when I recalled the interest shown by many writers on the Ancient astronaut theme with Quetzalcoatl, the "Winged Serpent" of Central America. Quetzalcoatl was a culture-bearer who brought many arts and skills to the peoples of ancient Mexico, and he was associated with Venus. In fact, Venus occupies a prominent position in the calendrical system of early Mexico, and was a factor in the design and alignment of many of its temple features. So we have a Venus connection, and will now reinforce it with the physical significance of the name Quetzalcoatl! If you were approaching the region to the east of Florida from the west, to take advantage of the spin of our planet in the west-east direction, during the descent from space and while over Florida you would see the land below as having the appearance of the head of a serpent. Lake Okeechobee would form the eye of the serpent, and the Keys would form the tongue and fangs. To your left, the spreading coastline of parts of the southeastern United States, together with the cut-off at the horizon, would have the appearance of wings. You would be looking at a "Winged Serpent." The implications are potentially awesome.

Let me anticipate the critics, and assure them that I am aware that the atmosphere of Venus is appallingly hot and consists almost entirely of carbon dioxide. There is a lot of sulfur and sulfuric acid about, too, and I'm in no hurry to visit. What the correlations above have to do with a mythological culture-bearer is beyond my capacity to resolve at this stage. But I'm going to stay with it, as the coincidences are highly suggestive and I don't find the explanations of anthropologists regarding the meaning of "Winged Serpent" particularly persuasive.

NASA has been trying steadily for some years to get more than minimal funding for its program on SETI (Search for Extraterrestrial Intelligence). The idea is that there may be intelligences in space that are sending out signals for others to pick up. The reasoning is that we should construct arrays of radio-telescopes in an attempt to intercept such signals, in the interests of science. That is fine with me, and good luck to them. As they say, the equipment can always be used for other work if the signals are not found. But why stop there?

Our own space exploration program is strongly vehicle-based. We want to go places and do things there. Why do our scientists resist the idea of extraterrestrial contact with our own planet so fiercely? It seems as though some kind of taboo may be operating. One of the limitations may be that no equipment is involved other than an inquiring mind and the desire to discover new insights. Or maybe we have become too vain to contemplate any help we once received from outside. Perhaps that is the real nature of original sin, a state we have gratuitously inflicted on the serpent.

PREDICTION OF FORTEAN EVENT REPORTS FROM POPULATION AND EARTHQUAKE NUMBERS

by Michael A. Persinger, Ph.D.

INTRODUCTION

REPORTS of odd events, generally classified under the vague label of Fortean Phenomena, remain a challenge to science. Are they consequences of: (1) artifacts of human language, (2) the normal memory modifications for odd events (of which most people are not familiar), (3) poor observation, (4) the statistical refuse of otherwise orderly natural principles, (5) routine principles with anisotropic geometries of application, or (6) the sporadic occurrence of phenomena that are symptomatic of other principles not yet measured or understood?

One or more of these solutions have been discussed by various writers with different levels of analytical prowess. The majority of pro- and con-Fortean enthusiasts have used logical arguments or suave semantics in order to demonstrate their point. Since the language used is primarily a nominal scale, composed of 0,1 conditions (something is either true or not true, without intermediate conditions), solutions appear as simple and clear demonstrations.

Unfortunately qualitative conclusions from clever arguments can elicit an illusionary sensation of resolution. One walks away with a simple explanation and with the anxiety of uncertainty removed, only to be frustrated by the next barrage of contradictory and frustrating facts. After a few trials, one begins to suspect the limits of simple language.

Quantitative analyses, whereby numbers rather than words are used, contain almost unlimited degrees of freedom. Whereas with a scale like: true or not true, one would be forced to partial all of the different and unrelated events in the universe into two over-inclusive categories, numerical scales allow the precise (within measurement limits) discrimination of the potentially unlimited events. Using numerical scales, one can seriously predict and understand complex phenomena.

Quantitative analyses require the experimenter to be more than just a verbal acrobat. Clear understanding of methodology becomes more important than mind-blowing metaphors, such as "magnetic windows" or "elastic time." One is faced with a different set of questions that often alters the complexion of the phenomena.

The present study is the first systematic statistical evaluation of Fortean events as a numerical population. Three specific questions were considered as basic themes: (1) How much does population contribute to the numbers of Fortean reports, (2) How much does earthquake history contribute to Fortean reports, and (3) Do different Fortean categories relate in different quantitative ways to these variables?

The first question is critical since human beings are the primary observers (measurement devices) and reporters of odd events. If one can accommodate the majority of the variability in odd-event numbers by population alone, then one is not left with much "numerical room" in which to test various theoretical assumptions. Statements like population contributes a little "or a lot" are not sufficient here. We must know how much of the phenomena is due to population alone.

The second question is a test of a general theory developed earlier.[1] In fact, if one conducts a content analysis of Charles Fort's writing,[2] the semantic connection between earthquakes and odd events is conspicuous. The magnitude of the contribution of earthquake numbers to odd events (if at all) is critical information to test any mechanism involved.

The quantitative solution of the third question is essential for both the methodology and mentality of odd events. If all categories of odd events are predictable in the same manner from known variables and display the same numerical characteristics, then the possibility of any differentiation between possible mechanisms is reduced. As a singular inseparable source of variability, the entire population of Fortean events is reduced to an amorphous mass—smarting significantly of measurement artifact or random error.

The validity of Fortean events cannot be demonstrated with the data sets now available to the researcher. One can only determine reliabilities within limits. In the present analyses, the events, like any probationary phenomena, are considered as *verbal reports*. They should be considered populations of numbers. Neither the acceptance nor the rejection of the phenomena can be based upon a single case or group of cases.

In an area plagued by measurement problems and by the human emotions of theoretical commitment, phenomena can be rejected completely or accepted without question. Some events may be accepted as statistically significant when they are chance, while other events may be rejected as chance when they are reliable. Long and systematic evaluation decreases this likelihood.

METHODS AND RESULTS

Data Sources

A total of 1,153 odd events reported between the years 1850 and 1973 within the 31 states bordering and east of the Mississippi river were used as data. These events were sorted from a larger file of more than 6,000 events that had been the source for *Space-time Transients and Unusual Events.*[1] Approximately 97% of the 385 events reported between 1850 and 1945 were taken directly from the works of Charles Fort.[2] Approximately 98% of the 768 events reported between 1945 and 1974 were collected from *Fate* magazine. The remaining data were collected from various historical publications.

These 31 states were selected since their population

values have changed systematically over the years with the exception of Florida. States to the west are characterized by longer histories of few human observers and by larger areas. Data from Fort and *Fate* were selected in order to compare the reliability of odd event types. Analyses on two separate populations allow internal checks for: (1) the consistency of any effect isolated and (2) the reliability of classification categories, i.e., whether events recorded as "luminous lights" in the Fort data are similar to the events recorded as "luminous lights" in the *Fate* data.

To reduce sampling or biasing errors, *all* of the events reported (even those with missing values) in the Fort and *Fate* data sources were used. They had been classified and placed on computer cards according to time (hour, day, month, year), space (city/town, state/province, country and continent), category codes, a short verbal description and source. The use of all events reported in the sources reduces exclusion/inclusion artifacts from *ad hoc* or *a priori* conclusions about "which phenomena are real or not real." Obviously, this does not reduce the initial selection bias of either Charles Fort or of the editors of *Fate* magazine.

Since unusual events tend to cluster within one-month periods but display inter-event-intervals of up to several years, simple addition of all events was considered misleading. For example, UFO (unidentified flying object) reports may be reported in several places within a state several times during one week. To obviate this potential artifactual inflation of cases within categories and states, all events from a given category within a state occurring within one month were given no more than a value of 1 (no matter how many redundancies).

Although summary lists for each state were available from information collected for *Space-time Transients and Unusual Events*, a new printout was produced. Events were counted by this experimenter, using the one-month criteria for selection. Only general UFO reports (lights in the sky), feline-like animals and odd glass events (phantoms, snipers, window crosses), displayed any difference from the original data compilation. This difference was minimal. Correlations (for states) between the present and previous analyses were greater than 0.96.

Categories

The data had been coded according to 9 major categories each containing 9 subcategories. The 9 categories were unusual: Falls (FALT), sounds (SOUN), electrical events (ELEC), UFO-related phenomena (UFOT), human occurrences (HUMA), animal sightings (ANIT), "forces" (TELE), geological displays (GEOP), and archeological finds (ARCH). The rationale has been discussed elsewhere.[1]

For this analyses, 4 to 5 or all subcategories of each category were combined. The advantage of this operation is the increased number of events within each category. Many of the subcategories contained 0 or 1 event for more than 25% of the 31 states. Although such nominal data can be accommodated with some statistical methods, a single report (even by a group) is suspect when pattern analyses are involved. Larger sample sizes reduce the anisotropic contribution of an aberrant case to the population, assuming the population approaches some regular function.

The disadvantage of collapsing subcategories involves the arbitrary pooling of possibly different phenomena and mechanisms (even though they had been classified under the same gross category). If the 9 subcategories reflected 9 mutually exclusive mechanisms with different numerical properties, then any unique aspect of each subcategory could be masked. The problem is similar to assuming that all phenomena labeled as UFOs are from a singular source merely because they share the same crude (and over-inclusive) verbal label.[3,4]

The categories or clusters of subcategories used for this analyses (and sample event types for each) were:

FALA: reported falls of rocks, ice, and unusual rains from the sky or inferred falls from immediate proximal observation.

FALB: reported falls of organic materials, including live or dead animals (predominately reptiles/amphibians).

FALT: the combination of FALA and FALB.

ELEC: aurora-like events, mirages of cities and ghost-lights or related events (luminosities occurring in the same area, i.e., 100 m) over at least one decade but not associated with classic haunts.

SOUN: odd sounds: two major sources; first, involving groans, bumps, and related low frequency sounds; second, involving voices with no apparent origins but not related to haunt situations.

UFOA: lights in the sky, including the reports of an odd comet or an odd meteor from Fort's rubric.

UFOB: more complicated and discriminative luminous displays, including phantom, angels, people in the sky and "UFOnauts."

UFOT: the combination of UFOA and UFOB.

HUMA: odd human reports, centered around human loci, such as stigmata, spontaneous human combustion.

ANIA: odd or unusual creatures including feline-like humanoid, reptilian (sea monster) and flying (large birds) types.

ANIB: odd behavior of animals or appearance of known animals such as massive movements, sudden appearances.

ANIT: the combination of ANIA and ANIB.

TELE: odd force-related events, including phantom sniper events, bleeding statues, odd glass etchings following a discrete event (e.g., a storm).

GEOL: unusual geological reports, such as sudden appearance of rocks in fields, large holes (following unknown explosions) in fields, moving rocks, and alleged gravity-magnetic anomalies.

ARCH: unusual, unclassified or noncommensurate (with current theory) archeological findings such as 12 feet tall skeletons, ancient European coins, odd potsherds of "non-existent" cultures. For more details, see (1). All consequent statistical analyses were conducted on a DECSYSTEM 20 computer using SPSS software; sample results were checked manually.

Comparison of Populations

The means and standard errors of the mean (S.E.M.) of each category for the Fort and *Fate* populations are presented in Table 1. For comparison, means and S.E.M.s for the percent contributions of each category to the total number of events for each population are shown as well.

Except for the FALT categories in the Fort data and the ANIT and UFOT categories in the *Fate* data, the percent distribution of the other categories is relatively similar for both populations. In fact, the distortion appears to be primarily a consequence of the heavy loading from the general UFO (UFOA) category in the *Fate* data. If one excludes this category only from both populations of data, the discrepancies are reduced almost to zero except for the FALT and ANIT reports.

The correlation coefficients (Pearson's r) between categories within Fort and *Fate* data are shown in Table 2 while coefficients between Fort and *Fate* populations for the different categories are shown in Table 3. Scattergrams were printed for all correlations and inspected visually for non-linear relationships and extreme values. Since 4 of the states displayed values that were beyond the major cluster, coefficients were calculated for all of the states and 27 states (without the 4 larger values).

TABLE 1

Means ($\bar{X}$) and standard errors of the mean (S.E.M.) for the members of odd events in different categories and for the relative contribution (in percent) of each category to the total population, for both *Fate* and Fort data (n = 31 states).

	Raw Data		*Percent of Total*	
	FORT	*FATE*	FORT	*FATE*
FALA	1.7 ± 0.3	2.2 ± 0.4	18.9 ± 3.9	8.6 ± 1.3
FALB	1.1 ± 0.3	0.5 ± 0.2	9.2 ± 3.0	1.8 ± 1.2
FALT	2.8 ± 0.4	2.7 ± 0.5	28.1 ± 4.5	10.4 ± 1.4
ELEC	0.6 ± 0.1	1.0 ± 0.2	5.1 ± 1.4	4.2 ± 1.0
SOUN	0.3 ± 0.1	0.4 ± 0.1	2.0 ± 0.8	2.0 ± 0.9
UFOA	1.5 ± 0.3	7.9 ± 1.2	10.7 ± 1.6	29.9 ± 2.5
UFOB	0.9 ± 0.2	1.4 ± 0.2	8.5 ± 2.6	7.0 ± 1.2
UFOT	2.4 ± 0.5	9.4 ± 1.3	19.2 ± 2.7	36.9 ± 2.8
HUMA	2.1 ± 0.7	2.1 ± 0.4	14.2 ± 3.4	8.5 ± 1.6
ANIA	0.9 ± 0.2	2.3 ± 0.5	6.0 ± 1.2	9.3 ± 1.6
ANIB	0.3 ± 0.2	4.3 ± 0.7	1.8 ± 1.2	5.2 ± 1.8
ANIT	1.2 ± 0.3	3.6 ± 0.7	7.8 ± 1.3	14.5 ± 2.0
TELE	1.8 ± 0.3	3.4 ± 0.5	13.9 ± 2.3	14.4 ± 2.1
GEOP	0.4 ± 0.1	1.3 ± 0.2	4.2 ± 1.8	5.0 ± 1.0
ARCH	0.7 ± 0.2	0.9 ± 0.2	5.6 ± 1.8	4.1 ± 0.9
ALL	12.4 ± 2.0	24.8 ± 3.5	—	—

The n = 31 and n = 27 analyses were used throughout the study in order to reduce the possible artifacts or distortions from one or two extreme values. Correlation coefficients were calculated for the total population and for the remaining population after extreme (large) values had been deleted following visual inspection of scattergrams. Such operations are important for any analyses since only 1 value that is 10 times greater on both the Y and X values in a random cluster, can produce correlation coefficients of 0.5.

Statistical significance levels are given for different correlation coefficients for the different methods used. Here $p < .01$ is taken as a criterion that the relationship is not a routine chance occurrence. A correlation coefficient that is significant beyond the .01 level would occur by chance alone 1 out of 100 times: or, one would expect that 1 out of every 100 correlation coefficients to be significant by chance alone at this level.

The magnitude of the correlation coefficient required for statistical significance varies with sample size. For 31 cases (states), a correlation value must be 0.46 or greater to be significant at the .01 level. For 27 states, the correlation coefficient must be 0.49 or greater. (Both values assume a two-tailed test considering the nature of the data.)

TABLE 2

Correlation coefficients (r) between categories in the Fort population (above the diagonal) and in the *Fate* population (below the diagonal).

	FALT	ELEC	SOUN	UFOB	HUMA	ANIT	TELE	GEOP	ARCH
FALT	1.00	0.43	0.08	0.45	0.48	0.22	0.45	0.02	0.24
ELEC	0.20	1.00	0.06	0.46	0.30	0.34	0.13	0.21	0.28
SOUN	0.12	0.07	1.00	−0.04	0.25	0.14	−0.18	−0.15	0.08
UFOB	0.30	0.22	−0.03	1.00	0.07	0.04	0.09	−0.02	0.19
HUMA	0.50*	0.36	0.19	0.10	1.00	0.59*	0.34	0.14	0.50*
ANIT	0.60*	0.41	0.17	0.30	0.67	1.00	0.54*	0.38	0.54*
TELE	0.60*	0.36	0.09	0.33	0.65*	0.45	1.00	0.12	0.29
GEOP	0.43	0.37	0.43	0.58*	0.40	0.22	0.56	1.00	0.11
ARCH	0.54*	−0.02	−0.05	0.43	0.26	0.25	0.30	0.23	1.00

$r \geq 0.49$, $p \leq 0.1$, two-tailed

One should realize that practical significance and statistical significance are two separate issues. A correlation coefficient that is significant statistically may in actual fact "explain" or account for only a trivial amount of the total variability in the data. For example, a r of 0.50 between variable X and Y appears relatively impressive. However, such a relationship accounts for only 25% ($r^2 = (0.50)^2$) of the variability of the data.

In other words, one can explain or account for only 25% of the variability in X by knowing Y or vice versa. The remaining 75% of the variability in the data is associated with some unspecified source. Even a correlation of 0.90 between X and Y indicates that 20% of the variability cannot be accounted for by the other variable.

Correlations Among Event Categories, Population and Earthquakes

Previous analyses of the data indicated that the three variables: odd events, population and earthquake history of the 31 states were inter-correlated. The relationship between population numbers and event numbers is expected since human beings are the primary measure.[5]

The relationship between population numbers and earthquake numbers is more obscure. However, recent unpublished data indicate a possible explanation for this correlation. States with higher seismic history, within the population analyzed, tend to cluster along the "valley" regions and river basins of the primary mountain ranges and have displayed large areas of fertile regions. Not surprisingly, these areas were settled first and have expanded proportionally.

Based upon previous data, one can offer a probationary explanation for these interrelationships. Whereas population is correlated with event numbers due to the requirement of human observers, earthquakes and populations are interrelated due to a shared third variable: some geological-geographical condition. No doubt the relationship, if any, between odd events and seismic activity will be confounded pervasively by this third variable.

For the present analyses, odd event categories from the Fort data were correlated with population values for the year 1900 (the median value for the Fort printout) and with earthquake numbers between 1700 and 1945 (FQTOT). The *Fate* data were correlated with population values for the year 1960 and for earthquake numbers between 1945 and 1974. The earthquake data were collected from Coffman and von Hake[6] while the population data were taken from U.S. vital statistics.

In order to check the regularity of the correlations between population numbers for different years, correlations were completed between population values for every 10-year interval between 1880 and 1960. All years after 1900 were intercorrelated by more than 0.96. Only 1880 and 1890 showed correlations below 0.90 with the later periods.

Tables 4 and 5 show the correlation coefficients (Pearson's r) between: (1) total numbers of earthquakes and of odd events in different categories and (2) population numbers and odd event numbers, for the *Fate* and Fort data using the total population (n = 31) and the limited population (n = 27). As expected, most of the categories for both populations are correlated significantly with population number. The persistence of these relationships in both n = 31 and n = 27 data indicate these correlations are not due to a few values. This statement is verified by inspection of scattergrams.

TABLE 3

Correlation coefficients (r) for different categories between the Fort and *Fate* data for the different categories and subcategories. Coefficients for all 31 states and without the extreme states (n = 27) are shown.

	n = 31	n = 27
FALA	0.16	0.18
FALB	0.41	0.35
FALT	0.49*	0.46
ELEC	0.57*	0.44
SOUN	0.04	−0.02
UFOA	0.42	0.13
UFOB	0.18	0.00
UFOT	0.36	0.10
HUMA	0.59*	0.42
ANIA	0.22	0.22
ANIB	0.14	0.00
ANIT	0.22	0.16
TELE	0.56*	0.40
GEOP	0.32	0.21
ARCH	0.26	0.27
POP	0.93*	0.72*
QUAKES L	0.56*	0.47
QUAKES H	0.61*	0.57*

$p < .01$

The primary difference between the Fort and *Fate* data is the number of significant correlations between odd events and seismic activity. None of the event categories within the *Fate* data are correlated significantly with the earthquake numbers during that period. On the other hand, depending upon the n = 31 or n = 27 population, several event categories from the Fort data are correlated with the earthquake activity.

If indeed earthquakes are correlated to some or all odd event categories, then some "period-dependence" should be evident. In other words, odd events during a particular interval should be most correlated with earthquake numbers during that period. This statement assumes, of course, that long-term lags—in the order of decades—do not exist between the odd events and quake numbers.

As a check for this possibility, total numbers of earthquakes recorded before 1874, between 1875 and 1909 and between 1910 and 1945 were correlated with the different categories in the Fort data; these three intervals were called QT1874, QT1909 and QT1945, respectively. The greatest changes for the three intervals, respectively, were for FALT (0.46, 0.44, and 0.26), UFOT (0.57, 0.62, and 0.13), HUMA (0.72, 0.36, and 0.02), and ARCH (0.62, 0.46, and 0.28).

