



PURSUIT[®]

"SCIENCE IS THE PURSUIT OF THE UNEXPLAINED"

VOL. 7 NO. 3

JULY, 1974

SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED

Columbia, New Jersey 07832
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Our publishing schedule is four quarterly issues of PURSUIT, dated January, April, July, and October, and numbered as annual volumes — Vol. 1 being 1968 and before; Vol. 2, 1969, and so on. These are mailed at the end of the month. (Subscription to PURSUIT, without membership benefits, is \$5 for 4 issues.) Order forms for back issues will be supplied on request.

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

Vol. 7, No. 3
July, 1974

PURSUIT®

THE JOURNAL OF THE SOCIETY FOR THE
INVESTIGATION OF THE UNEXPLAINED

FOUNDED BY IVAN T. SANDERSON

DEVOTED TO THE INVESTIGATION OF "THINGS"
THAT ARE CUSTOMARILY DISCOUNTED

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ARE BIOLOGISTS MYOPIC? OR AN INQUIRY INTO ZUCK'S LAW*

After more than twenty-five years of teaching and research, I feel qualified from experience and by aptitude to put forth my "law"—the result of observation and synthesis for the guidance of future generations of scientists and human beings in general. Although history may not teach lessons, hopefully my law will have such universal applicability that we may not need to rely on the questionable activity of man's past. I realize that modesty should dictate that I allow others to put my name before the word "law" after the validity of it has been established; this does take time and the acceptance of a particular law by a considerable body of peers. Owing to the urgency of the situation in science and the world in general, I feel that we cannot wait for the judgment of posterity—or of contemporaries, for that matter.

I think I first became aware of the foundation of my law almost as the result of an instinctive response to a complicated piece of scientific equipment in my early days of research. I shall not reveal names and thus cause some embarrassment. Suffice it to say that this particular piece of equipment, costing many tens of thousands of dollars, was put to a use that tried to do in a physical, mechanical way a task which required human judgment as to what a particular set of values were in determining the quality of a natural product. Something comparable today would be the use of computers in composing and playing music. Composers and performers need have no worry about being supplanted by the computer, as anyone can say who has listened to such music.

But to return to my instinctive response when I first viewed the expensive machinery doing a task which I felt immediately it was not made to do, nor could any machinery or device ever do, I felt a revulsion toward this creation of man. The machine was in a darkened room attended by young women in laboratory coats, almost as though vestal virgins were attending to the needs of the temple. And I am sure, like the virgins, they were doing what they were doing as the result of a blind faith, in this case a blind faith in science, which has rather largely supplanted a similar response in the name of religion in the Western world.

Here they were, carefully ministering to a machine which glowed from time to time and gave out results that were dutifully tabulated and which no one really understood. The collected data were then analyzed by the director and his statistician. The results were inconclusive, as they were bound to be. Finally, after several years, the project was abandoned, after the ex-

penditure of hundreds of thousands of dollars—a modest sum in today's billions for research. But the lesson became clearer to me over the years and I have been able to translate it into Zuck's law. My students have been exposed to this law and have benefited from it, even before I put it into words.

And what is this law? It is all put down in just thirteen words: **"The significance of the experiment varies inversely with the complexity of the equipment."** It can even be shortened by leaving out the definite articles and it becomes rather telegraphic in its directness: **"Significance of experiment varies inversely with complexity of equipment."** For an older generation, the drawings of Rube Goldberg would illustrate, in all their ludicrousness, the equation in reverse. The complex machinery comes first in the drawing, and the end result, following the arrows and directions through a maze of wheels, gears, funnels, strings, and assorted hardware is something as insignificant as striking a match, the flame of which burns the foot of a sleeping man, thus awakening him on time.

Zuck's law when applied to the history of science immediately shows its relevance. All one has to do is to think back to Galileo and his cannon balls in the leaning tower, Newton and his prism, Becquerel and the photographic plate exposed accidentally (or was it?) to pitchblende, Mendel and his bags over the pea blossoms, and Flemming with his culture of bacteria contaminated with Penicillium to realize how simple were the beginnings of the understanding of acceleration and gravity, the nature of sunlight, the splitting of the atom, the laws of heredity and the control of most infectious diseases of human beings through antibiosis.

When we apply my law to present day science, the obvious conclusion, when considering the space projects, the exploration of the earth's crust, and computerization in general, is that with such complexity the significance is approaching zero. The moon may be reached, but the significance of this feat for science and mankind would be comparable to Hillary's climbing Mount Everest. The jiggling of the now abandoned Mohole to probe the earth's crust would be nowhere near as entertaining or significant, for that matter, as Jules Verne's imaginary journey to the center of the earth. And computers are about as valuable to fundamental discoveries in science as the first spring-wound watch was in relation to the science of its day.

To bring matters into focus for the present day science—my examples, after all, stopped with Flemming, whose discovery is now forty years old—I would like to put forth a student of life whose work has a significance I appreciated even before he was awarded the Nobel Prize in 1965. In my lectures in microbiology, I called attention to his work and told my students that

*Reprinted with permission from The Drew University Magazine, Winter 1967-68.

this is the kind of careful, thoughtful, but essentially simple work that needs to be done in studying viruses and bacteria. I refer to Andre Lwoff, who had the sense to observe dividing bacteria under the microscope which led to the firm establishment of the phenomenon of lysogeny, wherein bacteriophage, that diabolically clever parasite of bacteria, enters the host cell and is transmitted through several generations without reappearing in the external medium. Eventually some bacteria explode, releasing bacteriophage particles. Here is the solution to a problem that no amount of statistics, computerization, or other fancy equipment could possibly solve. A microscope, a small amount of glassware, a steam sterilizer and some nutrients for the bacteria were all that were needed—except, of course, for the inquisitive mind which got down to the bare essentials