The correlation coefficients between the individual intervals displayed a large range. Quake numbers for the

TABLE 4

Correlation coefficients (r) between different event categories and population (in the year 1900) and total earthquake numbers (1700 to 1945) for the data collected from Fort for both n = 31 and n = 27 state analyses.

	n = 31		n = 27	
	P1900	FQTOT	P1900	FQTOT
FALA	0.64*	0.38	0.52*	0.04
FALB	0.39	0.55*	0.44	0.68*
FALT	0.71*	0.61*	0.63*	0.50*
ELEC	0.34	0.42	0.23	0.32
SOUN	0.07	0.17	−0.10	0.09
UFOA	0.56*	0.57*	0.42	0.38
UFOB	0.23	0.53*	0.15	0.47
UFOT	0.51*	0.60*	0.38	0.56*
HUMA	0.70*	0.55*	0.53*	0.48
ANIA	0.74*	0.43	0.48	0.31
ANIB	0.37	0.53*	0.09	0.25
ANIT	0.66*	0.51*	0.39	0.35
TELE	0.64*	0.48*	0.49*	0.31
GEOP	0.28	0.08	0.40	0.03
ARCH	0.54*	0.61*	0.33	0.59*
	P1900:FQTOT = 0.51*		P1900:FQTOT = 0.35	

*$p \leq .01$

QT1874 interval correlated 0.60 with total quake numbers and less than 0.40 with any of the other intervals. The other three intervals correlated between 0.75 and 0.83 with total quake numbers. Correlation coefficients between the low (Mercalli IV and V) and total quakes for the QT1874, QT1909, QT1945, and QT1973 intervals were 0.91, 0.83, 0.94, and 0.98, respectively. On the bases of these data, one would expect little difference between total and IV-V magnitude correlations with odd event categories.

Factor Analysis

The persistent correlation between the different odd-event categories and population, and for that matter, the inter-correlation between categories, suggested that factor analysis was in order. Given an array of correlation coefficients for a set of variables, factor analyses allow the experimenter to determine whether some underlying pattern of relationship exists. If this relationship exists, then the data could be "rearranged" or reduced to a smaller set of *factors.*

Although the single most distinctive characteristic of factor analysis is its data-reduction capability, the isolation of factors allows potential isolation of the *source variables.* Using factor analysis, one can find groups of variables that display shared properties of variability. If completed carefully and systematically, sometimes one can isolate the mechanism associated with the shared source of variability.

Factor analyses involve a large number of different procedures. In this study, the most accepted method: PA 2 is used.[7] All factor loadings were determined from the varimax solution, which gives the clearest resolution (enhances high or low loadings on a factor). Again, since variability is a central operation, separate factor analyses were completed on the n = 31 and n = 27 population for each population of data. Extreme values have been known to grossly distort factor isolations.

The main 9 categories were factor analyzed. Major analyses included: ELEC, FALT, SOUN, UFOT, HUMA, ANIT, TELE, GEOP, ARCH. In most instances, total categories were substituted by one of their major divisions. UFOT was replaced by UFOB, FALT was replaced by FALA and ANIT was replaced by ANIA. These replacements involved the "most strange" of these categories. For a given category (variable) to be significantly loaded upon a factor, a correlation coefficient of greater than 0.4 on that factor was required.

Results of the factor analyses for the Fort and *Fate* data are shown in Table 6. The loading of each variable on the factors are shown in parentheses. Both eigen values and the percent of the total variability of all the categories accommodated by each factor are shown in parentheses beside the factor numbers. Eigen values are measures of relative importance of the factor. (Eigen values of 1.00 or less indicate that the factor explains no more than that explained by a single variable.)

Two to three factors emerged from the n = 31 and n = 27 populations for both the Fort and the *Fate* data. The cumulative variability that can be accommodated by these factors ranged from 64% to 73%. Despite the variable loadings on some factors, some persistent patterns are evident. For example, the variables UFOB, FALT and ELEC appear on the same factors for both *Fate* and Fort data and for both n = 27 and n = 31 analyses. Similarly, some variables, such as TELE, FALT and UFOB are loaded on more than one factor significantly. All four analyses also show the persistence of a cluster composed of FALT, HUMA, ANIT, TELE.

To determine how population and earthquake numbers might load on these factors, FQTOT and P1900 were added to the Fort data while QT1973 and P1960 were added to the *Fate* list. The results were clear and persistent for the Fort data. Whereas the TELE, FALT, HUMA, ANIT cluster was loaded heavily by population (0.72) and lightly by earthquakes (0.41), the factor containing UFOB, FALT and ELEC was loaded heavily by earthquakes (0.70) but not by population (0.38). The third factor was loaded by earthquakes (0.45) but only with the n = 31 analyses. Substitution of QT1909 (1875-1909) did not alter the contribution of the quake variable.

The *Fate* data were different with respect to population and to quake loadings. For these data, population was loaded heavily on Factors 1 (0.70) and 3 (0.40) for both analyses and also on Factor 2 for the n = 27 analyses. Earthquakes during the *Fate* data period were loaded in

a negative way on Factor 3 only for the n = 27 (−.5) and n = 31 (−.60) analyses. The addition of the population and quake data produced a third factor for the n = 31 analyses only. Interestingly, Factor 3 in the *Fate* data contains very high positive loadings of the UFOB and ELEC categories. The addition of UFOA did not alter the factor pattern for either data pools.

To determine whether some of the categories from both the Fort and *Fate* data may fall on the same factors, all major categories of the two data pools were factor analyzed together. The existence of 18 variables rather than 9 variables is expected to inflate the number of factors discriminated. However, with careful interpretation, artifacts can be reduced.

The results of these analyses are shown in Table 7. The six factors that emerged can account for 75% to 78% of the variability. Again, the first factor tended to be weighted by the HUMA, TELE, FALT, and ANIA categories (1s indicate Fort data, 2s indicate *Fate* data). Note that Factor 4 again emerged with ELEC1, UFOB1, and FALT 1.

TABLE 5

Correlation coefficients (r) between different event categories and populations (1960) and total earthquake numbers (1945-1974) for the data collected from *Fate* magazine for both n = 31 and n = 27 state analyses.

	n = 31		n = 27	
	P1960	QT973	P1960	QT973
FALA	0.69*	0.27	0.61*	0.19
FALB	0.44	0.26	0.39	0.17
FALT	0.70*	0.31	0.63*	0.21
ELEC	0.66*	0.01	0.54*	−0.30
SOUN	0.36	0.25	0.38	0.20
UFOA	0.81*	0.11	0.76*	−0.11
UFOB	0.64*	0.02	0.10	0.13
UFOT	0.82*	0.10	0.74*	−0.15
HUMA	0.67*	0.22	0.62*	0.06
ANIA	0.48*	0.10	0.47	0.03
ANIB	0.60*	−0.03	0.48	−0.24
ANIT	0.65*	0.06	0.59*	−0.12
TELE	0.71*	0.28	0.65*	0.11
GEOP	0.59*	0.23	0.59*	0.16
ARCH	0.42	0.14	0.32	0.15
	P1960:QT973 = 0.30		P1960:QT973 = 0.01	

p < .01

The difference between the n = 27 and n = 31 analyses are quite evident as well. The former results show little sharing of categories from both Fort and *Fate* data on the same factors. A given factor is predominated by either 1s (Fort) or 2s (*Fate*). However, the n = 31 analyses show a clear clustering effect whereby both 1s and 2s appear on a single factor such as Factor 1.

As a preliminary identification of these factors, earthquake histories for the Fort and for the *Fate* data and populations for the two periods were added to the analyses. Only the first factor was loaded by population: P1900 (0.83) and P1960 (0.77). Fortean period earthquakes were loaded slightly on Factor 1 (0.44). Factor 4 was loaded by Fortean period earthquakes (0.67) but not by population. Since P1900 and P1960 were so highly intercorrelated, the same analyses were conducted with only one population value (P1900 or P1960); the basic pattern did not change. The clustering of Fortean period quakes on UFOB1, FALT1 and ELEC1 remained persistent.

On the basis of these results, some new variables were computed for further analyses in order to determine the contribution of population and earthquake history (if any) to their occurrence. Categories that appeared on the same factors were computed (added) and given new labels. These computed categories (for Fort and *Fate* separately) were:

PIEZ = (UFOB + FALT + ELEC)
LUMO = (UFOB + ELEC)
MIND = (HUMA + TELE)
EART = (FALA + ELEC + SOUN + GEOP)
FORC = (FALA + TELE)
ODDS = (UFOT + ANIA + ARCH)
EVER = (ALL − UFOA)
ALL = (All 9 total categories)

The inter-correlations for some of these between Fort and *Fate* data are shown in Table 8.

These computations have both positive and negative aspects. One could argue that the different variables (categories) by themselves do not reflect an "integrated" phenomenon, whatever it is, since they are artificial fragmentations due to labeling systems. The computation presents the data as an integrated pool. On the other hand, one could argue that adding similar source data merely amplified any effect artifactually. Such limits should be realized.

Partial Correlation

Inspections of the data demonstrated the association of population numbers, earthquake numbers, odd event numbers, and, implicitly total areas (per state). Partial correlation provides the researcher with a single measure of association describing the relationship between two variables while adjusting for the effects (on variability) from one or more other variables.[7]

Partial correlation can be a helpful tool to unmask spurious correlations. A spurious correlation is defined as a relationship between two variables X and Y in which X's correlation with Y is purely a consequence of X varying with some other variable Z, where Z is the true predictor of Y. If the effects of Z were controlled (partialled out), the X would no longer vary with Y.

To use an example critical of Fortean phenomena in general, assume the relationship between odd events and earthquakes is due to the contribution of population to

odd events. If the contribution of population was held constant, then the correlation between earthquakes and odd events would no longer be statistically significant or as large. In this situation, the original correlation between odd events and earthquakes would be considered *spurious*.

Table 9 shows the first order partial correlation coefficients for the Fort and *Fate* data according to events, population and quake numbers, for different computed categories. The results of using all states (n = 31) and states within the major cluster (as inspected by scattergram) are shown as well. Partials for both Fortean period (QFORT) quakes (1874 to 1945) and *Fate* period (QFATE) quakes (1945 to 1974) are shown to compare populations.

Taking PIEZ1 for example, the partial correlations with population numbers but controlling for quake numbers show a correlation of 0.38 and 0.40 for the n = 27 and the n = 31 data, respectively. The results of correlating PIEZ1 with quakes and controlling for population, on the other hand, produced correlations of 0.49 and 0.55, respectively. One can conclude that the controlling variables for PIEZ1 in this situation would be primarily earthquake numbers during the Fortean period and secondarily population numbers.

PIEZ1, LUMO1, ODDS1, ALLO1 and EVER1, all displayed some correlation with earthquakes even when controlled for population. This was evident to some extent when the data from the Fort period were correlated with earthquakes for the *Fate* period. On the other hand, none of the *Fate* period computed categories were significantly correlated with quakes from either period. Population was the primary control variable.

These data support in general the results of the factor

TABLE 6

Major factors and relative loadings of categories (in parentheses) for n = 31 and n = 27 state analyses for both *Fate* and Fort data.

FORT

n = 27

Factor 1 (3.14, 35%)		Factor 2 (1.44, 16%)		Factor 3 (1.16, 13%)	
FALT	(0.62)	FALT	(0.48)	ANIT	(0.83)
ELEC	(0.67)	ANIT	(0.38)	GEOP	(0.46)
UFOB	(0.71)	TELE	(0.88)		

n = 31

Factor 1 (3.66, 41%)		Factor 2 (1.13, 14%)		Factor 3 (1.04, 12%)	
FALT	(0.48)	FALT	(0.71)	TELE	(0.76)
HUMA	(0.88)	ELEC	(0.59)	ARCH	(0.41)
ANIT	(0.96)	UFOB	(0.42)		
TELE	(0.47)	TELE	(0.42)		
ARCH	(0.42)				

FATE

n = 27

Factor 1 (4.26, 47%)		Factor 2 (1.26, 14%)		Factor 3 (1.04, 12%)	
FALT	(0.44)	FALT	(0.72)	SOUN	(0.40)
ELEC	(0.53)	UFOB	(0.43)	UFOB	(0.40)
UFOB	(0.63)	TELE	(0.40)	TELE	(0.40)
HUMA	(0.72)	ARCH	(0.71)	GEOP	(0.94)
ANIT	(0.78)				
TELE	(0.55)				

n = 31

Factor 1 (4.90, 55%)		Factor 2 (1.22, 14%)	
FALT	(0.61)	FALT	(0.48)
UFOB	(0.69)	ELEC	(0.72)
HUMA	(0.77)	UFOB	(0.65)
TELE	(0.88)	ANIT	(0.71)
GEOP	(0.48)	GEOP	(0.47)
		ARCH	(0.80)

TABLE 7

Major factors and relative loadings of categories (in parentheses) for n = 31 and n = 27 analyses for Fort and *Fate* data combined (n = 18 variables).

n = 27

Factor 1 (5.18, 29%)	Factor 2 (2.49, 13%)	Factor 3 (1.93, 11%)
ELEC 1 (0.52)	TELE 1 (0.67)	SOUN 1 (−0.48)
TELE 2 (0.51)	HUMA 1 (0.60)	UFOB 2 (0.79)
HUMA 2 (0.74)	ARCH 1 (0.57)	HUMA 1 (−0.49)
FALT 2 (0.65)	ANIT 1 (0.84)	GEOP 2 (0.54)
ANIT 2 (0.92)		

Factor 4 (1.48, 8%)	Factor 5 (1.34, 7%)	Factor 6 (1.21, 7%)
ELEC 1 (0.75)	ELEC 2 (−0.44)	SOUN 2 (0.69)
UFOB 1 (0.71)	GEOP 1 (−0.50)	GEOP 2 (0.60)
FALT 1 (0.52)	ARCH 2 (0.67)	
	FALT 1 (0.44)	

n = 31

Factor 1 (6.67, 37%)	Factor 2 (2.37, 13%)	Factor 3 (1.43, 8%)
ELEC 1 (0.60)	ELEC 1 (0.40)	UFOB 2 (−0.43)
ELEC 2 (0.64)	ELEC 2 (0.46)	GEOP 1 (0.70)
UFOB 2 (0.64)	UFOB 2 (−0.44)	ARCH 1 (0.53)
TELE 1 (0.67)	HUMA 1 (−0.64)	
TELE 2 (0.77)	ARCH 2 (0.58)	
FALT 1 (0.70)	ANIT 1 (−0.55)	
FALT 2 (0.73)	ANIT 2 (0.50)	
ANIT 1 (0.72)		
ANIT 2 (0.67)		
HUMA 1 (0.65)		
HUMA 2 (0.72)		
GEOP 2 (0.66)		
ARCH 1 (0.49)		
ARCH 2 (0.53)		

Factor 4 (1.38, 8%)	Factor 5 (1.18, 7%)	Factor 6 (1.12, 6%)
ELEC 1 (0.46)	UFOB 1 (0.51)	SOUN 2 (0.41)
UFOB 1 (0.52)		UFOB 2 (−0.40)

analyses. Some of the categories of the Fort data are clearly correlated with earthquake and population histories of the states. Other categories are almost totally loaded on the population factor, an observation that suggests a different source for some of the odd events. However, all the categories from the *Fate* data appear to be controlled (predicted) by *only* population data.

The areas of the states are not randomly distributed. Consequently, the possibility exists that some artifact of area could be contributing in a negative or a positive manner to the patterns. Dividing the different event category, population and earthquake numbers by total area of each state, reduces these values to a common unit of area. In addition, this operation introduces a qualitatively different type of relationship: density.

Although a common operation by many scientists, the division by a common factor can be a source of spurious correlation too. If three *uncorrelated* populations of data X1, X2 and X3 are involved and a person divided X1 by X2 to obtain I1 and divided X3 by X2 to obtain I2, then the correlation between I1 and I2 can approach 0.5.[8] By dividing through by a common source, even a random population, the total amount of random distribution is reduced. For populations that are inter-correlated, the solution becomes less determinant, i.e., the division may enhance or cancel the effect.

If completed appropriately, this procedure can enhance the relationship and remove confounding factors that could be masking any effect. Consequently, first order partial correlations were calculated for events/total

TABLE 8

Correlations between Fort and *Fate* data as a function of different data transformations for sample computed categories (following factor analyses), earthquake and population numbers.

Event	Total Numbers n = 31	Total Numbers n = 27	Events/Area n = 31	Events/Area n = 27	Events/Population n = 31	Events/Population n = 26
PIEZ	0.41	0.23	0.48*	0.39	0.20	0.23
EART	0.48*	0.56*	0.63*	0.23	0.42	0.44
FORC	0.60*	0.44	0.66*	0.63*	0.11	0.30
MIND	0.67*	0.39*	0.79*	0.68*	0.38	0.50*
ODDS	0.44	0.25	0.50*	0.38	−0.11	0.30
ALLO	0.61*	0.41	0.73*	0.53*	0.46*	0.48
QUAKE	0.61*	0.57*	0.71*	0.47	0.69*	0.41
POP	0.93*	0.72*	0.96*	0.94*	—	—

area (of each state) as a function of population/total area and earthquakes/area, and (2) events/population as a function of earthquakes/population and area/population, for each of the computed categories. Except for the significant contribution of seismic activity to the FORC1 (0.58), the basic pattern following division by area did not change from Table 9.

Not surprisingly, the division by population drastically altered the pattern of significant first order partial correlations. Significant partials for quakes (controlling for area/popula-

TABLE 9

First order partial correlation coefficients for sample computed categories for Fort (1s) and *Fate* data (2s) in order to determine the relative contribution of population (1900 for Fort and 1960 for *Fate*) or earthquakes to variability in the categories. For comparison, seismic data for both the Fort (Fort Q) and the *Fate* (*Fate* Q) periods are used for each set of categories.

Variable		NG		n = 27 Partial r	n = 27 Partial r	n = 31 Partial r	n = 31 Partial r
		With	Controlling for	Fort Q	*Fate* Q	Fort Q	*Fate* Q
PIEZ	1	P	Q	0.38	0.28	0.40	0.49*
PIEZ	1	Q	P	0.49*	0.26	0.55*	0.25
EART	1	P	Q	0.48*	0.60*	0.52*	0.68*
EART	1	Q	P	0.02	0.19	0.21	0.10
FORC	1	Q	P	0.04	0.24	0.21	0.19
FORC	1	P	Q	0.55*	0.67*	0.64*	0.76*
MIND	1	P	Q	0.56*	0.63*	0.68*	0.79*
MIND	1	Q	P	0.16	0.50*	0.26	0.42
ODDS	1	P	Q	0.37	0.41	0.54*	0.66*
ODDS	1	Q	P	0.57*	0.40	0.61*	0.40
ALL	1	P	Q	0.57*	0.67*	0.68*	0.47*
ALL	1	Q	P	0.56*	0.52*	0.63*	0.79*
EVER	1	P	Q	0.60*	0.64*	0.68*	0.81
EVER	1	Q	P	0.59*	0.50*	0.56*	0.50*
PIEZ	2	P	Q	0.80*	0.80*	0.83*	0.85*
PIEZ	2	Q	P	−0.12	−0.23	−0.18	−0.25
EART	2	P	Q	0.79*	0.80*	0.78*	0.76*
EART	2	Q	P	−0.08	0.24	−0.25	0.04
FORC	2	P	Q	0.73*	0.67*	0.78*	0.80*
FORC	2	Q	P	0.25	0.24	0.03	0.16
MIND	2	P	Q	0.69*	0.71*	0.68*	0.72*
MIND	2	Q	P	−0.20	0.15	0.14	0.10
ODDS	2	P	Q	0.76*	0.76*	0.76*	0.81*
ODDS	2	Q	P	0.07	−0.14	0.05	−0.19
ALL	2	P	Q	0.82*	0.60	0.84*	0.85*
ALL	2	Q	P	−0.00	−0.03	−0.09	−0.11
EVER	2	P	Q	0.85*	0.86*	0.82*	0.86*
EVER	2	Q	P	−0.07	0.26	0.00	−0.10

tion) appeared for PIEZ1 (0.75), EART1 (0.58), EVER1 and ALLO1 (0.66) and for FORC2 (0.50) and for ALLO2 and EVER2 (0.62). All other correlations were not significant and predominately negative. Similar patterns held for both n = 31 and n = 27 analyses.

Multiple Regression

Ultimately, we would like to predict the various categories of unusual events from known and measurable variables. Sometimes simple correlations between two variables do not involve all of the necessary variance required to explain or to predict one of the variables. In these instances, one can use multiple regression whereby more than one variable is used to predict a given dependent variable.[7]

Multiple regression allows the calculation of a multiple r value that is the consequence of combining the different variables in the equation. Like the simple r, r^2 is the amount of variability in the dependent variable that can be accommodated by the others. For example, if the r^2 for Y is 0.80 with two variables X and Z in the equation, then $(0.80)^2$ or 64% of the variance in Y can be explained by the combination of X and Z.

The relative contribution of each variable in the equation to the prediction of Y is also calculable. Sometimes all of the major variability can be accounted for by one of the two (or more) variables. Other times, depending upon the phenomenon, each variable may add similar amounts of predictability to the total. Although separately, the two or more variables in the equations may only marginally correlate with Y, together, they may produce substantial multiple correlations.

A primary limit of multiple regression occurs when two or more variables in the equation are themselves highly inter-correlated. "Highly inter-correlated" is an arbitrary term but is usually applied to r values greater than 0.90. In this situation, the high inter-correlation between X and Z themselves, may artifactually inflate the multiple r value for Y.

Using multiple correlation, we can predict how much of the variability in the odd events can be accounted for by the two variables in question: population and seismic activity. If one can obtain multiple rs of 0.90 or greater then one can predict safely that 81% of the variance in the odd events can be predicted by knowing population and earthquake measures. Only 20% of the variability in odd events would be due to some other source/sources. With other data in the social sciences, this variability is related usually to measurement error or scaling "noise."

Table 10 displays multiple rs for sample Fort and sample *Fate* populations. The two most populated single categories: UFOT and HUMA are presented for comparison. As can be seen, the multiple rs range from 0.64 to 0.87 for the Fort data and from 0.67 to 0.87 for the *Fate* data. Translated into predictability, however, one can predict only between 40% to 76% of the variability in different categories as a consequence of knowing population and earthquake history.

The two populations: Fort and *Fate,* differ blatantly with respect to the relative contribution of earthquake numbers and population to the total variability of the categories. In some of the Fort categories, earthquakes contribute, as shown by their r^2 values, most of the explained variance. Population appears trivial. Again, in the *Fate* data, all of the variance is due to population.

TABLE 10

Multiple regression results demonstrating multiple r values and the relative contribution (r^2) of either population or earthquake numbers during the appropriate periods for different categories in the Fort and *Fate* data.

	FORT		*FATE*	
	Fort Q	*Fate* Q	Fort Q	*Fate* Q
PIEZ				
MR	0.80	0.68	0.84	0.83
Q r^2	53%	30%	9%	0%
P r^2	10%	16%	62%	68%
LUMO				
MR	0.60	0.34	0.81	0.80
Q r^2	35%	4%	2%	5%
P r^2	1%	8%	64%	59%
FORC				
MR	0.74	0.73	0.81	0.81
Q r^2	24%	53%	16%	11%
P r^2	30%	0%	51%	56%
UFOT				
MR	0.70	0.56	0.83	0.84
Q r^2	45%	16%	5%	2%
P r^2	4%	15%	68%	68%
HUMA				
MR	0.74	0.70	0.67	0.67
Q r^2	30%	20%	1%	1%
P r^2	24%	32%	45%	45%
EVER				
MR	0.87	0.83	0.86	0.87
Q r^2	51%	26%	0%	0%
P r^2	26%	43%	75%	75%

From the point of view of prediction (even with possible spurious correlations not totally excluded), the multiple regressions completed with events/area as a function of population/area and earthquakes/area show much greater potency. As seen in Table 11, a multiple r of 0.98 is found with the *Fate* data. In other words, 96% of the variability for all basic categories (with the exception of UFOA) when combined can be predicted from population/area and earthquake/area. Whereas population by itself has an r of 0.93 with the EVER category, the earthquakes add an extra 0.05. This is the difference between explaining 86% of the variance and 96% of the variance.

In order to enhance the prediction of the Fort data in particular, since the multiple rs were smaller than the *Fate* categories, various substitutions were made in population and quake variables. Since the Fort data were scattered over a longer period of time than the *Fate* data, one might argue that the use of population for 1900 or the large

TABLE 11

Multiple rs and relative contribution of either population or earthquake numbers for sample computed event categories for both n = 31 and n = 27 analyses. F refers to F-values.

	FORT				*FATE*			
	n = 31		n = 27		n = 31		n = 27	
	rv	F	rv	F	rv	F	rv	F
EVER/A								
MR	0.83	31	0.83	27	0.98	295	0.98	305
Q/A r^2	62%	11	63%	8	9%	56	9%	54
P/A r^2	7%	7	6%	5	86%	112	88%	108
PIEZ/A								
MR	0.78	18	0.77	21	0.95	118	0.96	154
Q/A r^2	57	23	58%	27	13%	34	13%	43
P/A r^2	3%	2	2%	2	76%	198	80%	257
LUMO/A								
MR	0.48	4	0.48	4	0.40	3	0.38	2
Q/A r^2	16%	8	16%	7	6%	2	10%	1
P/A r^2	7%	2	7%	2	10%	5	5%	4
FORC/A								
MR	0.52	5	0.53	5	0.90	60	0.91	57
Q/A r^2	13%	1	13%	1	43%	1	44%	1
P/A r^2	15%	6	15%	5	37%	57	39%	54
MIDWD/A								
MR	0.91	71	0.93	75	0.93	83	0.93	77
Q/A r^2	46%	1	48%	1	8%	15	6%	11
P/A r^2	39%	63	38%	7	78%	33	81%	32

quake interval FQTOT would not display sufficient resolution. However, the use of population figures for the years 1880, 1890, or 1910 did not alter the multiple rs. The specific use of QT1909 also did not alter the prediction potency.

Neither the use of VI or more quakes, quakes of IV or V, total epicenters, or grand total quake numbers enhanced the Fort or *Fate* predictions. In most cases, the multiple rs were less. The use of these values in the *Fate* data reduced the high multiple rs to within the 0.7 to 0.8 range. Reduction of data to events/population as a function of quakes/population and area/population did not allow greater multiple r values.

CONCLUSION AND DISCUSSION

Several repeatable patterns have emerged in the different Fortean event categories analyzed in this study. Simple correlations, partial correlations, factor analyses and multiple regressions all demonstrate the inter-correlation of Fortean phenomena with population. Although all these methods do share similar assumptions of internal operation, the replicable nature of the data patterns increases the general application of the results.

The interrelationship between different odd event categories within either the Fort or *Fate* data as well as between the Fort and *Fate* data are relatively small. Not more than 50% (average 15%) of the variability in any category within the same data pool can be predicted or accounted for by another category in the same pool. Similarly, a given category in the Fort data can account for not more than 50% of the variability in the *Fate* data. The average explained variability between the Fort and *Fate* data was about 20%

Since the population numbers in the Fort data can account for up to 86% of the variability of population numbers in the *Fate* data (or vice versa), one might conclude that the low inter-correlations between odd event categories imply a minimum contribution from population. However, this conclusion is inappropriate for a number of reasons.

First, the variability around the means of each category for each state in the Fort or the *Fate* data is more commensurate for the population data. Whereas the population measures actually involve millions of counts (and

the entire population, statistically speaking), the odd event numbers for each state are only samples. Presumably, all the odd events, by nature of their space-time transient characteristics, have not been counted.

Since the magnitude of the correlation and the amount of variability accounted for by a predictor are a function of the shared patterns of variability, less random variation occurs in the population data due to the sample size. When the population data are correlated with the odd events, the extra sources of random fluctuation from the odd event sampling, decreases the shared variability patterns.

Second, the more complicated analyses all demonstrate that population can account for almost all the variability contributing to the correlations with earthquakes in most categories, especially for the *Fate* data. Since one is more likely to conclude that population numbers are predictors of odd events rather than the odd events are predictors of numbers of people, the population factor appears to account for most of the variability in all odd event categories. Even in categories (within the Fort data) where earthquakes can account for some of the variability, population is still a contributor.

Certainly, one expects population to correlate with the numbers of events since the human being is the primary measurement. It is now clear, for the *Fate* data at least, that the relative sums of all *Fate* events can be accounted for almost entirely by population variability. When converted to events/area and population/area, in fact, almost all the variability in the odd events can be accounted for by population. Without this transformation, more than 75% of the variability is explained.

For the *Fate* data, at least, one can see that population is the control variable. One would be arguing on very precarious ground if explanations of Fortean events were couched in some environmental or theoretical variable. Such a variable would have to almost perfectly match the variability patterns of population to remain hidden.

Statistically, we cannot proceed any further on the population question. The reduction of Fortean phenomena to purely population causes—in a mechanistic sense—does not follow totally although it is implied. At present, we cannot resolve whether the data imply persistent artifacts in the human population or whether odd events are occurring almost homogeneously over that space and the population merely reflects the statistical observation.

The differential contribution of earthquake numbers to the categories within the Fort data strongly suggest that some of the categories may involve different sources of variability (and perhaps mechanism). Specifically, PIEZ and ODDS (and EVER, since it contains these subsets) showed very clear association with the earthquake history of the Fort period.

The association with earthquake numbers is not artifactual to the period, since even the *Fate* quake numbers correlated with the Fortean categories. Any contribution was expected to be lower, (it involves a different time period) but still evident (since Fort and *Fate* period quakes are correlated). In short, one could conclude that the composite of UFOB, FALT, ELEC, and ARCH are influenced by earthquake history.

A more conservative interpretation would be that the earthquake contribution is trivial and perhaps artifactual. Suspiciously, similar categories for both *Fate* and Fort data show similar multiple rs when both quakes and population are in the equation, even though they may contribute to various degrees. One must ask why should the variability explained by quakes in the Fortean data be replaced by a population component in the *Fate* data?

This pattern could be explained as a consequence of just sampling problems. With large samples (and *Fate* contained twice as many cases as Fort data), the errors of sampling are decreased. As one approaches the entire population and the number of cases increase, the discrepancy of sampling error is decreased. One would expect, even *predict*, the obvious. The EVER category *should* show the greatest prediction and correlation with population since it contains the greatest number of samples.

In short, variability in population can account for most of the distribution in the different odd-event categories. No doubt, one could argue that the composite nature of the analyses removed individual cases and potential phenomena. However, the smaller the sample size, especially in this area, the more one is dependent upon the consequences of random variation, error and worst of all: anecdotal reasoning.

At a probabilistic level, one can consider the human being or the entire population of human beings as a series of responses. Statistically, one expects reports of something odd within and throughout the population. Verification attempts, from photographs to multiple reporting by "reliable witnesses," does not alter the mechanisms of statistical occurrence.

The occurrence of these events would be random; their pursual would be comparable to playing dice. Every so often, the enthusiast would "guess" the next number. Although due to chance, the potent reinforcement would maintain the fragments of some theory. With each roll or each event, the theory, by necessity, must become more and more far-fetched. Except for word games, there is no pattern in randomicity.

Although the analyses by spatial (states) increments were confounded by population variables, the isolation of some environmental contributor to Fortean phenomena may still be possible. The use of temporal increments would allow the inclusion of variability associated with dynamic processes. Time lagged correlations for Fortean categories could discriminate any sequential relationships in the data. This procedure has been used successfully with recent UFO reports.[9]

A solution to the Fortean problem, like other dilemmas in the history of science, will require repeated numerical analyses and the generation of specific hypotheses[5] that can be tested with numbers. "Time-pumps," "magnetic windows," and "Supersargasso Seas" are hypnogogic diversions. They do not solve the problem.

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AN APPENDIX TO "THE ONE PHYSICAL EXPERIMENT SCIENCE CANNOT EXPLAIN"

(Printed in Pursuit, *Vol. 12, No. 3, Summer 1979)*

by T. B. Pawlicki

AMONG the innumerable speculators who have formulated a holographic model to explain universal mechanics, Tom Bearden is best known to me for analyzing the holographic structure mathematically. Our theories are virtually identical except that Bearden has calculated an abrupt, right-angle, *orthorotation* at the point where radiant energy is transformed into a standing-wave vortex; Bearden calculates one orthorotation on each of the three axes of field spin; an orthorotation on one axis transforms radiant energy into the mental signals of words and music; orthorotation on two axes transforms radiant energy into visual, photonic images; the structure of the spherical standing-wave becomes manifest with orthorotation on all three field axes. In contrast, my models demonstrate a gradual rotation of field energy into the standing-wave phase and back to the radiant phases, although radiation is stopped on each of the three axes to bring words, music and mental images into manifestation. It is difficult to gainsay a sound mathematical calculation, but it is perhaps more difficult to deny the validity of constructed models. Paradoxes of this kind usually provoke critics into assuming that one or both theories must be wrong because both cannot be right. But paradoxes of this kind, including the wave/particle dichotomy, arise simply because mutually exclusive mechanics *are* both right. The problem is to perceive the larger perspective in which both views become synthetic instead of contrary. If you take the time to study waves upon the surface of a sizable body of water, you will see a natural physical model demonstrating the mechanics described by both Tom Bearden and myself. As a tent is an involute of a bubble, each wave and wavelet on the surface of water is an involute of the standing-wave vortices in a Plate Flutter Experiment tuned to white sound. The wave always rises at right angles to the veolcity of radiant energy on its proper scale. The rise is always abrupt upon encountering an opposing velocity on the same axis. A wave-front is formed by opposition on two axes; the third axis cannot be observed on a plane surface of water. There is the phenomenon corresponding to Bearden's calculation of *orthorotation*, while the standing-wave phase of the field progresses gradually throughout the full circle or rotation.

(These models have defined the universal hologram almost sufficiently to design an analogue time transport simple enough for home experimenters to construct, like the Vortex Drive prototype.)

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WAS EINSTEIN A BERKELEIAN?

by Harry E. Mongold

ILSE Rosenthal-Schneider writes that "reality of the external world" is something Einstein "does not discuss." ([4], p. 137) Perhaps more important than any discussion Einstein might have offered is the implication of his special theory of relativity. It is possible to deduce that he in practice regularly conceived no reality except sense-experience.

In "Relativity, the Special and General Theory," Einstein speaks of a metre-rod in system K' moving in the direction of its length relative to system K. He gives the measurement that must be made of the rod by an observer in K and declares as follows:

> "The rigid rod is thus shorter when in motion than when at rest, and the more quickly it is moving, the shorter is the rod. For the velocity $v = c$ we should have $\sqrt{1 - v^2/c^2} = 0$, and for still greater velocities the square-root becomes imaginary. From this we conclude that in the theory of relativity the velocity c plays the part of a limiting velocity, which can neither be reached nor exceeded by any real body." ([1], pp. 35-6)

The implication here is that the speeding rod has actually shortened relative to its former length. The velocity of light c can be considered a limiting one only if the rod becomes nonexistent at that speed. It should be noted, incidentally, that the shortening of a space ship could not be measured on shipboard, because *everything* there shortens in the direction of motion, including those who measure.

Einstein adds:

> "If, on the contrary, we had considered a metre-rod at rest in the x-axis with respect to K, then we should have found that the length of the rod as judged from K' would have been $\sqrt{1 - \frac{v^2}{c^2}}$; this is quite in accordance with the principle of relativity which forms the basis of our considerations." ([1], p. 36)

Since the metre-rod in this illustration represents any sort of body, evidently each of two moving observers (that is, moving in the same "x-axis") must measure the other as having shortened, as compared with himself. It is clear that now we are speaking of appearances. How can we reconcile this with the implication that the shortening is real?

Einstein's comment is not clear:

> "*A priori* it is quite clear that we must be able to learn something about the physical behaviour of measuring-rods and clocks from the equations of transformation, for the magnitudes x, y, z, t, are nothing more nor less than the results of measurements obtainable by means of measuring-rods and clocks. If we had based our considerations on the Galileian transformation we should not have obtained a contraction of the rod as a consequence of its motion." ([1], ibid)

The first sentence is ambiguous. Which behavior of rods and clocks is referred to, shortening and slowing or measuring? He says the magnitudes are measurements as though there are none other than measurements, and adds that a different formula brings out a different measurement (calculation?). His reconciliation of the ostensibly opposed concepts, apparent and real, may be that these have the same meaning.

The parallel situation of the slowing clock is presented similarly:

> "As judged from K, the clock is moving with the velocity v; as judged from this reference-body, the time which elapses between two strokes of the [seconds-] clock is not one second, but $\frac{1}{\sqrt{1 - v^2/c^2}}$ seconds, i.e., a somewhat larger time. As a consequence of its motion the clock goes more slowly than when at rest. Here also the velocity c plays the part of an unattainable limiting velocity." ([1], p. 37)

A velocity that is "unattainable" because all clocks stop and lengths vanish from reality is not the result of appearances that leave reality untouched. However, the concept that *some* appearances are equivalent to reality is obviously not the same as the concept that *all* are. The case for inferring Einstein's Berkeleianism-in-practice is that he deduces reality from appearances with no other expressed warrant. It is evident that for him the fact that a speeding metre-rod is measured shorter than before is the same as the reality that it *is* shorter. Each frame of reference—K and K'—measures the other shorter (indicating appearance) and *if* they were moving fast enough relative to each other they would both be non-existent (indicating a real effect). Since there would then be nothing to move, c is the limit for velocities. It is his easy unmentioned assumption that appearance must mean reality that suggests that he uses the assumption as a general rule. *If he had thought it exceptional* he would have had some reason other than the predicted measurement to give us for thinking c a limiting velocity. He sees no possibility of reality that is *not* a measurement.

Can the idea that appearance is reality be found expressed anywhere in the writings of those presenting the special theory? There is much variation on this point, some writers speaking only of appearances and others speaking of reality. Perhaps the closest to a blanket assertion that *all reality is but appearance* is Martin Gardner's explanation: "Length and time are relative concepts. They have no meaning apart from the relation of an object to an observer." ([3], p. 49) If lengths and time (four "dimensions") fail to cover all that is believed of reality,

mass can be added, as he says it too is relative. He specifies further in a way that at first reading seems to qualify the meaning:

> "There is no question of one set of measurements being 'true,' another set 'false.' Each is true relative to the observer making the measurements; relative to his frame of reference. *There is no way that measurements can be any truer.* In no sense are they optical illusions, to be explained by a psychologist. They can be recorded on instruments. They do not require a *living* observer." ([3], ibid)

The reference to instruments does not actually moderate the implicit idealism. Conceivably, instruments are themselves only sense-impressions. Since they consist of lengths in a time, they must "have no meaning apart from the relation" to other instruments, and to human observers. The train of thought leads back to us. We always assume that *we* exist, as a starting point, and we tend to include all other people. Inanimate objects can be more easily regarded as only sense-impressions.

Gardner's position thus seems to be that all is measurement, all is observation. This, however, is less clear when the above quotation is compared to a paragraph two pages earlier:

> "How is it possible, you ask, for each ship to be shorter than the other? You ask an improper question. The theory does not say that each ship is shorter than the other. It says that astronauts on each ship *measure* the other ship as shorter. This is a quite different matter. If two people stand on opposite sides of a huge concave lens, each sees the other as smaller; but that is not the same as saying that each *is* smaller."

This common-sense paragraph does not square with the paragraph printed just before it:

> "Lorentz and FitzGerald still thought of moving objects as having absolute 'rest lengths.' When objects contracted, they were no longer their 'true' lengths. Einstein, by giving up the ether, made the concept of absolute length meaningless. What remained was *length as measured,* and this turned out to vary with the relative speed of object and observer."

If there is only "length as measured," there is no distinction between a ship that is shorter and one that an astronaut measures as shorter. More important, a *differentiation between measurement and what is measured* could never require the deduction that *c* is the limiting velocity for moving objects, if the only evidence is that movement *appears* to cause a shortening.

In the 1937 book, "The Philosophy of Relativity," Ushenko defends relative simultaneity by explaining that even if two rocket trips were agreed to have lasted the same number of seconds (over a period of years), "it may be no less true that while the journey was in progress the duration was not the same." He continues:

> "Two telegraph poles if brought together to the same place would be the same in length, but as they stood apart in the street they were at once larger and smaller than one another as witnessed by two observers of whom each was standing by one of the poles. Being used to relativity of length, we easily understand that it is incorrect to say that the poles are really equal in length even while distant from one another, and we recognize that both observers were right. It is the same kind of understanding that is required of the opponent of the Theory of Relativity in order to have him converted." ([5], pp. 55-6)

Ushenko denies that a view of two objects together is preferable to any other arrangement as far as allowing true measurement is concerned. If all observers are right regardless of distance, what we have called "mere appearance" must be accepted as all there is. Relativity theory concerns objects in motion. Ushenko here extends the justification of various views to observations of standing objects, and it seems a logical extension.

His next paragraph (a long one) begins as follows:

> "The source of reluctance to be converted into a relativist is the belief that there is an essential distinction between the measure of a duration and the duration as it is in itself. And in a sense there is, but not in the sense which is constitutive of an objective non-relative order of events in time, since a duration in itself is an act of self-experience which, being the private aspect of an event, is incommensurable with any other event. In so far as events can be compared in duration or put in an order of simultaneity and succession, this must be done from the station-point of an outsider-percipient ... who supplies the standards of comparison and arrangement. Or, to put it in other words, as long as an event is taken as having a definite size in space and time, its size is equivalent to its measures of space and time. Those who oppose the identification of duration with its measure are likely to be misled by a belief in the reality of time as a uniform flow of moments which is different from the succession of events."

Although the statement that duration is the "private aspect of an event" is rather startling, basically he has here said nothing not standard to the theory, since simultaneity (or succession) is considered relative to the observer. The order in which events occur and the speed with which they follow one another—these vital aspects of reality are said to depend on observation.

It is sometimes argued by the theorists that they are not saying that objects exist because perceived, but only that they have the size, duration, mass, etc., that are perceived as different by different observers. This may seem a valid defense against charges of idealism until one recalls that Einstein declares that each of two speeding systems is shorter than it was even to the point of each finding that the other no longer exists. The latter velocity is accepted as *therefore* the limit of possible motion—and not simply the limit of relative velocities in which movers can still see each other.

Without length, duration, and mass, a body does not exist. They are essential characteristics. Both these essentials and their measures change with motion, according to Einstein, to the limit of zero, or of infinity, as applicable. There are, it is claimed, no distinctions between magnitudes and their measures. It follows that relativity theory assumes no physical reality in the sense that the ordinary person does (although some could exist that is never contacted) but only measurements, and all machine measurements (which are ordinarily assumed to be reality apart from anyone to read them) are only what a human being observes them to be. This is only one step from solipsism, the position that Einstein said he avoided by preserving a distinction between "sense-impressions" and "mere ideas," and between two types of the former—"as conditioned by an 'objective' and by a 'subjective' factor." ([2], p. 673) Those words sound like an attempt to reserve a place for physical reality, and he went on to say, "The above mentioned 'objective factor' is the totality of such concepts and conceptual relations as are thought of as independent of experience, viz., of perceptions." ([2], pp. 673-4) What is independent of perceptions, however, can hardly be physical reality if they are concepts and conceptual relations. Bishop Berkeley offered the explanation that they are the "thoughts of God," and Albert Einstein's theory accords well with this.

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YOUR VERY OWN ENERGY LINE GRID

by Allan Grise

NARY a reader of *Pursuit* is a stranger to Fortean brouhaha such as a report of a yeti passing himself off as a Fuller Brush salesman in downtown Pittsburgh. Neither are SITUians bent out of shape by first-hand accounts of polkadot slush raining down from the inside of some poor slob's VW bus.

But, lamentably, very few Earth people, to say nothing of Forteans, have even a nodding acquaintance with the network of energy lines that literally criss-cross our planet.

In the following paragraphs, I will share with you some speculations regarding the nature of these lines, as well as give detailed instruction on how to locate the Earth Energy Line grid you are sitting in as you read this.

By referring to Figure 1, you will discover the width and spacing of these Earth Energy Lines (hereinafter "EELs"), and note that the rectangle formed by these lines is oriented to magnetic north.

I have yet to find a backyard or parking lot where there is not a regularly recurring pattern of EELs. I hear the same from others who are thousands of miles away, and so I can only conclude these EELs are planetary in scope.

Exactly what EELs are, and what they are doing all over the place is anybody's guess. One fact that helps our guessing is EELs appear to be similar to Ley Lines.

"Ley Line" was invented by Alfred Watkins, a man who was "shown" these straight paths back in the twenties.

One fine spring morning, Alfred found himself trotting up a hill in his native England only to be treated to something that sounds very much like a vision.

He glimpsed in one extraordinary moment a pattern of lines that covered the countryside, as far as the eye could see. Ribbons of thin luminescence swept in from the horizon from all directions, connecting hilltops and church steeples, much like other-dimensional spokes on a wheel. Alfred's eyes beheld a network of Leys that was stunning.

Mr. Watkins was so stunned that he jotted down his innermost conviction, that the Powers That Be had singled him out to make the existence of Ley Lines known to a tardy world. A gripping revelation. What to do?

From that day forward, Watkins' life consisted of drawing straight lines on maps, and shouting "A-ha!" and "Eureka!" at odd hours of the night. He also spent countless hours in the field, trekking through meadowlands, backyards, garbage dumps and cemeteries; sometimes standing on roofs and climbing trees in village squares to get a better look at how things lined up.

While he was doing all that, he kept exhaustive and painstakingly accurate notes of all those alignments, and later published all of them in his now-classic text, *The Old Straight Track*.

Credit is due Watkins for the manner in which he handled his mind. He could have invented a cult, or at least chocked up his book with new words to define Ley Lines. He did not. Watkins apparently let the task of defining Leys (the undefined) in terms of gravity and magnetism (more undefineds) to the Pillars of the Scientific Community.

Watkins was concerned with what to him was a fact—that Ley Lines were merely visible markings of a system of naturally occurring energy paths. The points at which these paths crossed, by the way, were sacred to Druids and Celts. They healed and worked magic at these points. Later, churches were erected at those sites.

Leys are marked, but EELs aren't even talked about except in contemporary UFO-contactee literature.

Grids of a navigational sort are featured in Bruce Cathie's

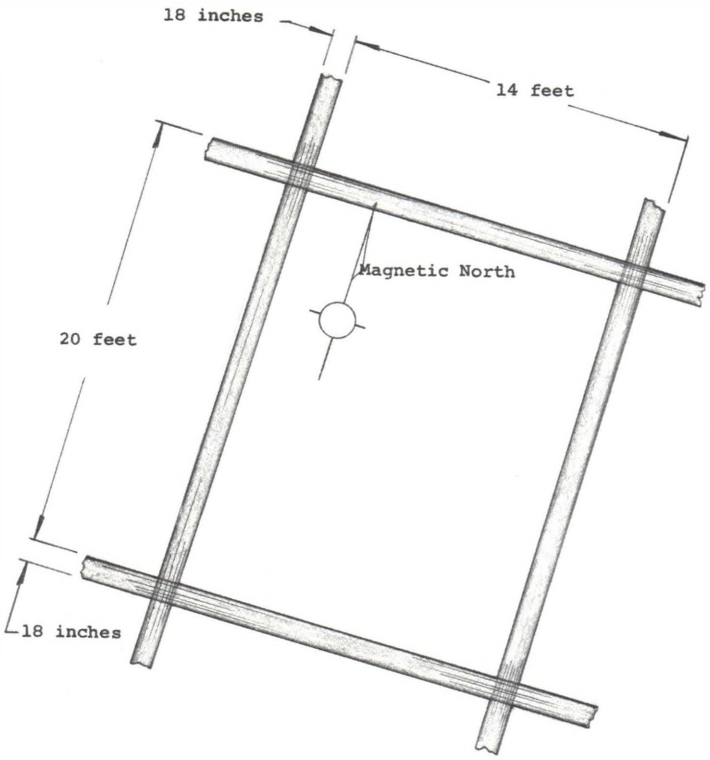

Figure 1. Lines of undetermined energy intersecting to form a "grid." Size is typical of grids at 34 degrees north latitude.

Harmonic 695. This book romps through such favorites as the nature of time and space, gives an equation on anti-gravity, and takes a left-handed swing at the planetary navigational grid as Cathie perceives it.

Some overwhelmingly fuzzy organization described as "them" is having great fun, says Cathie, stealthing around the planet stuffing navigational beacons and other gizmos into the dirt.

Cathie and I use the same words, "planetary grid system," but the similarity ends right there.

It is also likely that Ley Lines and EELs are similar in function to the meridians central to acupuncture philosophy and practice. These meridians, according to Chinese theory, are channels for the distribution of a life energy named "Chi." Makes me wonder if Leys and EELs supply Mother Earth with vitality of some sort.

It is also possible EELs have something to do with holding our version of reality together. If space-time has fabric, are EELs the threads of that fabric?

Enough speculation. Now it is time to tell you how to locate these Earth Energy Lines.

You do it by dowsing for them with bent pieces of wire known as L rods—dandy devices that can be whipped up in a few minutes by sacrificing a few wire coat hangers.

Here's how to make L rods: Cut through a wire coat hanger at one end of the bottom, then take another cut through the side that is continuous with the bottom, making the cut about where the hook begins.

Next, bend the legs to as near ninety degrees as possible. You have just made an L rod.

After you have made two L rods, hold them by the small leg of the L so they are parallel and horizontal to the ground, and about a foot apart.

Holding your hands in a fist, touch the inside of your wrists to your body. This gives stability.

Make sure the large leg of the L rod is an inch or so above the top of your fist. If it is not, then it will rub and tend to interfere and limit the response of the L rod when you walk over an EEL.

Another hint: Make a hole in your fists, so as to hold onto the L rod very, very loosely—the looser the better.

Yet another hint: In case you cannot get the L rods to stay put and they are wiggling all over the place, tilt them down as this will tend to stabilize them.

When you are confident you are holding them correctly, take the L rods, a compass, and markers (pebbles, a deck of cards) to some place where you can walk in a straight line for at least twenty feet.

Walk in any direction, but slowly, at about 2 mph. Walking slow gives the L rods time to respond to the EELs. When you walk over an EEL, the rods will cross in front of you. Don't worry about missing this crossing, as it is a gross, physical phenomenon.

After you walk over an EEL, the rods will uncross, and return to their normal parallel position. When you find the rods cross, mark the spot. After the second crossing, step a few feet to the side, and go back in a path that is roughly parallel to the path you first took. Naturally, you will mark the points of L rod crossing, and repeat the process until you have enough markers to see lines.

If you repeat the process, this time walking parallel to the lines you have just marked, you will find the other sides to the rectangle. Check your very first Earth Energy Line pattern with the compass to ascertain that it is aligned to magnetic north.

You have seen for yourself after you actually do what I have just detailed that there are lines of some force. If you actually earn the right to further knowledge by acting, you will then know as I do that there are EEL patterns all over.

At 10,000 feet, in holes, canyons, in upstairs apartments. All over.

I would be naive and forfeit my Fort Card if I were not to mention the obvious: EELs may be a source of power that is universal in scope. Whatever the EELs are, they are worthy of serious investigation.

To that end, I ask that the Board of Directors of SITU define and inaugurate a two-phase program of investigation of Earth Energy Lines and Grids, where

Phase One would be a coordinated effort to gather information that EELs do in fact exist on a planetary scope; and that

Phase Two would be a call for papers whose subject would be an explanation of the origin and probable use of the Earth Energy Lines to humankind.

It is further likely that in the spirit of Good Office the appropriate SITU principals could encourage participation by sweetening the pot, so to speak, by offering: a) a lifetime subscription to *Pursuit;* b) the very first Charles Hoy Fort Award for Actual Thinking; or, failing that, c) a two-week all expenses paid vacation in Lapland.

THE QUEST FOR NORUMBEGA PART III: THE SECRET OF THE SUN GODS

by Jon Douglas Singer

IN the previous section of this series we saw how the discovery of carbon-14 dating and archaeoastronomy revolutionized scientific thinking regarding the ancient history of Europe. We saw how the study of ancient British sites such as Stonehenge showed archaeologists that ancient western Europeans were not just skin-wearing savages but the possessors of a strange but advanced civilization of their own. Thus, it became clear that ancient Europeans could indeed have been fully capable of extending their domains over vast distances and of even crossing the Atlantic. We showed that the discovery of similar stone structures in eastern America revolutionized ideas held by historians, more of whom began to accept the hypothesis that ancient seafarers had come from the land of Stonehenge to New England. We saw that they went on beyond the work of Goodwin, the discoverer of the New England sites, and that they revised his theories to fit in with developments in old world archaeological speculation. In short, the work of Old World archaeologists complemented and paralleled the work of New World archaeologists.

Although New World archaeologists and amateur historians observing the Mystery Hill problem were often ridiculed as fringe members, as the years went on they found more and more evidence with which to buttress their arguments. Again and again, the strange stone structures found by Goodwin popped up elsewhere as their analogues were found by his successors in areas where he himself had either never looked or where he had only visited briefly. New kinds of evidence, namely allegedly ancient inscriptions, began to appear. Although Goodwin had found two inscribed stones at Leominster, Massachusetts,[63] he was unable to decipher the weird pictographs. Prof. Barry Fell's work, mentioned in the previous chapter, allowed the old moss-lined stones to speak. Ghostly voices told stories of ancient mariners from ancient cities: Cadiz, the Gadeira of the Phoenicians,[64] was the name of a port of origin written on one stone. On another, the famed ships of the Iberian city of Tarshish were named.[65] The riddle of the lost builders of Mystery Hill was close to a solution.

Yet we still haven't found the location of long-dead Norumbega. In the last chapter I showed that Mystery Hill was not unique. Goodwin had at first thought that it was Norumbega, but after studying thousands of withering maps and crumbling texts coated with the dust of ages, he concluded that Mystery Hill was probably not Norumbega, even though it bore the closest resemblance to the many-towered metropolis of the Renaissance maps.[66] But as he and his successors found other stone-walled complexes up and down New England, and even in the Middle Atlantic states where Goodwin had never ventured, the location of Norumbega became even more elusive.

For example, as experts such as John Williams, a high school teacher in Danbury, Connecticut, or Salvatore Trento, an archaeologist from Middletown, New York, looked at the problem, it appeared that not only were there individual sites, but *clusters* of sites as well in certain specific areas. Were these site-clusters, as I choose to call them, an illusion based only on the fact that certain researchers in particular regions staked their claim, so to speak, and simply found local varieties of stone structures at random in a given area? Or was there really a pattern of stone ruins in certain areas and not in others because that is where the ancient settlers chose to live as one region or another met their requirements? If we could find the largest of these clusters we might find the origin of the Norumbega legend, and perhaps the settlements.

So far, only the temples and presumed burial places, the stone beehives which Goodwin called monastic Irish sweathouses or chapels, and the standing stones (which Goodwin hadn't found as far as I know) have been discovered. No one has yet uncovered the settlements which may be buried under the streets of modern New England towns and cities. It would be interesting to know if Boston construction workers have come across remnants of massive, crumbling stone walls beneath demolished Colonial or nineteenth century tenements, for instance.

Although no towns of the suppositional pre-Columbian megalith builders have been found, what might very well be the *farms* of the ancient settlers have been found in the past three years or so. I first heard of the remarkable discovery of what appear to be ancient field patterns of non-Indian, pre-Colonial origin while reading Francis Hitching's fascinating book, *Earth Magic*.[67] Ms. Noel Ring, instructor of geography at Norwich University's Earth Sciences Department at Northfield, Vermont, found odd keyhole-shaped field patterns while studying NASA U-2 photographs taken at 65,000 feet. The hexagonal patterns recurred at several sites across Vermont underlying more typical Colonial, Indian, and nineteenth century farms. This was the first clue to the possible location of the putative ancient settlements since the Celts, at least certain Celtic tribes, and their unnamed megalithic predecessors were agricultural.[68] I will return to the field pattern mystery later in this chapter.

Even as Ms. Ring was locating allegedly ancient fields, Barry Fell and his associates, John Williams and James Whittall, were locating site-clusters in a 20-mile region in central Vermont near the Connecticut River. Betty Sincerbaux, a Vermont resident of that particular region, guided the researchers to several standing stones, stone chambers, and the calendar sites.

Aided by Byron Dix and the Sincerbaux family, Fell and Whittall soon located a number of stones inscribed with the controversial ancient American variety of Ogam script. One of the most important finds was a stone with what appeared to be an actual place-name on it. On page

239 of *America B.C.*, Fell describes a stone which called the region "The Precincts of the Gods of Iargalon." The language was Celtic and the writing was Ogam, yet the name Iargalon did not occur in known Celtic mythology. However, other stones found with the peculiar American version of Ogam script did have the name Iargalon on them, so Fell assumed that this was the ancient Celtic name for America. For example, a stone found originally in 1913 on St. Vincent Island in the West Indies had on it an Ogam-like inscription which Fell translated as referring to a Celtiberian captain named Mabo who discovered the island, which was called *Iargh innis* or Western Island by Mabo, another form of the name Iargalon. Fell dated the inscription to 800 B.C. by the style of the language and writing.[69]

Another great cluster of sites was discovered (by NEARA, ESRS, and Epigraphic Society researchers as well as by Salvatore Trento's MARC researchers from the Middletown Archeological Research Center) in western Massachusetts north of Springfield, in a region extending from the Berkshires to the Thames and Connecticut Rivers, both of which reach down to the Atlantic.

The work in this region was begun by Goodwin, who found a remarkable stone chamber in that general vicinity, yet he only illustrated it with a sketch and failed to describe it in great detail.[70]

The stone chamber is of the beehive type, with a beautiful stone staircase leading up to a door which opens into a cavern 8 by 12 by 6 feet. I heard of this site a few years ago. A friend, Ms. Kathy Kenn of New London, Connecticut, told me that her friend, Mr. Patrick Callahan of Northampton, Massachusetts, had visited these stone chambers and had found that there were several, arranged in a circle around the town. Each was within a day's walk of the next one. Ms. Kenn's friend added that the structures were locally known as Monks' Caves or Druids' Caves, but it isn't clear to me at this point whether they were given this name by Goodwin, or if the name resulted from local speculation. It is even possible that that name might be derived from an authentic local tradition.

Another chamber in the same area was investigated by Prof. Vincent Fagan of Notre Dame University in 1946, according to James Whittall.[71] Whittall had a sketch of a stone beehive chamber on a hillside. The square chamber was 5'2" in height and width. Its entrance was quite small, 1'8". The structure was 10 feet above a local road and may have been a tomb or storage structure.

Mentioning briefly the Berkshires Standing Stones Site (which I discussed more fully in the last chapter), I might include the fact that around it are several other curious stone remains which have been found by NEARA contacts and members. One example is a cluster of sites. On page 20 of the *NEARA Newsletter* of March, 1973, is an article describing some of the nearby sites.[72] For example, NEARA member F. Newton Miller found two standing stones on a farm 1½ miles southwest of the stone circle. One of the monoliths is shown in a photograph in the article. Also near the site are small stone circles (one is shown in a photograph as a cluster of small stones). The NEARA people believe that the small circle and others like it in the vicinity are probably bases for now-vanished monoliths.

Close to the stone ring is a curious three-sided stone chamber a half mile to the north with an entrance facing east. The chamber was built into a hillside, and the stone walls are 10 feet long and 5 feet high. Apparently, there was neither a water-source nor any cellar holes from abandoned Colonial or nineteenth century farms found in the vicinity.[73]

Moving west, one comes to the mysterious stone tunnels at Goshen, Massachusetts. There are other sites of stone chambers around Boston and in the Berkshires, but they will be dealt with later. The Goshen Tunnels are impressive works, as they consist of several shafts and tunnels. One tunnel is approached by climbing down a shaft 15 feet deep and 3½ feet wide. At the bottom are two tunnels running in opposite directions. One of them is 2x2½ feet and at least 90 feet long. Horror fiction fans will be delighted to learn that it goes east toward a cemetery, but stops just before reaching it. (The tunnel is not unlike the one which leads towards a cemetery in the film, *Horror Hotel*, which was set in Massachusetts.) The second tunnel is 70 feet long and goes toward a farm.[74]

Both tunnels are lined by stone blocks 2 to 10 inches thick, which Godfrey said came from a local ledge 200 feet away. Godfrey also wrote that there was no evidence to support the idea that the site was a well, nor was it a site of the Underground Railroad or local counterfeiters, after whom the site is sometimes called "Counterfeiters' Den" because they were caught there. No evidence at the site supports such assertions. I don't know if anyone has yet tried to get C-14 dates from the tunnels.

Let us leave Massachusetts for a moment and move south to lower New York State and the Connecticut border. Here many interesting sites have been found, in a possible cluster extending around North Salem, New York—where are found, coincidentally, supposed pre-Columbian settlements just like those in North Salem, New Hampshire!

The sites at North Salem, New York, have a history at least as old as the site at Mystery Hill. Also, long before Goodwin wrote about Pattee's Caves, scholars were engaged in a great controversy as to whether a large granite boulder weighing some 90 tons, and seemingly set into place on short stubby stone legs, was a man-made monument of the druids or simply a natural feature deposited there by the glaciers.

Stan Blomfield, a historian of the North Salem (N.Y.) Historical Society, wrote that as early as 1856, John Nilson, a British writer, published a book in London which suggested that the Great Boulder of North Salem was a druidical monument erected by ancient Celtic settlers.[75] In 1875, John Jay 2nd made a speech in which he referred to the Great Boulder, suggesting that it was of Viking origin, according to Blomfield.

However, when I visited the Great Boulder two years ago, I saw that there was a plaque erected at the site (which is on the main road where anybody can view the tourist attraction without charge) to identify the stone as a natural glacial phenomenon, a rock left by the melting glaciers of 11,000 years ago. Professor Fell revived the Celtic hypothesis, although it was not the Celts, but rather the mysterious nameless pre-Celtic megalithic people who erected dolmens. I first read of the North Salem Great Boulder in *America B.C.*, where a photograph of the object is shown

on pages 130-1. Fell, by the way, showed a definitely man-made dolmen at Westport, Massachusetts which resembles a crude stone table, also at Westport, Massachusetts, and a large boulder-shaped dolmen at Bartlett, New Hampshire. According to NEARA, the latter may really be a man-raised structure and not just a glacially deposited "balanced rock."[76]

Salvatore Trento, of the Middletown Archaeological Research Center of Middletown, New York, sent a photograph to NEARA of circular field patterns underlying fields of recent date. These were about 1½ miles from the Great Boulder. The photographs were taken from a plane at 800 feet. What is even more fascinating is that those patterns were adjacent to probably modern stone walls which contained stones with markings similar to the New England Ogam inscriptions.[77] Also, stone chambers were found in the same vicinity. Some of these were studied by James Whittall in September of 1976.

Whittall, with John Williams, the Epigraphic Society researcher mentioned previously, studied a weird stone chamber with two rooms, a type unknown in New England. (Whittall later found two similar chambers 20 miles to the south, according to his report in the December, 1976 *Work Report* of the ESRS.) The chamber was already standing when a barn was built in 1710, according to local tradition.[78]

Another interesting site in southern New York yields more clues to the riddle of ancient voyagers to America. A standing stone, like the ones found in Vermont by Betty Sincerbaux or Byron Dix, was known to local residents of the area for years before NEARA member Ralph Robinson of Middletown, New York, along with NEARA member Mead Stapler, brought it to the attention of New Jersey archaeologist Edward J. Lenik, NEARA's archaeological chairman.[79]

The stone was formerly thought to be 9 feet tall, but in recent times construction workers piled up an extra 3 feet or so of dirt at the stone's base, making it 5 feet 8 inches in height. Salvatore Trento, in his book *The Search for Lost America,*[80] wrote that the owner's grandfather found that the stone is actually 18 feet long, since 9 feet of it are buried underground for support. Trento felt that the stone, leaning at a 76 degree angle, seemed to be pointing to the highest hill in the area.

Other sites were found in New York by Warren Broderick of NEARA and by Trento's MARC researchers. One such site was found at Plattekill, New York, where in August, 1976, Trento and MARC researcher Neil Novesky found a huge stone wall in a forest. The wall, 150 yards long, 16 feet wide at the base and 4 feet across at the top, had a height of 8 to 10 feet.[81]

Other sites found in southern New York by MARC members were located in the Putnam Valley region. Three huge stone walls were found within a few miles of each other. The first, near a swamp, was found to be a rectangular enclosure covering 500 square yards. Nearby are two stone flat-roofed chambers of unequal size. One of the walls of the enclosure is 67 feet long and the other is 50 feet. The walls' height is 6 feet. The width extends from 14 feet at the base to 8 feet at the top.

A second stone wall complex in the same vicinity has walls 6 to 8 feet wide and 2 to 3 feet high. Nearby are the remnants of ancient mining activity; and Dutch pottery as well as nineteenth century garbage can be found at the site. Trento added that stone-roofed chambers facing in the direction of the equinox are in the neighborhood, but he gave no measurements of these structures. The site seems to be a mixture of Colonial remains mixed with some older material.

A third complex is a stone enclosure in Clarence Fahnestock Memorial State Park. There are stone chambers (no measurements given), and the enclosure's walls are the largest yet described, being no less than *20 feet* in height! All these stone walls are near swamps, by the way, which may or may not be coincidental.

The next site of importance is a stone wall complex at Ramapo, New York, in the Ramapo Mountains on the border of New York and New Jersey. In the Fall, 1974 issue of the *NEARA Newsletter,* Edward J. Lenik described a joint research project by the North Jersey Highlands Historical Society and NEARA which began, in 1969, to investigate the local folktales about stone mounds and weird stone walls in the Ramapo Mountains.[82]

The walls were already well-known in 1845, when a map was drawn locating them on a now-unidentifiable farm called the Wrightman Place. Lenik says that the map, in the possession of a worker for the Ramapo Land Company, actually bore the caption, "Supposed Prehistoric Walls in the Wrightman Fields, Ramapo, New York." Lenik also noted prehistoric Indian rock shelters, a Tuscarora Indian settlement (now no longer in existence), and eighteenth century iron works, as well as forts in the area.

The Ramapo site proper consists of some 200 acres of stone walls and sixteen conical round stone mounds of large size. Interestingly, there is also a swamp here. There is also a small brook that heads off towards the Ramapo River, into which it flows.

Two small rock shelters are located nearby, but they weren't excavated by Lenik's people, who dug at the site during the years 1969-1973. Some of the stone walls at the site are 6 to 10 feet in width and 1 to 4 feet in height, according to Lenik. He also said that the walls are sometimes interrupted by gates, or gaps, 8 feet wide.

Another group of walls on the western side of the site are on a cliff edge and, neatly built, are of a different type of workmanship from the main site. The walls here are 2 to 4½ feet in width and 1 to 3½ feet in height. Neither group of walls forms a recognizable pattern, although there is one diamond-shaped enclosure.

Lenik suggested several theories for the walls' purpose and origin: that the Indians constructed them; that an unknown prehistoric non-Indian colony built them as a temple; or that farmers of the eighteenth and nineteenth centuries compiled them in land-clearing operations, when fieldstones were cleared and simply dumped in wall-like patterns.

The New Jersey archaeologist and his assistants excavated the site for answers. Digging at a stone fireplace on the site, they found carbonized material (which was not dated), but no artifacts. A stone-filled depression nearby was excavated also, and yielded two .22 caliber brass cartridges. The researchers noted that the depression was not natural, but rather a man-made pit, and not a well.

Next, a stone mound 45 feet wide and 3 feet high was excavated. It had two pits in its top, pits which could not be explained. Near the bottom of the mound, a shotgun shell was found. Lenik was unable to find any clues as to who built the stone structure or why, except that perhaps, because of the shell, the mound was recent.

Lenik concluded that while there was no evidence for the walls being pre-Columbian and non-Indian in origin, neither was there any evidence that they were built as property boundary lines. Also, while it is possible that the walls were built by farmers clearing land, the land is nevertheless unsuitable for farming, and no farm buildings were present in the area. Lenik concluded his argument in favor of the farm theory because the stone walls could have been the base of a wooden stockade, while records indicated that even if the site was not a farm, it was in an area that had been farmed extensively during the eighteenth century.

Lately, new evidence for the prehistoric theory has been revived by new researchers. Salvatore Trento pointed out in *The Search for Lost America* that the Ramapo site resembled stone mound sites in the Midwest and in the South.[83] Lenik referred to these sites also, but insisted that after a detailed study the resemblance was superficial and coincidental only.

Another researcher has found more evidence that may support the pre-Columbian theory of the Ramapo site's origin. Epigraphic Society member John H. Bradner of Warwick, New York, has found an incredible cluster of sites in the Ramapo Mountains. In an article in the April, 1979 issue of the Epigraphic Society's journal, *OPES*, Child described no less than 38 sites consisting of, among other things, obelisks (some 10 feet tall), carved stones containing what appeared to be Barry Fell's controversial New England variant of Ogam, aligned rocks, a broken megalith which may have stood upright at one time (and which was 25 feet long), stone thrones like the ones found by Goodwin in Ontario, Canada, and a new wall complex with ruined stone huts.[84]

A link between the Ramapo sites and the New England sites was suggested by Epigraphic Society member William P. Child of Sparta, New Jersey.[85] Mr. Child suggested that the sites in Connecticut were linked by straight lines (mathematical alignments) to other sites such as Mystery Hill in New Hampshire and the sites found by Dix and Sincerbaux in Vermont. The lines drawn between the site clusters formed a zigzag path, and the zigzag lines themselves seemed to form angles whose degrees were identical, whether the lines were in New Jersey or hundreds of miles to the north, in the cold forests of New England. For example, a cluster of sites at central Jersey yielded 55 and 50 degree angles, as did a cluster of sites with lines drawn through its midst at Ramapo. Again, one also finds 50 and 55 degree angles at the Vermont site clusters.

Now that we have examined a number of sites of odd stonework and allegedly ancient inscriptions which are located up and down the eastern coast of North America, we can begin to add up the clues which will help us solve the mystery of Norumbega. It is interesting to note that the enigmatic sites of stonework and inscriptions have all been found within the areas that scholars have identified with Norumbega's territory. These scholars have located Norumbega at three different localities: somewhere on the rivers of Maine (either the Penobscot or the Kennebec), further south around Boston, or in Rhode Island.[86]

According to Ramsay, the name Norumbega first appeared in 1529, when two cartographers, Girolamo da Verrazano, the brother of the explorer, and his colleague, Majollo, drew a map based on the former's famous brother's expedition of 1524. In 1526 an earlier map showing a *Norman villa* in the New England region was published by Girolamo. Other maps of the sixteenth and early seventeenth century soon began to show the location as a matter of course. Ramsay noted that Norumbega first appeared as a city on Mercator's map of 1569. It was located inland, up a river, in places now identified as ranging from Cape Cod to Cape Sable.[87]

It should be noted that all the great explorers of northeast Canada and the New England coast failed to find the towered city of Norumbega, although some found capes and rivers which they honored by giving those features that strange name. For example, among those who sought Norumbega and failed to find it was Jacques Cartier in 1541-2. (He named a cape and river Norumbega; these Ramsay identified with Cape Cod and the Narragansett River.) Others who failed to find Norumbega were the Englishman Sir Humphrey Gilbert in 1583, and Champlain, in 1603, 1604, and 1607. Champlain's expedition chronicler, Marc Lescarbot wrote, in 1607, that Norumbega was a land of barbarians, with no trace of towered cities.

However, before we totally abandon Maine as a site for Norumbega, I should note that Goodwin wrote, in *The Ruins of Great Ireland in New England* (page 157), that he had heard reports of stone beehive shaped ruins in forests. Although he was unable to locate them, he indicated that they were double beehives, meaning two such structures connected to each other. Goodwin also showed (page 408) a photograph of European-type carving, possibly Celtic and possibly non-Indian in style, found on the *Kennebec River* in Maine. In December, 1975, archaeologist James Whittall wrote that it was probably Celtic of c. 1000 A.D.[88]

On Manana Island, opposite Monhegan Island, off Maine's storm-swept coast, a curious group of markings has created controversy for over a hundred years. In *Weird America*, Jim Brandon summarized the arguments about it.[89] He wrote that as early as 1856, an antiquarian named G. H. Stone dismissed the markings as freak erosion, not true writing. The opposite viewpoint was taken by Prof. Olaf Strandwold, who said that they were Norse, carved by one Veigle, who left his name just as Kilroy later did on World War II battlefields. A third opinion was advanced by Prof. Barry Fell, who said that the markings were in Ogam script and referred to a Phoenician landing quay that had once been on the island. I am, however, sceptical of that translation because, on page 122 of *America B.C.*, Fell writes that the word meaning "Phoenicia" is written F-N-K and that the Phoenicians called themselves Canaanites. Phoenician was a Greek word, a nickname meaning purple from the purple dye they traded. However, as Greeks settled in Spain at Ampurias, this anomaly could be explained since there were also Phoenician colonies in Spain, at Cadiz. Fell also suggested that

the F-N-K could be derived from the Feni, an ancient kingdom of pagan Ireland.

Another find of note was reported by James Whittall in an article in the ESRS *Bulletin*, Vol. 5, 1977,[90] and that article has been republished in William R. Corliss' sourcebook, *Ancient Man*.[91] This find was made in 1971 by Norman Bakeman of Castine, Maine, who while scuba diving came across two submerged ceramic vessels. The pots were brought to the University of Maine and a faculty member, Dr. Sentiel Rommel, notified Prof. Barry Fell and James Whittall of the find. The pots were identified as being possibly Mediterranean in origin, of the anforeta or small amphora type storage jar, of the kind used in Portugal from Phoenician times through the Roman and Byzantine periods. The height of one anforeta was .31 meters and its greatest width was .202 meters. The other measured .33 by .18 meters. To my knowledge, they have not yet been dated by the thermoluminescent dating method.

The last find from Maine is a copper spear point. It was excavated by local archaeologist Ronald Stanley, and is described in the December, 1975, *Work Report* of the ESRS.[92] The point was excavated from a depth of 1.2 meters, and was found with stone tools and bone (swordfish) fragments. The University of Maine dated (by C-14) the site to c. 1800 B.C., and Whittall noted that he had seen Iberian copper spear points of that date of similar appearance.

Having eliminated Maine, we can now move on to the next possible location for Norumbega—the Massachusetts coastline. The peninsula of Cape Cod and Boston's vicinity are usually the most favored locations, according to the arguments of several antiquarians. Jean Alfonce, Cartier's navigator, located the Cape of Norumbegue at what is now Cape Cod and placed the River of Norumbegue 75 miles to the west, according to Ramsay (page 146). That river was identified with the Narragansett by Ramsay. It is interesting to note that several stone chamber sites have been found in the Boston area, including the great Pearson chamber in the suburbs to the southwest. On the northern shore of Boston Bay is a chamber called the Witch House Cave, on private property.[93] This is a large stone chamber 8 feet wide and 5 feet high. Its interior is 18 feet long, and is covered by huge rectangular capstones, each measuring 4 by 2 feet, and 10 inches thick. The tunnel runs under a gazebo and there is a theory that it leads to a now-blocked-up room under that structure.

Boland, on page 170 of *They All Discovered America*, wrote that in the nineteenth century a Bostonian chemist of note, named Eben Norton Horsford, located Norumbega at Boston and built a memorial tower at his own expense. Apparently nobody has taken his identification seriously since that time.

The third area in which Norumbega has been traditionally located is Rhode Island, specifically Narragansett Bay. I have already mentioned the identification of the River of Norumbega with the Narragansett River. Ramsay noted that the great tower at Newport, known as either the Viking Tower or the Old Stone Mill, has been cited by many authors as being evidence of a pre-Columbian, non-Indian city of presumably Norse colonizers.[94]

The Newport Tower is 24½ feet high and about 18 feet in circumference, approximately (measurements vary slightly according to the various authors who have studied the problem). This site is so complex that it merits an article on its own. It should be sufficient here to say that there are those such as Philip Means[95] and Charles Boland[96] who insist that the Tower is Norse because of its style and measurements, which are based on the medieval measurements of Germans and Norsemen. Others, such as Birgitta Wallace, the runic expert mentioned previously, say emphatically that the Tower is only Governor Arnold's stone mill. A previous study of the Tower had failed to uncover any Norse artifacts, and the town government has since passed an ordinance preventing further excavation for fear of ruining the park, and also for safety reasons. Hence, the controversy has not yet been settled.[97] Most recently, NEARA member Dr. Clyde Keeler found what appear to be runic and Latin inscriptions in the Newport Tower, which allegedly refer to Henricus, the Greenland archbishop known as Eric Gnupsson in the sagas, who supposedly sailed to Vinland to convert the Skraelings (Indians) in 1116 A.D.[98]

There are two more areas left on the list of possible sites of the fabled Norumbega. William Goodwin, in an earlier book entitled *The Truth about Leif Ericsson*,[99] suggested that the Norumbega River was in the lower Hudson River valley. He came to the conclusion that the city of Norumbega itself was probably in the vicinity of Connecticut, or perhaps near Cape Cod.

Goodwin studied hundreds of old maps and texts, and finally concluded that Norumbega was simply the Renaissance world's name for the Vinland settlement called Leif's Booths in the sagas. Indeed, he added that he had actually found a map dated 1584 which was in the Atlante Grande collection of Vittorio Emmanuell's library. It had a finger-shaped cape called, *Nova Norbega*, that is, *New Norway*.

On page 282 of *The Ruins of Great Ireland in New England*, Goodwin states he had studied thousands of maps showing Norumbega because he had thought that the ruins of North Salem might be that ancient city, discovered at last after centuries of fabulous tales. However, he ultimately came to the conclusion that North Salem's stone chambers and odd walls were not the ruins of Norumbega.

The next person to link Mystery Hill to Norumbega was Charles Boland in *They All Discovered America*. On page 169, he discussed early maps showing Norumbega. One, Gerhardus Mercator's of 1541, placed it near the Hudson River, while others placed it at Cape Breton or between the St. Lawrence and Penobscot Rivers.

Boland, however, dismissed the early vague notions of Norumbega's location and placed it squarely at Mystery Hill. He believed that it was a sort of cosmopolitan temple center. He concluded that Norumbega was simply another name for the country called Hvitramannaland (White Man's Land) by the Norsemen, which was one of their names for the suppositious Irish colony in America, a country called Albania (White Land) in Latin on early maps. Boland thought that Norumbega was a name derived from a word meaning Norsemen, or a place visited by the Norsemen. He cited as evidence several alleged runestones found at Bourne, near the Cape Cod Canal.

Boland's conclusion was forgotten, however, and the mystery was still unresolved for many years. In a letter dated June 12, 1978, NEARA editor Andrew E. Rothovius called to my attention his theory that Norumbega might be Mystery Hill, since he found a description of an expedition led to America in 1580 by John Walker, who had been part of a convoy led by a Captain Sharpam, and who had been sent to the New England coast. Also in 1580, one Walsingham sent a Portuguese pilot serving the English to Norumbega, whence he returned in three months. The English expedition reached the River of Norumbega and sailed up a river for nine leagues to a hill on the north shore. There, traces of habitation were found which do not appear to resemble what is known of historical Indian tribal cultures of that area, namely, a silver mine.[100]

Walker's expedition also discovered a house that contained no less than 300 hides, each 18 square feet, which Rothovius identified as moose hides. There were also other houses, round in shape. This was seven miles from the river's north shore. Rothovius said that there is a hill called Mine Pit Hill in Dracut, which is on the north side of the Merrimac River. The site with the round house is near Mystery Hill, which is seven miles north of Dracut. Unfortunately, it is not stated whether the round houses were of stone, because then they could indeed have been the odd beehive structures of the lost settlement of Mystery Hill. A reference to the 1580 expedition was reprinted by Rothovius in the Winter, 1978 issue of the *NEARA Journal,*[101] but the identification of Norumbega with Mystery Hill seems to have not received much publicity outside NEARA's readership.

I, too, thought that Norumbega was possibly Mystery Hill and sent off a query to Egerton Sykes, the British expert on Atlantis and an advocate of Phoenician, Egyptian and Celtic pre-Columbian voyages to America long before Prof. Barry Fell. Sykes, a Fellow of the Royal Geographic Society and editor of *New World Antiquity,* concluded that Mystery Hill was Norumbega.[102]

Egerton Sykes reasoned that where one has an archaeological site without a known ancient name, and an hitherto unidentified ancient place-name such as Norumbega without an archaeological site, then one can assume that the site and name are identical. Hence, Mystery Hill (the site) equals Norumbega (the odd name in New England).

The problem is that no inscription bearing the name *Norumbega* in an ancient script such as Ogam or Egyptian has been found at Mystery Hill, so for the moment I cannot equate Mystery Hill with Norumbega. One must remember the other, nameless stone wall complexes found in New York state by Trento.

One clue to the ancient name of Mystery Hill was described in 1975 by Robert Stone, the owner of Mystery Hill and chief founder of NEARA. In the Summer-Fall issue of the *NEARA Journal,* Stone wrote how, several years prior to 1975, he had been exploring the site with Dr. Charles Hapgood, the famous author of *Maps of the Ancient Sea Kings,* who was then of the Keene Teachers College of the University of New Hampshire. They came across a peculiarly marked stone which they removed for inspection. Unfortunately, the year of the discovery isn't given, nor is the exact location of the stone at Mystery Hill noted.[103]

Later, Robert Stone showed a photograph of the artifact to Prof. Fell who suggested a reading, "Nawa-Aunun," or "Administrative Capital." This would be the ancient name of Mystery Hill, in the Iberian language, and could tell us the precise identity of the builders and one of the purposes for which the site was built. It would also be one of the oldest non-Indian place-names in the New World. However, Stone said that the reading could not be relied upon as being accurate because the markings were so poorly preserved. Also, the validity of the inscription itself was questioned by Mr. Stone. I would like to point out a vague resemblance in sound between the first half of the odd name, *Nawa,* to the *Nor* sound of Norumbega, even though that might, perhaps, be stretching the hypothesis a bit.

We are left with derivations of Norumbega from Norse and Indian names. Raymond H. Ramsay suggested that three Indian words have been mentioned as possible origins for the name. The first is Abnaki, namely, *Aranmbegk* ("At the Water's Head"). Next, there is *nolumbeka,* and the third is *nalambigik,* both being Abnaki words having to do with pools of water.[104]

It is clear to me that Ramsay was fishing in the dark for an answer, so we may have to turn to one more solution. The most popular derivation of the name Norumbega is that from the Norse. Ramsay said that the Norse solution was suggested to many because of the element *Nor.* Such an idea seems too simple and too easy, but it remains the only one left unless one can find an ancient Egyptian or Celtic word that sounds like Norumbega. Indeed, he suggested that the form of the name was derived, according to writers such as Frederick Pohl and Hjalmar Holand, from an original form, *Nordhman Bygd,* Northman Settlement. However, I don't know if that name occurs in the sagas although it could be that the name Norman Villa on Majollo's 1526 map is the Latin form of Nordhman Bygd. But Ramsay dismissed the whole idea of Norumbega, the lost city, as a legend, perhaps based on dim recollections of the Norse discoveries.[105] He preferred, instead, to see it as a European misinterpretation of an Indian word, as he concludes on page 156.

Before leaving Ramsay's study, I must point out that in an appendix, on page 211, he mentions the story of the Venetian Zeno brothers who allegedly reached America in 1398. One country in the controversial *Zeno Narrative* is Estotiland, a land that, according to Ramsay, is occasionally linked with the Irish colonies in America because of its resemblance to a hypothetical form *Escotiland.* The Zenos found a city of stone houses inhabited by an otherwise unknown European people. If the tale is true, then this could be the last known reference to a still-thriving pre-Columbian settlement, which Ramsay suggested could have been North Salem. However, he says that although an archaeologist named Roland Robbins found only Colonial objects there, Geoffrey Ashe suggested that the site could be Bronze Age.

It thus appears that Norumbega is not a specific place, but more likely a regional name. It could be the Latinized form of an ancient name for eastern America in either an

Indian language or in a now-unidentifiable but possibly Scandinavian language. The tale of the great stone city may indeed be based upon the discovery, by parties of explorers or pioneers or fur traders, of the stone ruins later rediscovered by Goodwin and others.

There are still mostly sceptics who say that there is no evidence for pre-Norse visitors to America and that, other than the Scandinavian seafarers, only the Indians came here. For example, in the book *Ancient Vermont,* a compendium of papers on the stone ruins of New England,[106] Vermont State Archaeologist Giovanna Neudorfer reported on a study she conducted of stone chambers for the Vermont Division of Historic Preservation and for the National Parks Service. She concluded that the chambers were most likely Colonial.

However, her study didn't take into account similar chambers found elsewhere by NEARA, ESRS, and MARC. Indeed, Neudorfer's conclusion may now be disputed by the fact that James Whittall has just found, after careful excavation, that a chamber near Putney, Vermont, is from 545 A.D., a date based on material carbon-dated by the highly respected Geochron Laboratories of Massachusetts.[107] We await with interest further developments.

A study made by Salvatore Trento showed that it is possible that some stone chambers were oriented to the sun's position and that others could have been tombs. Some could have been solar temples oriented to the position of the winter sun, such as those western Connecticut and New York chambers that had been unknown to Goodwin.[108]

A last objection to Neudorfer's Colonial theory is the work of Noel Ring, to which I referred earlier. If we are ever going to find the settlements of these putative colonists, then the field patterns may be the clue to their location. Perhaps we may even find the stone foundations or the postholes of houses within the long-fallen walls of fabled Norumbega. Ms. Ring found that certain field patterns that underlie Colonial or more recent fields were not Indian in form but rather they took, usually, one of two basic forms. These were labeled keyhole shapes and indented wedge shapes, because of the shape of the fields. Also of interest is that on two of the indented wedge field sites, walls of an archaic character were found that had 107° angles at adjoining corners. These fit no Colonial field patterns known to Ring, according to extensive research by her and her student assistants at Norwich University.[109]

It is now time to end our quest for Norumbega. In the course of our journey we looked at an old legend about a mysterious stone city that was located by various writers at numerous points along the northeastern American seaboard. We found a number of clues from old Renaissance and seventeenth-century maps and texts that pointed towards the same region where curious ruins of stone were found since the 1930s and on to the present time. Archaeologists at first didn't think that these structures were ancient northern European settlements, as the discoverers had supposed.

Later, research at Stonehenge and other northwest European sites had revealed that the ancient non-Greek and non-Egyptian "barbarians" actually had a more advanced civilization than what had previously been supposed, so it was then thought that such peoples were capable of long sea voyages. The latter assumption is made since the megalithic sites are spread over hundreds of miles, and the same types of sites recurred at distant localities, from Malta to Ireland.

However, much more research must be done before we can conclusively state that there were widespread colonization activities going on in America long before both the time of Columbus and of the Norsemen. It is clear there are clues in the archaeoastronomical problem, namely: certain megalithic sites along the European coast appear to have astronomical features such as calendars and star-position locating stones set up at points within a given site, and so do certain North and Meso-American sites. Many of the European and North American megalithic archaeoastronomical sites appear to be contemporary with each other, and a few even contain similar symbols. The question is, are these resemblances only coincidental or are a few due to pre-Columbian contacts between the various cultures?

The riddle of Norumbega is, then, the riddle of the strange ruins and symbols that suddenly leap out at us from the darkness of prehistory. If we look at the stone ruins of New England in detail, perhaps we will find the solution to the Norumbega problem. Barry Fell claims to have translated stones' inscriptions bearing the names of Phoenicians and Libyans. Perhaps one will yield the name of Norumbega, just as one yielded the equally legendary name of Tarshish, the lost city of ancient Spain.

We must also look at the less well-known people of remote American regions. The Takhelne tribe of Canada might have clues to the fate of the elusive colonists. Professor Fell wrote that that Indian tribe, in British Columbia near the Frazer River, speaks a language heavily influenced by ancient Celtiberians. He and others even found apparent Ogam inscriptions in that locality! His theory is that the Takhelne are descendants of the New England Celtiberians who migrated, for reasons unknown, to the remote Canadian wilderness and intermarried with the local Indians.[110]

The saga of Norumbega therefore has not yet concluded. The ghosts of the old Celtiberians are still steering their coracles into the sunset. . . .

POSTSCRIPT

As I was finishing this report, I received the May, 1979 issue of the *Newsletter* of the Early Sites Research Society. It reports that William Nisbet, secretary and treasurer of ESRS, has found a dramatic serpent effigy of stone, with two stone chambers nearby, in eastern Connecticut on a military reserve. One of the chambers is the beehive variety. The other measures 4.1 meters by 2.1 meters. The serpent effigy is a stone circle 5 meters across with a tail about 30 meters long. The tail is wavy, with two "humps." Research there is continuing.

Another point worth noting: In a letter I received dated April 23, 1979, Andrew E. Rothovius wrote that Jenks, the discoverer (according to Charles Berlitz, in *Mysteries from Forgotten Worlds,* pp. 96-97) of a sunken tower in

1958, was apparently telling a tall tale to friends. The story was only a New England "Yankee yarn" which leaked out and was spread around. Berlitz also mentions the discovery, in 1935, of a mound 40 feet under water. The mound contained walls and masonry, and was found by a Navy diver. Later, in the 1960s, a fishing party allegedly found a sunken archway in the same area. In a letter dated May 7, 1979, Rothovius wrote to me that these tales are also probably mythical and are items from folklore rather than archaeology.

NOTES AND REFERENCES

63. Goodwin, William, *The Ruins of Great Ireland in New England,* Boston, Meador, 1946, p. 111 and p. 112.

64. Fell, Barry, *America B.C.,* New York, Quadrangle/The New York Times Book Co., 1976, p. 98. A dramatic photograph of an inscription on the Paraguay River in Paraguay, South America, mentions the city of Gedeth, an early form of the name Cadiz.

65. Ibid, p. 99. A stone carved on Mount Hope, Rhode Island, was found in 1780 and translated by Fell recently, after Malcolm Pearson had photographed it in the 1940s. It actually says that sailors of Tarshish were at that point—if it is authentic, that is.

66. Goodwin, op. cit., p. 282.

67. William Morrow and Company, Inc., New York, 1977, pp. 121-2.

68. In England, the Celts had squarish fields 400 by 260 feet or smaller, according to T.G.E. Powell, *The Celts,* New York, Frederick A. Praeger, 1960, pp. 89-90.

69. Fell, op. cit., p. 239; see p. 114 for Iargh-Innis.

70. Goodwin, op. cit., p. 409.

71. *Sean Cloiche de an Nua Shasana,* 1977, ESRS.

72. "Sites Adjacent to the Western Massachusetts Standing Stones Grouping," photographs by F. Newton Miller.

73. Ibid.

74. "The Goshen Stone Mystery," by Andrew E. Rothovius, in NEARA Newsletter, 7:52, 1977, summarized from Leland H. Godfrey, *Yankee* magazine, Nov., 1971, reproduced in William R. Corliss, *Ancient Man,* Glen Arm, Maryland, 1978 (privately published by the Sourcebook Project), p. 332-3.

75. Blomfield, Stan, "The Great Boulder," Spring, 1977 issue of the *Bulletin* of the North Salem (N.Y.) Historical Society. This article was copied for me by staff of the North Salem Public Library.

76. Personal communication, Andrew E. Rothovius, June 12, 1978.

77. "Circular Soil Patterns in Southeast New York State, near Stonework Sites," *NEARA Journal,* Summer, 1977.

78. Whittall, James P., "Stone Chamber—North Salem, N.Y.," December, 1976, *Work Reports,* ESRS, Vol. III, No. 30.

79. "A Standing Stone in Poughkeepsie, New York," *NEARA Journal,* Winter, 1977, p. 40.

80. *The Search for Lost America,* Contemporary Books, Inc., Chicago, 1978, p. 106.

81. Ibid., p. 103.

82. Lenik, Edward J., "The Riddle of the Prehistoric Walls of Ramapo, N.Y.," *NEARA Newsletter,* Fall, 1974, pp. 42-54.

83. Trento, op. cit., p. 117.

84. Child, William P., "Exploring Northern New Jersey," *OPES,* April, 1979, Vol. 7, part II, No. 155, p. 138.

85. Bradner, John H., "A Possible Megalithic Calendar Site," *OPES,* Vol. 7, No. 175, April, 1979.

86. Ramsay, Raymond H., *No Longer On the Map,* Ballantine Books, New York, 1972, pp. 143-156.

87. Ibid., p. 148.

88. Whittall, James P., "A Celtic Effigy in Maine," ESRS *Work Reports,* Vol. I, No. 3, December, 1975.

89. New York, E. P. Dutton, 1978, pp. 99-100.

90. "Anforetas Recovered in Maine," Whittall, James, ESRS *Bulletin,* Vol. 5, 1977.

91. Ibid., in Corliss, op. cit., pp. 408-9 also.

92. Whittall, James P., "Monhegan Copper Point" ESRS *Work Reports,* Dec., 1975, Vol. 1, No. 5.

93. "The 'Witch House' Cave Site at Nahant, Mass." *NEARA Newsletter,* December, 1970, p. 83.

94. Ramsay, op. cit., p. 154.

95. *The Newport Tower,* New York, Henry Holt, 1942.

96. Ibid.

97. Boland, Charles Michael, *They All Discovered America,* New York, Pocket Books, 1961.

98. Keeler, Dr. Clyde, in *Fate* magazine, June, 1977, Vol. 30, No. 6.

99. Boston, Meador, p. 290.

100. "The Newport Tower: Sir Humphrey Gilbert Proposes Annoying the King of Spayne," by Horace F. Silliman, *NEARA Newsletter,* June, 1969, pp. 46-7.

101. "Archaeological Finds at Newburyport in 1977," *NEARA Journal,* Winter, by Elizabeth J. Harris (p. 43 has an extra commentary by Andrew E. Rothovius about the new Norumbega-Mystery Hill theory and Sir Humphrey Gilbert.)

102. "A Possible Solution to the Norumbega Problem," by Egerton Sykes, F.R.G.S., in *New World Antiquity,* January/February 1978, p. 3.

103. Stone, Robert, "Mystery Hill and NEARA Research, Progress Report—1975," pp. 7-8.

104. Ramsay, op. cit., p. 144.

105. Ibid, p. 154.

106. Edited by Warren L. Cook, Ph.D., Castleton, Vermont, Castleton State College, 1978, "A Preliminary Analysis of Vermont's Stone Chambers," pp. 9-13.

107. *OPES,* Vol. 7, part 2, No. 142, "An Important Carbon Date—Supposed 'Colonial Root Cellar'," by James P. Whittall.

108. Trento, op. cit., pp. 121-29.

109. Ring, Noel, "Bygone Blueprints: The Atlantic Trace Settlement Design," NEARA Fall Meeting, Nov. 11, 1978.

110. Fell, Prof. Barry, "Takhelne, A North American Celtic Language, Pt. 2," Vol. 7, Pt. 1, *OPES,* April, 1979, p. 22. No photographs of the British Columbian Ogam, in the Frazer River Valley area, are given. A similar type inscription is at Spuzzum, B.C., as is shown on pages 93-100 of the same volume, "Inscribed Rock near Spuzzum, British Columbia," by Bruce A. MacDonald. The latter hasn't been translated yet, as far as I know, In the first part of the Takhelne article, in Vol. 4 of *OPES,* Fell suggested that the Takhelne were the descendants of the New England Celtiberians who had abandoned, for unknown reasons, their homeland in New Hampshire and elsewhere in order to migrate westward to British Columbia, where they intermarried with the local Indians.

SYMPOSIUM

Comments and Opinions

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CORRIGENDA

Jon Douglas Singer has sent in the following corrections to his article, "The Quest for Norumbega."

In Part I of the article (*Pursuit*, Vol. 12, No. 1, Winter 1979), Mr. Singer writes (p. 14, column 2, last 5 lines of last paragraph), "Vescelius excavated for a short time and found 8,000 artifacts, most either from Pattee's time or of native Indian origin from the Point Peninsula culture of 1000 B.C. He concluded that the site was, at the earliest, Colonial." The error was not Singer's, but his source's, Birgitta Wallace's article entitled "Some Points of Controversy," in G. Ashe's *The Quest for America* (Praeger, New York, 1971), p. 172. In a note to Jon Singer dated May 7, 1979, Andrew E. Rothovius says that Wallace had mixed up her facts. He points out that Vescelius did *not* find Point Peninsula pottery at Mystery Hill, and no sherds of it have been found there. Osborn Stone found some at a rock shelter in the cliff (which Vescelius hadn't investigated).

Another error in Mr. Singer's sources concerns Goodwin's purchase of Pattee's Caves. Mark Feldman wrote (*The Mystery Hill Story*, Derry, New Hampshire, 1977) that Goodwin bought the caves in 1933. This error is repeated in Singer's article also (Part I, Vol. 12, No. 1, p. 14, column 1, line 36), but should be corrected. Andrew Rothovius, in his letter of April 23, also writes that Goodwin purchased the caves in 1937. He adds that the Massachusetts Bay Colony claimed the land all around the region, but didn't specifically own the site itself. Feldman said the site was granted in 1641 by the Colony to the Rev. Nathanial Ward. Lastly, Rothovius wrote that a seventeenth century map shows the Leverett House near the site but not necessarily exactly on it.

In addition, there was a small error in the references to Part I. In number 6, the name Kelly, A. R., should be replaced by Smith, Philip E. Although Kelly did some of the investigations, it was Smith who wrote them up.

There was also an error in Curt Sutherly's article, "Count St. Germain: Where Are You?" (Vol. 12, No. 2, Spring 1979), where he lists the "Nights of Templar" (p. 83, col. 1, lines 20-21). Eugenia Macer-Story has pointed out that this should be the "Knights Templar," which was a mystical organization of Crusaders who became so influential and wealthy (probably spending many an interesting night) that they were excommunicated and their leaders burnt at the stake in France in the 13th century. Her source for the correction is *The Modern Templar* (Macoy Publishing and Masonic Supply Co., 1932), by Sir Knight Chalmers Lowell Pancoast.

* * *

LETTERS TO THE EDITOR

IN many areas of the world today, natives claim no knowledge of older races, but I wonder! No doubt most of them are ignorant of their predecessors, but unless the race was completely exterminated, I'll bet there are still people somewhere who have retained at least a fragmentary although perhaps garbled knowledge of their long-since ancestors. Unless a people are completely destroyed, it's almost impossible to completely wipe out every vestige of their ancient culture or religion.

Did you ever hear of "shin-talk"? When I was a kid, about 10 or 12, an old man moved into my neighborhood; he was impressive looking, a big old gent with a magnificent spread of gray whiskers. A grandson about my own age lived with him. They rented an old log house on my family's farm, and I frequently visited the kid's house. When I would sometimes arrive unexpectedly, I would occasionally find the man and boy seated, facing each other, legs crossed, and wiggling their fingers on the upheld leg, below the knee. Finally, I asked the boy why they sat like that, not talking, just wagging their fingers on their leg.

He said it was "shin-talk," a sort of sign language like deaf and dumb people use, only different. His grandaddy was teaching him because the skill had been handed down from generation to generation in his family. Even his grandaddy didn't know when it started or why, but each male head of the family had always taught his son, and since the boy's father had died young, his grandfather

was teaching him. He said his grandfather claimed it would be very bad luck if the teaching was not carried on from one to another.

That's the gist of what the child told me, although our juvenile vocabularies no doubt phrased it somewhat differently, and in terms I don't remember now. And it meant nothing to me then, but the boy must have told Grandad about my questions, for I never saw them at a lesson again.

They moved on in a year or so, and I forgot all about them or their finger-waving until about 30 years later, when I ran across a book describing that same language-system. It seems the system was utilized for secret conversations by some of the Celtic cults, as a sort of priestly knowledge, but died out maybe 700-800 years ago. A written version, using the same system of shinbone or vertical long line, with crossed fingers or crossed lines, was developed and when written it was called "Ogam." Some surviving samples written on bark or wood remain in museums in Ireland, or perhaps Scotland. The point is, this art, supposedly extinct since the priests finished Christianizing the Celtic pagans nigh onto a millenium ago, *still existed,* though in the possession of an otherwise barely literate and rather ignorant old man who didn't know quite what he knew, or why, or where it originated, or why it still was to be passed on from generation to generation, or even why it was to be kept secret.

—Member #380, Kentucky

CAN there be a more productive search for extra-terrestrial intelligence than limiting it to the twenty-year-old lack of success on the 21 centimeter wavelength (1,420 Mc/s) of neutral hydrogen? I think there can be on the following heretofore untried wavelength—

Brain wave frequencies, particularly beta, range from about 14 to 21 cycles per second. Beta is the frequency of brain positively correlated with using the five senses. Beta is the "typical world of Time and Space categories known to philosophy and science."

Since a brain operates on about 25 watts of electrical power, which causes a voltage to appear detectable by EEG pen-drop plotters, would it not be logical for intelligent life to communicate on the wavelength that gives human life its common basis? Interstellar transmitting stations manned by living brains need only the right wavelength to join them. I believe the beta range, from about 14 to 21 cycles per second, would communicate with, or receive signals from, the seat or organ of mind function, universally.

—Russ Reardon, South Carolina

I'M sure that it has come to the attention of many researchers besides myself that "Fortean phenomena" is a cumbersome term to wield. We now have ufology, parapsychology, pyramidology, etc.; what we really need is a simple, all-inclusive term that covers the entire spectrum. I humbly propose *xenology,* being the scientific study of the strange and the unexplained, as the solution. What do you, my fellow xenologists, think?

—Kim L. Neidigh, San Antonio, Texas

YOUR Spring, 1979 *Pursuit* (Vol. 12, No. 2) has an article entitled "The Time Pump," by E. Macer-Story. The author makes an unforgivable error when she says a regular tetrahedron has five sides. A tetrahedron, by definition, is a *four-sided* polyhedron. This mistake is typical of the mathematical knowledge of your authors.

Harry Mongold's "What is Time" is another example. His understanding of the real number line is shown by his questioning the fact that no two points can be next to each other.

Let him answer this: What number is less than and next to 1? If he answers x, then $x + \frac{1-x}{2} = \frac{x+1}{2}$ is also less than 1 and closer to 1 than x is. Thus, there is no number *next* to 1.

These authors would benefit greatly by a good college algebra course, and if they could handle *that,* perhaps some calculus.

—Dennis Hamlin, Minneapolis, Minnesota

RE: "What is Time" by Mr. Mongold:

The concept of "discontinuous motion" is a good one, and it fits the nature of pre-atomic energy ("orgone", as per Wilhelm Reich) very well. Life energy has been observed to move in *pulses*—not so strange for beings with hearts and lungs! This has been *discovered* and *verified* many times, and so is more concrete than it would be if it remained solely on the level of a philosophical or scientific *concept* (like Bergson's elan vital, or Freud's libido, and so on).

Extension, however, does imply divisibility, at least *mathematically* speaking. That there are actual atoms (in the Greek sense of ultimate non-divisible somethings) is obvious nevertheless. Otherwise, I think you agree, nothing else would be (that is, there is no macrocosmos without an ultimate microcosmos). So how to deal with this apparent paradox (extension = divisibility; there are atoms which are non-divisible, yet such atoms must be extended)?

Thusly:

Such atoms are *actually* undivided, though, like everything else extended, mathematically divisible. They *function,* in other words, as non-divisible extensions, although theoretically they are divisible. This simply expresses one aspect of what many have come to see in time: mathematics does not replicate reality in every respect.

Your "postulate" requires this kind of addition for it to be acceptable simply because diehards need never agree with your position on extension, that it does not imply divisibility. You give no good reason for taking such a position except for the conclusion, namely, that there *must* be such real things as extended, non-divisible, atoms. You are correct, of course.

My addition is not simply another fiat, but involves a new type of logic, namely, functional logic (introduced by Wilhelm Reich in *Ether, God, and Devil* and other works).

Living energy, the pulse of living motion and that of orgone energy in its unbounded (non-membranous) state is not usually *jerky*. Healthy, unimpeded motion is *pulsationally flowing* as opposed to jerky.

The apparent time leaps you report may be the result of moving into one of the streams of orgone energy which move in the atmosphere (see *Cosmic Superimposition* by W. Reich).

—David Brahinsky, New Jersey

Following are my replies to the preceding letters:

1. Dennis Hamlin supposes there are such things as numbers in the physical world. Actually, animate beings who can count have *memories* of counting *abstracted* from the objects counted. A psychology course is my counter-recommendation to the college algebra he assumes I am unfamiliar with.

$\frac{x + 1}{2}$, in his example, utilizes half an assumed distance between an assumed fraction *almost* the "size of one" and one itself, but the question should arise, one what? If he is counting molecules in a melon or a glass he will find that they cannot be divided without changing them. I still think my reasoning indicates that even if he can count neutrinos, there are points of space that cannot be divided. I question whether he has tried to follow my reasoning but has substituted recall of a dogma.

2. To David Brahinsky: If the word 'extension' must be defined to imply divisibility, then it is not the word I should have used. I meant to say that not every space or moment can be divided, and that the basic characteristic of space or time exists in the smallest bits of them. If space can be divided endlessly, and discontinuously moving particles can settle in only *certain places* out of an "infinite" number of possibilities (as Brahinsky implies), then the nature of space is both impossible to conceive and unnecessary to define in that regard. That is, the concept of infinity in the small is useless for our explanations, at best.

I would say that the very concept of boundaries requires discontinuous space. The edge of a proton has to lie somewhere, and (like Zeno's arrow) if it has an infinity of alternatives for position, how can the proton lie in its "certain place"?

—Harry Mongold, Manhattan, Illinois

IN *Pursuit*, Vol. 11, No. 3 (Summer 1978) you published a letter of mine which outlined the need for ufology to insure that its literature is preserved for future generations of researchers. Since that time, I have located several university libraries that seem willing to collect and preserve UFO material. They have facilities that can store the material in an environmentally controlled and limited-access manner and are willing to treat it as the rare and special resource that it is. Now that the libraries have been identified, we need to locate sources for them to collect from.

Special help is required now. I need your assistance to reach those private individuals who have the UFO materials that those libraries need. What will be needed soon is for *Pursuit* to print periodic announcements requesting that donations be made to those libraries. In this way, a few responsive collectors may be reached.

—William E. Jones, Columbus, Ohio

I SAW an item of interest in the *NEARA Journal* (Spring 1978), p. 75. The article contains a list of archaeological mysteries compiled by Ron G. Dobbins, an Arizona researcher, who found an article in the *New York Times* stating that Gov. Scrugham of Nevada had found New York financiers who would help him finance the uncovering of a vast ruined city 8 to 10 miles long and 7000 years old. There was also an underground cavern with thousands of carvings.

Is this a hoax, a misidentified Anasazi or Hohokam site, or something bizarre like Niven's legendary buried cities? The Anasazi and the Hohokam don't go back to much older than the time of Christ. There were no cities in America 7000 years ago. The Anasazi didn't build cities 10 miles in length. The Hohokam had long canals but no stone buildings, only adobe huts.

—Jon Douglas Singer, New York City

I have a curious addition to the Syracuse UFO sightings of 1978 (see "The Central New York UFO Wave," *Pursuit*, Vol. 12, No. 1, Winter 1979).

The first UFO was sighted March 29, 1978, on a Wednesday. That Saturday, the television show, "Project UFO," was on as always. But the next week the TV Guide, published about Tuesday, listed "Project UFO cancelled in Syracuse only, and not regionally." This listing is confirmed by the newspapers for that week. The next saucer sighting I am aware of was Wednesday, April 6. Now, cancelling "Project UFO" would be a logical move if the local authorities wished to prevent hoaxes, panic, etc., in an upcoming UFO wave. But the problem is that no one *knew* it was a wave until two days *after* that TV Guide was printed. Or at least so the order of news stories released would lead us to believe. The funny thing is, Syracuse is a noted test area for lots of new products. Two teenagers were caught making "UFOs" in an eastern suburb.

Maybe someone was testing us—someone who the authorities could know about but couldn't stop? Maybe the CIA? Notice that theory explains all the shady goings-on, too.

—Kenneth Behrens, Syracuse, New York

BOOK REVIEWS

***EXTRATERRESTRIAL INTELLIGENCE AND UNIDENTIFIED FLYING OBJECTS: A SELECTED, ANNOTATED BIBLIOGRAPHY*, publication No. 76-35 SP, Congressional Research Service, Library of Congress, Washington, D.C., 1976, 45 pages, free.**

***THE UFO ENIGMA*, publication No. 76-52, same publisher as above, 1976, 124 pages, free.**

At first glance, you might think *Pursuit* is getting senile, carrying a review of two widely publicized booklets born in ancient 1976. Actually, this doesn't concern the publications as much as it concerns the government's *promotion* of them among members of Congress. Thinking back for a moment...

Extraterrestrial Intelligence and UFOs, you may recall, provided a generally fair and comprehensive list of books,

magazines and journals devoted to information on both UFOs and other-worldly life. Most entries were accompanied by brief descriptions of their contents.

Less than a month after the booklet saw print, *The UFO Enigma* appeared as a companion document. The treatise served to provide a condensed introduction to the history and status of the UFO subject. It was a respectable effort, though the booklet did tend to dwell on the skeptical aspect of UFOs a bit. Nevertheless, the introduction to *Enigma* points out that "After 28 years of concentrated interest in this country alone, experts cannot agree on what inhabits our skies."

The research and writing of the two widely distributed publications was handled by Marcia S. Smith, Analyst in Science & Technology for the Science Policy Research Division of CRS. At their inception, each report could be obtained free from one's Congressman. Whether or not that is still true is not certain, but they have been offered for sale now and then by private distributors.

But, the point here is that, even if you missed the booklets, you shouldn't miss the form letter that accompanied them. Members of Congress who requested copies routinely received a copy of the letter reproduced here, though, unfortunately, the letter itself rarely seems to have gone along to constituents who asked their representatives to order copies for them.

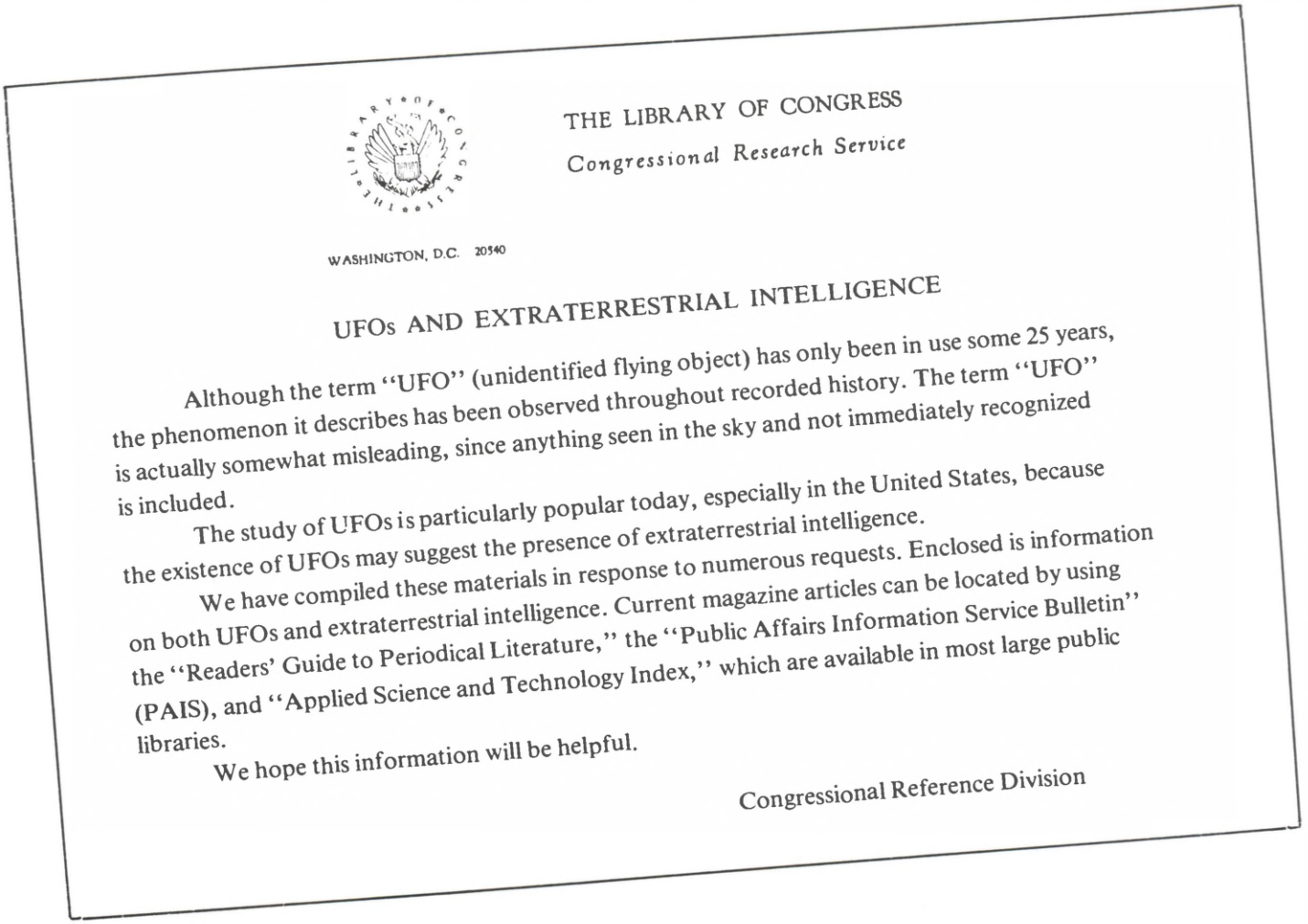
While the letter appears brief, pay particular attention to the second paragraph: "The study of UFOs is particularly popular today, especially in the United States, because *the existence of UFOs may suggest the presence of extraterrestrial intelligence.*" (Emphasis added.) Only the government could get away with making a remarkable suggestion of that nature appear relatively insignificant in a form letter!

Whoever wrote the letter for the Library of Congress apparently decided to be even more definitive about the UFO phenomenon than the booklets the letter accompanies. And, while there is virtually no reason to associate the statement with bureaucratic mystery and intrigue, we probably *can* assume that certain people working within the Congressional Research Service—and you *can't* become much more governmental than that—are quite open-minded on the UFO subject. At the very least, they seem familiar with supporting evidence. Now ... if only our CIA or god-knows-what agencies would come across with UFO information in a similarly matter-of-fact fashion! Err ... paranoiacally speaking, of course.

—Robert Barrow

***THE UFO ENIGMA: THE DEFINITIVE SOLUTION OF THE UFO PHENOMENON* by Donald H. Menzel & Ernest H. Taves (Doubleday, Garden City, New York; 297 pages, illus., index & appendix, $8.95).**

The late Dr. Donald H. Menzel was more than a grouchy old man who didn't believe in flying saucers/UFOs. If you are really interested in learning about the man who was an internationally respected astronomer, a true giant in that field, and a man of many diverse interests and skills (UFO skepticism was only a very small part of his life), then read the tribute to him in *Sky & Telescope* magazine for April 1977.



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UFOs AND EXTRATERRESTRIAL INTELLIGENCE

Although the term "UFO" (unidentified flying object) has only been in use some 25 years, the phenomenon it describes has been observed throughout recorded history. The term "UFO" is actually somewhat misleading, since anything seen in the sky and not immediately recognized is included.

The study of UFOs is particularly popular today, especially in the United States, because the existence of UFOs may suggest the presence of extraterrestrial intelligence.

We have compiled these materials in response to numerous requests. Enclosed is information on both UFOs and extraterrestrial intelligence. Current magazine articles can be located by using the "Readers' Guide to Periodical Literature," the "Public Affairs Information Service Bulletin" (PAIS), and "Applied Science and Technology Index," which are available in most large public libraries.

We hope this information will be helpful.

Congressional Reference Division

In this, his third and last UFO book, Menzel waspishly sinks barbs into the hide of just about everyone connected with the saucer scene. Convinced that he had the answer to each and every UFO sighting that came along, Menzel clearly believed that only stupidity, stubborness, and/or greed prevented folks from accepting his solutions.

To give him his due, he does make a compelling case in some instances: I share his skepticism about the Pascagoula 'kidnap,' the 'psychic' abilities of Uri Geller, von Däniken's 'gods' and others of like ilk, but I draw the line on some of his explanations. (This, as it happens, puts me into the USAF camp since, according to Menzel, "his advice and suggestions [to the USAF] were usually strongly discounted.") But let us press on.

In the opening chapters, Menzel gives us a once-over lightly tour of the UFO scene and even 'confesses' how he was twice deceived by misperceptions of common objects seen under unusual circumstances.

He then surveys UFO history from biblical times up to the present, with stops along the way during the Middle Ages and the late 1890s. In passing, he 'solves' a variety of biblical miracles including the Parting of the Red Sea, Jesus Walking on Water, Jacob's Ladder, and Ezekiel's Wheels. All, says Menzel, were the results of witness misperceptions of various mirage and other atmospheric optical effects. 'Swamp Gas' and 'St. Elmo's Fire' are also among the explanations advanced by Menzel for saucer sightings both new and old.

Menzel also spends a fair amount of time reviewing, and proposing solutions to, the many cases left 'unexplained' by the Condon Report. Clearly he must have been of two minds about the report and its personnel—he defends it and them against the charges of the UFO 'believers,' but he also chastises Condon's staff for their failure to solve nearly 40% of the cases they studied.

Next, with some aid from his collaborator, Dr. Ernest Taves, a respected psychoanalyst who has done research in parapsychology and visual perception, he tackles such UFO-related fields as photography, the news media, psychological optics, the upper atmosphere, radar, meteors, and the like. There is a certain similarity here with the ideas of Phil Klass, but where Klass has gone into the field and actually researched cases in great detail, including witness interrogation, Menzel preferred to sit at home, digesting reports of saucer sightings (he admits to having been a saucer newsclip service subscriber) and formulating theories about what the witness *really* saw. Considering his obvious low opinion of the news media for its handling of saucer reports, I find it difficult to accept solutions he has contrived that are based, in large part, on information imparted to him by that same media. There seems a certain inconsistency in his actions as he accepts those parts of news media reports that suit his theorizing while rejecting as nonsense those reports which do not fit his ideas.

But for all its flaws, and it is flawed in more ways than I have space to tell you about, you would do well to read *The UFO Enigma* carefully. Menzel has proposed solutions to some sightings that seem to remove them from the list of 'unknowns' and he has imparted information that can help all of us to be better investigators. You may not agree, but I count his death as a loss to the UFO field.

—George W. Earley

***WHERE IS NOAH'S ARK?* by Lloyd R. Bailey, Abingdon, Nashville, Tennessee, 1978, 128 pages, $1.95.**

A brief—yet concise—as well as critical examination of the scientific evidence put forth for the Ark's existence. It definitely makes a constructive contribution to the continuing debate and should be found in the library of any would-be or dyed-in-the-wool ark-eologist.

"Certain other questions have deliberately been set aside in this inquiry, not because I find them uninteresting but because I find them unnecessary and because I suspect that they would be divisive. . . As far as the present volume is concerned, the reader may believe or not believe the literal historicity of the Genesis account, according to preference. The issue is, instead, simply this: either the reported sightings and photographs are creditable evidence or they are not; either the wood offered in evidence is of sufficient age to meet the specifications of a literal biblical chronology for the flood, or it is not" (p. 11).

Somewhat technical, but don't let that bother you. Highly recommended for your pursuit of knowledge.

—Kr. Kristiansen, Denmark

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SITUATIONS

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

A NEW PRIME NUMBER DISCOVERED

The apparently endless search by mathematicians for new prime numbers has uncovered one far larger than the number of all the atomic particles in the universe.

A prime number is one which can be divided evenly only by itself or the number one. They do not occur at fixed intervals in the sequence of numbers, and although there is a standard method by which a computer can search for new prime numbers, there is no simple formula for calculating new primes.

The sequence of prime numbers begins 3, 5, 7, 11, 13 and 17. It is easy to test small numbers for their primeness, but as the numbers become bigger the test becomes increasingly difficult, even for a very powerful computer.

The discovery of the new prime number was the work of Harry Nelson and David Slowinski, computer scientists at the Lawrence Livermore Laboratory of the University of California. The number found by their computer search has 13,395 digits—a number larger by far than needed to describe anything in the universe.

By comparison, scientists figure the number of fundamental atomic particles in the universe to be a number of only about 80 digits; the diameter of the universe measured in units the size of an atomic nucleus to be a number with 40 digits; and the number of stars in the universe to be a number with 20 digits.

A previous record-size prime number was discovered in 1978 by Curt Knoll, a student at Hayward College, California.

Although large prime numbers are not thought useful for measuring anything real, increasing attention is being given by cryptologists and computer experts in using such numbers as the keys to very complex codes designed to protect the secrecy of data banks.

SOURCE: *The New York Times*, June 5, 1979. CREDIT: Donaco Vojta.

* * *

HAIRY CREATURE OUTRUNS SHERIFF'S DEPUTIES

At about 11 p.m. Wednesday, August 30, 1978, three "quite excited" residents of Byron, Michigan, called the Byron police department about seeing a creature near their apartment building.

Sheriff's deputies Phil Cooley and Bill Bowman, from the Shiawassee County sheriff's department, reported chasing a "large, upright ... furry animal about eight feet tall" until it splashed into a shallow stream close to the Shiawassee River and ran upstream, after receiving a call for aid from Byron Police Chief Joe Thomas. Undergrowth in the area was too dense to permit them to pursue the creature from shore, the deputies said.

But, said the deputies, they found ample evidence that something big "had blazed a hasty trail through the brush to the stream."

SOURCE: *The State Journal* (Lansing, Michigan), August 31, 1979. CREDIT: Member #1843.

* * *

THE MOUNT VERNON MONSTER: GEORGE WASHINGTON OR BIGFOOT?

In May of this year, newspapers around the country reported that for some nine months a strange wailing or screaming was heard nightly a mile from the ancestral home of George Washington near Mount Vernon.

Residents occupying the $150,000 homes surrounding the haunted patch of woods from which the sound comes, have described the sound as something like: a wild boar, really loud frogs, some guy blowing in a wine bottle, a barred (or hoot) owl, a broken microphone on a CB outfit, a parrot, a mouse with an amplifier, a strangled dog, a prankster with a bullhorn, the ghost of George Washington and the ghost of George Washington's pigs.

Whatever it is (and the sounds have been captured on tape), the creature is elusive. One resident, Thelma Crisp, says she spotted the monster. She described it as about six feet tall and walking upright.

Game warden Ralph Stickman and other county animal agents, suspecting a hoax, for several months combed the swampy woods that lie between the subdivisions. On several occasions, they sat in the woods and listened. After shining their flashlights into almost every tree and bush, looking for loudspeakers, they have come up with nothing.

"The thing seems to know when you leave the woods. Then it will holler. I don't know what it is, to be frank," said Stickman.

Responding to angry, sleepless residents, the county police at one point stationed men in the woods, assembled two infrared cameras and called in the U.S. Park Police helicopter.

"We hoped that by flying over it, when it started to yell, we could see something," said Maj. Harry S. Sommers, who was contacted at police headquarters in Fairfax County after Mount Vernon area police refused to comment. Sommers said the "thing" didn't yell and the helicopter finally cut short its search.

"I'm not really sure it is a police problem anyway," Sommers said, somewhat disconsolately. Although several residents have reported that it eats food placed in the woods, the screamer has not harmed anyone.

And at the headquarters of the Fish and Wildlife Service in Washington, about 15 miles away, a spokesman had this to say: "If it's Bigfoot, and there's proof, we'd protect it."

SOURCES: *The Washington Post*, May 12, 1979 and *Daily News* (Bowling Green, Kentucky), May 20, 1979. CREDIT: Harold Holland, Fred Packard, J. Darsie.

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TUNGUSKA EXPLOSION THE RESULT OF A COMET?

Although no scientist reached the Tunguska region in Siberia until 19 years after the largest explosion ever recorded on earth occurred there June 30, 1908, few historical phenomena have evoked so much scientific speculation as that blast which blew down trees for 20-30 miles in all directions, knocked horses off their feet 400 miles away, and rendered unconscious and burned residents of a trading station 40 miles away. Theories have ranged from spontaneous nuclear explosions to extraterrestrial craft explosions to falling comet heads.

L. Kresak of the Slovak Academy of Scientists in Bratislava, Czechoslovakia,

has recently offered a suggestion which supports the comet-head theory. He suggests that the explosion occurred when a huge "boulder" shed by Comet Encke blew up in the atmosphere. Kresak noticed that the June 30 date coincided with the peak of an annual meteor shower, which originates in Taurus and is attributed to debris from Encke. Meteor showers occur when the earth passes through debris left by a comet that has been partially torn apart during repeated close passages of the sun. Encke, the comet that returns most often, orbits the sun every 3.3 years.

Kresak believes the volatile components of comet fragments that make comets and their tails glow are gradually boiled away from the solar heat, leaving only cometary "boulders" which, according to his report in the Bulletin of the Astronomical Institute of Czechoslovakia, constitute probably "an overwhelming majority" of interplanetary objects one to a hundred yards in diameter.

According to Kresak's hypothesis, such an object would become so hot during its fall through the earth's atmosphere that it would explode in a catastrophic manner. When large meteorites hit, they generate explosions sufficient to gouge out large craters; because no such crater was formed by the Siberian blast, the "boulder" may not have been large enough to do so.

SOURCE: *San Antonio News* (Texas), January 30, 1979. CREDIT: Tom Adams.

* * *

TWIN DAUGHTERS BORN TO 10-YEAR-OLD

A 10-year-old girl in Indianapolis may have made medical history by giving birth to twins. Doctors who helped in the premature delivery of twin baby girls at Indiana University Medical Center called the births "extremely unusual." The American Medical Association went a step further, saying it was an unheard-of occurrence. AMA science and news editor Frank Chappell in Chicago said, "I've never heard of anything like it before.

"There have been births to girls so young, girls as young as six years old in some Indian tribes, so a 10-year-old girl giving birth is unusual, but it has happened before.

"But twins—our records just don't show anything like it before."

SOURCE: *The Pittsburgh Press* (Pennsylvania), June 3, 1979. CREDIT: O. Oltcher.

* * *

TWIN SONS BORN TO 14-YEAR-OLD: AND THE 40-YEAR AFTERMATH

A 14-year-old unwed mother gave birth to twin boys in Piqua, Ohio on August 19, 1939. A few weeks later, the boys were put up for adoption and were taken in by different families—the Jess Lewis family in Lima, Ohio and the Ernest Springer family in Piqua, 45 miles away.

Through bureaucratic misinformation, however, neither family knew at the time that their adopted son had a twin brother.

About a year later, through final adoption papers, the Lewises discovered that their adopted son had a twin, but they couldn't find out who his adopted parents were.

The Lewis twin kept searching for his look-alike over the years that followed.

Finally, after nearly 40 years, he found the probate court records this year that led him to his brother, now living in Dayton, Ohio. When the twins got together, they discovered some unexplained coincidences about their separate lives.

The Springer family had named their adopted twin Jim. The Lewis family had also named their adopted son Jim.

Both boys had had pet dogs, and both had named their dogs "Toy."

After finishing their schooling, both had taken law enforcement training, and both enjoyed similar hobbies: blueprinting, drafting and carpentry.

Jim Springer had been married twice, Jim Lewis three times. Both their first wives were named Linda. Both their second wives were named Betty. Both named their first sons James Allen.

University of Minnesota researchers who specialize in studying twins examined the twins for a week to study similarities and differences in twins who had grown up separately. Needless to say, similarities were the rule.

"The results of all the tests we took," Springer said, "looked like one person had taken the same tests twice."

SOURCE: *The Pittsburgh Press* (Pennsylvania), May 18, 1979. CREDIT: O. Oltcher.

* * *

600-YEAR-OLD BUTTER A VALUABLE MEDICINE?

According to the Soviet News Agency Tass, a container of 600-year-old butter has been unearthed in Razdan, Soviet Armenia. Scientists say the butter, "hopelessly rancid," may prove to be a valuable medicine. It is not mouldy because it is filled with dead bacteria which have turned the jar of butter into an "anti-microbe" agent "which suppresses the causative agents of serious diseases affecting man," Tass said.

"Its capacity to kill off harmful bacteria may be used in medical practices," Tass said, without elaborating further.

SOURCE: *The Tennessean* (Tennessee), April 23, 1979. CREDIT: Harold Holland.

* * *

ORANGE RAIN IN THE CRIMEA

Orange rain recently fell on the Crimean city of Yalta, according to the Soviet newspaper *Trud*. Soviet scientists have speculated that the clouds contained dust picked up in Turkey and carried across the Black Sea, leaving a thick layer of rust-colored dust in the wake of about a half inch of rain.

SOURCE: *New York Times*, April 24, 1979. CREDIT: Jon Douglas Singer.

* * *

BULLDOZERS VS. THE STONE AGE

In Norton, Massachusetts, bulldozers excavating for an interstate highway have unearthed the remains of a civilization of wandering Stone Age people who may have lived in the area 8,000 years ago.

A team of archaeologists from the Brown University Archaeology Laboratory is looking into 34 sites uncovered by the bulldozers. So far, the archaeologists have discovered arrowheads, stone tools, chunks of burned rocks, tiny shards of pottery and bits of stone flaked off during tool-making. These finds offer clues into the lives of the "Paleo-Indians," who, according to Peter Thorbahn, the principal investigator, moved into New England after the glaciers receded perhaps 10,000 years ago.

For most of the prehistoric period, Thorbahn indicated, the Indians were hunters, fishermen and food-gatherers; only later did they develop farming.

The Massachusetts Department of Public Works refused to disclose the exact location of the sites, fearing they would be ransacked or damaged, and the scientists working at the sites are trying to dig up the remains as soon as possible to make room for the highway. Field work at the sites is expected to end by fall.

SOURCE: *New York Daily News*, May 7, 1979. CREDIT: Jon Douglas Singer.

* * *

GIANT RATS ATTACK

City health officials, notified of reports that foot-long rats were running amok and attacking people just a block from City Hall in New York, were prompted to build a giant rat trap to corral the brazen rodents.

"We have the rats trapped," was the triumphant announcement made by Deputy City Health Commissioner Jean Cropper, who supervised the roundup at the L-shaped excavation site on the edge of New York's financial district. The excavation was of a building housing a bar and grill until nine years ago, when it was leveled by an explosion which killed nine people and injured an additional 40.

Scores of the giant rodents were seen

in the excavation that fronts on both Park Row and Ann Street. Police who rushed to the scene Thursday night, May 10, after receiving a report that a woman was attacked by several rats as she walked on Ann Street, spotted "numerous rodents," but no victim.

The next morning, police were again called to the scene as the rats ventured out into the middle of Ann Street.

Cropper said the rats apparently have been in the big hole created by the explosion since it occurred nine years ago, adding:

"For some reason they have gotten more brazen in the last several days."

Work crews from the Health Department's Bureau of Pest Control began cleaning the site, spreading poison bait and rigging a mesh fence to keep the rats from escaping.

"We will trap some of them alive so we can comb them out and see what they have that is different from other rats in various parts of the city," Cropper said, adding that the department will "tighten up the area" and perform a building-to-building search to make sure the rodents don't relocate elsewhere....

SOURCE: *The Miami Herald* (Florida), May 12, 1979. CREDIT: Member #466.

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RADIATION RULED OUT FOR COW DEATHS

After the Three Mile Island incident, which caused low-level radiation to be released March 28, officials were called in to explain the death of 19 cows on a Lancaster County farm.

"Radiation had nothing to do with it," said Dr. David Ingraham, director of the Bureau of Animal Industry, concerning the deaths of seven cows and 12 calves on the Bainbridge farm of Clair Hoover.

Ingraham's statement followed a report from Agriculture Secretary Penrose Hallowell that tests indicated no relation between the deaths and low-level radiation released during the Three Mile Island incident.

Hallowell said tests on blood, feed, milk, grass and water from the farm had shown no evidence of radiation contributing to the cow deaths. He also said a survey of farms within a five-mile radius of the nuclear plant, and large dairy farms outside the five-mile radius, had discovered no reports of unusual or unexpected animal illnesses or deaths.

Hallowell also said he did not consider the Hoover farm deaths unusual considering most of the deaths involved cows that were having calves.

SOURCE: *The Pittsburgh Press* (Pennsylvania), May 25, 1979. CREDIT: O. Oltcher.

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RADIATION RULED IN FOR SHEEP DEATHS

A study by Harold Knapp, a former Atomic Energy Commission scientist, has concluded thousands of sheep were killed by two nuclear tests in Nevada in 1953. Knapp, a commission scientist during the testing period, did the study at the request of the House Subcommittee on oversight and investigations.

Rep. K. Gunn McKay (D-Utah) said the findings provide the first hard evidence to scientifically support McKay's contention that the government must accept liability for the sheep deaths. McKay has introduced a bill which would do just that.

Attorney Dan S. Bushnell, who represents the sheep owners, was elated by Knapp's report.

"It is my hope that in view of all this evidence that the government would negotiate a fair and reasonable settlement to the sheep owners who have suffered this damage these many years," Bushnell said.

"If the government is not willing to make such a settlement, then we will proceed with our legal proceedings," he said.

In the early summer of 1953, several thousand sheep died after being trailed through the desert east of the Nevada Test Site during a period when two atmospheric nuclear tests dropped heavy fallout on the area.

SOURCE: *Ithaca Journal* (New York), June 19, 1979. CREDIT: R. M. Wolf.

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BACTERIA FOUND TO ORIENT THEMSELVES TO EARTH'S MAGNETIC FIELD

In Washington, D.C., the National Science Foundation has announced a discovery which could have major implications in research on the homing mechanisms of other organisms and animals.

Some bacteria appear to synthesize iron compasses within themselves that orient them to the earth's magnetic field.

Drs. Richard B. Frankel of the Massachusetts Institute of Technology and Richard P. Blakemore of the University of New Hampshire have discovered that the bacterial compass is made of magnetite, a naturally occurring material composed of iron and oxygen—commonly called lodestone.

"Our finding is especially important because it is the first time that the orientation of an organism in the earth's magnetic field has been shown to occur via an internal compass made of a permanent magnetic material," Frankel said.

Although it isn't known whether higher animals use a similar mechanism, Frankel said that within the past year other researchers have found magnetitie in the heads of pigeons and the abdomens of bees.

"This is the beginning of some very exciting work—a whole new direction in research," Frankel said. Although scientists have long suspected some animals use the earth's magnetic field to orient themselves, how this is done remains a mystery, he added.

Blakemore discovered the magnetic bacteria in 1975 off the coast of Massachusetts. Since then, several varieties have been found in other areas of North America. Until now, however, no one knew why they were magnetic.

"Blakemore was just surveying sediments and noticed that bacteria in one sample collected on one side of a dish," Frankel said. "When he moved the dish, they kept swimming to one side—the north side. Using a small magnet, he found that he could make the bacteria swim back and forth."

As to *why* the bacteria swim north, Frankel said the magnetic field is felt both horizontally and vertically through the earth. In the Northern Hemisphere, that means "north" is also "down."

Since bacteria in water are too small to distinguish up from down on the basis of gravity alone, Frankel said, the compass might be advantageous for the organisms in getting to the muddy bottom sediments they prefer.

He said a chemical analysis shows the bacteria contain 10 times more iron than is usually found in such organisms. The metal is present as magnetic bits synthesized from iron atoms in the environment and strung on a line. The north-seeking pole of this bar magnet is at the opposite end of the organism from the whip-like strands that propel it, explaining why it swims north.

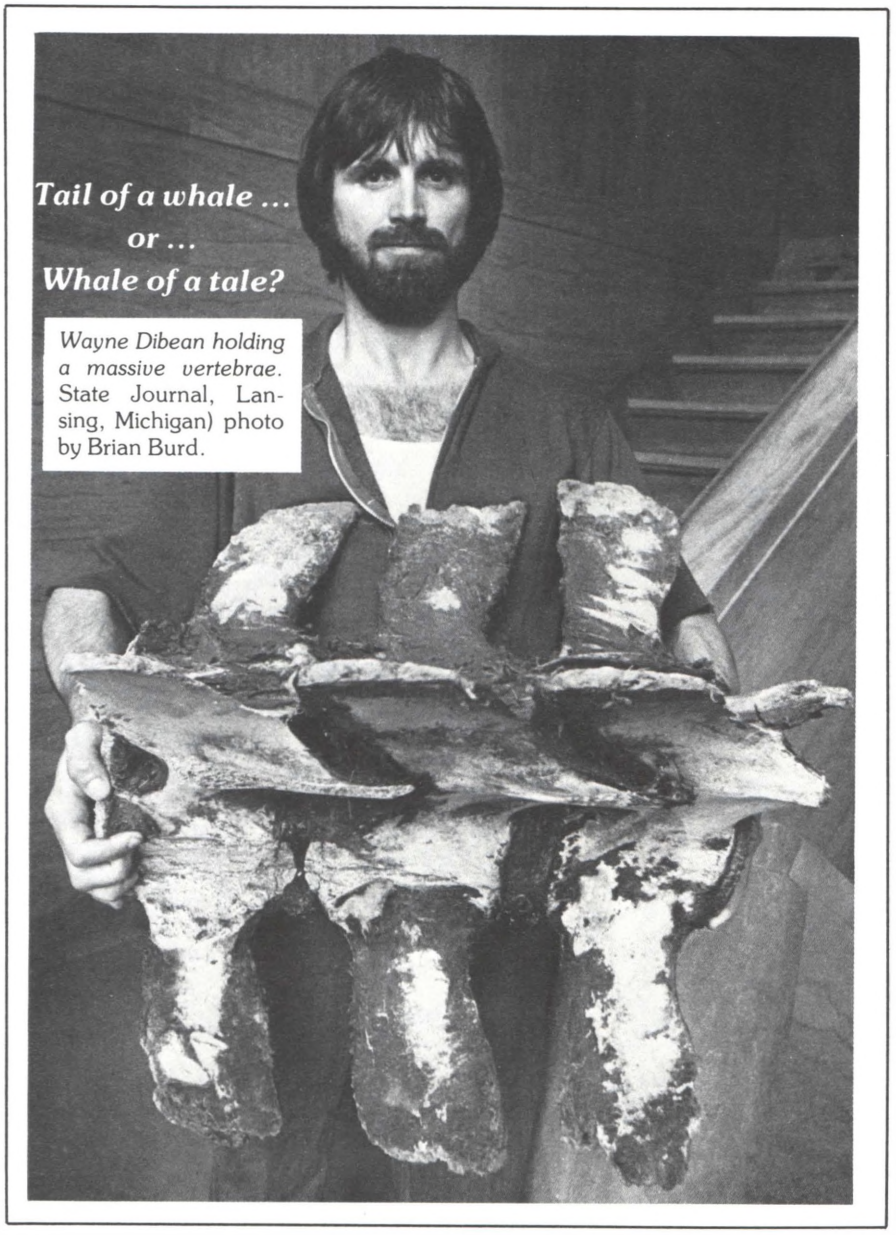
Frankel indicated there may be magnetic bacteria in the Southern Hemisphere that would tend to swim toward the South Pole. He expects to get sediment samples soon with which to test for such organisms from South America.

SOURCE: *The Tennesseean* (Tennessee), May 10, 1979. CREDIT: Harold Holland.

• • •

BONES FROM A MYSTERIOUS WHALE?

When Wayne Dibean discovered a strange set of bones lying near a river in the Lansing, Michigan area, he at first thought it was a joke. Because he works at a plastics plant, he thought maybe his fellow workers had made a plastic replica. Since the bones still had some of the meat on them, however, and since his fellow workers were able to convince Dibean the bones were no joke, he rushed the strange find over to the Michigan State University



Wayne Dibean holding a massive vertebrae. State Journal, Lansing, Michigan) photo by Brian Burd.

Museum as soon as his shift ended at 8 a.m.

What creature produced the bones?

Museum director Dr. Rollin Baker said the bones were probably the caudal section of a whale ... "but how it got by Ren Plastics I don't know."

Baker calls it "The Mystery of the Lost Vertebrae" or "The Case of the Lansing Monster."

"The mystery is from whence did it come," Baker said. "We don't have any large bodies of water nearby, and it isn't Bigfoot or the Loch Ness Monster.

"The only theory we have is that someone may have had it on a flatcar where they had people look at it for 10 cents. If that someone went broke while in the Lansing area, he may have dumped it."

Baker guessed whale since the vertebrae are larger than an elephant's. He also ruled out dinosaurs, since these bones still have meat—more like jerky now—clinging to them. A dinosaur's meat would have long since been replaced by mineral matter, Baker explained.

"It certainly hasn't been out there for very many years," he said.

He estimated the creature was 40 to 50 feet long when it came to its mysterious end.

"Though it was a huge varmint, it was probably not fully mature because the central part of the vertebrae hadn't fully grown together," Baker said.

Dearth of whales in Michigan

One of Baker's problems in identification is that there are no whale skeletons in the MSU Museum to compare Dibean's find with.

"We have full skeletons of beavers, horses, cows," Baker said. "We need them to identify pieces that come in. We don't have many whales coming through."

"How did it get here?" he mused. "Obviously it didn't swim in on the Red Cedar."

The bones, found along the Grand River (into which flows the Red Cedar), remain unidentified except as possibly the caudal section of a whale. When SITU spoke with Dr. Baker June 26, he told us that the bones were taken back to Ren Plastics after being photographed for the local newspaper (see accompanying photo). He hopes that they will eventually be returned for identification purposes by the Field Museum or the Smithsonian, although caudal bones do not provide the best identification. Earbones would be better, he said.

The 10-cent look

He does feel, however, the bones are definitely cetacean. He pointed out that in the covered wagon days, whale bones were picked up in the Midwest, and these were probably remnants of bones originally brought in as conversation pieces from coastal regions, then abandoned or lost. Also, during the 1930s, whale bones were sometimes loaded onto flatcars and taken inland; these were exhibited at 10 cents a look to those who would pay to see the bones. Eventually, the bones would be discarded.

According to Dr. Baker, a short paper concerning the finding of whale and walrus bones from a much earlier period around the upper Great Lakes has been written by Dr. Charles Handley, Jr. of the Department of Mammalogy at the Smithsonian (in the *Journal of Mammalogy*, published by the American Society of Mammalogists). So cetaceans *were* once there.

The question left unresolved is how realtively fresh whale bones appeared along the banks of the Grand River in 1979. . . .

SOURCE: *The State Journal* (Lansing, Michigan), May 9, 1979 and a telephone conversation with Dr. Baker June 26, 1979. CREDIT: W. L. Nielsen.

* * *

MARINE MAMMALS IN MICHIGAN PLEISTOCENE BEACHES

(Reprinted, by permission, from the author and the American Society of Mammalogists' *Journal of Mammalogy*, Vol. 34, No. 2, May 1953)

A number of bones of marine mammals have been found in the Pleistocene lake beaches of Michigan. Most of these have come from the lower peninsula, from beaches ranging in age from Arkona to

Nipissing. Obscure mention has been made of several of the finds in literature, but they are not generally known to mammalogists.

Uncertainty of the true origin of the bones has led to an understandable reticence to give them serious consideration. It is well known that whale bones are commonly carried to inland localities by curio-collecting human beings. This was possibly as true of the Indians in pre-Columbian times as it is of whites today. Most inland records of whale remains can be assigned without hesitation to this agency. However, some of the Michigan finds are unique. They were not picked up on the surface or located in marine sediments, *but were found buried, some at considerable depths, in Pleistocene lake beaches.* The question raised is: Did these marine mammals reach the Michigan beaches naturally or by human transport? I shall be the first to concede that very considerable obstacles stand in the way of imagining a Pleistocene marine fauna in the Great Lakes, but I do not want to argue that point here. The purpose in writing this note is to put the facts on record, with the hope that they may hasten a conclusive answer to the question that is here raised.

Winchell (First Biennial Rept. Geol. Surv. Michigan, 1861: 133) is apparently the first to have made mention of Michigan whales, but his reference is vague and may have related to a surface find: ". . . a large vertebra was discovered in the western part of the state which was recognized at the time as the caudal vertebra of a whale, by Prof. Sager, then State Zoologist." According to E. C. Case, former Director, Museum of Paleontology, University of Michigan, this specimen was subsequently lost, and has never been relocated.

Hinsdale (Univ. Mus., Univ. Michigan, Mich. Handbook Series, 1: Pl. 37, Fig. 2, 1925) figured a walrus *(Odobenus)* baculum with cultural objects from Standish, Michigan. Correct data for this specimen indicates that it was discovered in Otsego County by Ezra Smith, who wrote: "I found the bone when hauling gravel out of a pit 7 miles NW of Gaylord, Michigan in 1914. Other pieces of bone were mixed with the gravel but they did not attract particular attention." This specimen, bearing no. 400, is preserved in the Museum of Anthropology and Archeology of the University of Michigan.

In 1930, Hussey (Sci. [N.S.], 72 [1871]: xiv) reported briefly on three sets of whale bones which had come into the possession of the University of Michigan Museum of Paleontology. I have recently examined these specimens. They are well preserved and show no evidence of human mutilation:

No. 14101, a single rib of a fin whale, *Balaenoptera,* was found during excavation of a cellar on the property of William Hummell on Genessee Road, 10 miles NE of Mt. Morris (near Thedford Center, just south of the county line), Genessee County. It was standing vertically in loose sand of a beach of Arkona age.

No. 14102 consists of a lumbar vertebra and two ribs of a sperm whale, *Physeter,* taken from a swamp in the NE corner of Lewaunee County in 1928. Beach deposits of this area are of Whittlesey age, but since this specimen was not accompanied by detailed notes, its age may be questioned.

No. 11008, a single rib, is probably of a bowhead whale, *Baleana.* It was discovered in 1928 during excavation at the SW corner of the schoolhouse at Oscoda, Iosco County. The rib was five feet below the surface in sands of the Nipissing beach. Identity of this bone is not certain, for it was not compared directly with *Balaena.* However, it closely resembles *Eubalaena,* with which it was compared, and agrees with descriptions and figures of *Baleana* in literature.

Another find, not previously reported, is the anterior portion of a walrus skull, which is preserved in the Old Fort Makinac Museum. R. C. Hussey of the Department of Geology, University of Michigan, was told that the skull had been found many years ago in a beach deposit (Algonquin or Nipissing) on Mackinac Island. The original data was lost in a fire. The tusks are missing, but have probably been removed since the discovery of the skull, for their alveoli are well preserved. Of interest in this specimen is a series of short parallel grooves on the antero-lateral face of the rostrum. They may be the result of human carving, but there is no way to determine whether they came onto the bone or subsequent to its recent discovery.

Other references which have a bearing on this problem are a paper by Cameron (Ann. Rept. Nat. Mus. Canada, 1949-1950, Bul. 123: 116-119, 1951) recording a *Balaena* from a Pleistocene deposit on the south shore of the Gulf of St. Lawrence, and a paper by Sternberg (*ibid.*: 259-261, 1951) recording *Delphinapterus, Phocoena,* and *Phoca groenlandica* from the Pleistocene of the Ottawa Valley of Ontario. Closer scrutiny of Michigan's Pleistocene beaches for vertebrate fossils may prove fruitful.—Charles O. Handley, Jr., *U.S. National Museum, Washington, D.C. Received May 15, 1952.*

* * *

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ANIMALS AND EARTHQUAKES

A special investigating team from the U.S. Geological Survey and the Stanford Research Institute was sent to Willits, in Mendicino County, California, to test whether strange animal behavior is a clue to earthquake prediction. Willits, a small Northern California community, was hit November 22, 1977, by a tremor registering 5.0 on the Richter Scale. (The Richter Scale measures ground motion as recorded on seismographs. Every increase of a number means a tenfold increase in magnitude.)

According to Jack Pfluke, a researcher at the agency's offices in Menlo Park, the team found "an abnormal amount of animal misbehavior at the epicenter, and within a 10-kilometer radius."

Willits is about 125 miles north of San Francisco and is well north of California's active earthquake zone. The quake there took scientists by surprise.

Monday, May 7, 1979, shaken San Francisco residents reported house pets acted strangely before a quake that registered 4.8 on the Richter Scale. One resident claimed his parakeet began screeching wildly before the tremor. A dog owner said his pet "went bananas beginning about two hours before it hit," growling and running around the apartment.

"Dogs usually act plain scared," said Pfluke, "much like they do during a thunderstorm. Cats are more independent—they'll run away for a day or two and then return."

Pfluke believes the animals' senses respond to an electrical change in the environment that "occurs just minutes before or as much as two days before a quake."

"The animals are much more alert in their senses—this is really survival to them—and, of course, they don't drink or smoke," he said.

Dr. William Kautz, a Stanford Research Institute investigator, said: "Common house pets are hundreds to thousands of times more sensitive to certain physical stimuli than our most sophisticated machines."

And according to the institute's Dr. Leon Otis, the Chinese have successfully predicted as many as 11 earthquakes, although there have been a number of failures as well.

We wonder: Were there any reports of earth tremors in or around Decatur, Illinois or Little Rock, Arkansas during the elephant rebellions there? We wouldn't dare ask the same question about New York's rat-infested (to say nothing of the bulls and bears) financial district, where earth-shaking events occur daily. . . .

SOURCES: *The Tennessean* (Tennessee), May 9, 1979, and the *Herald-News* (New Jersey), May 20, 1979.
CREDITS: Harold Holland and Fred Wilson.

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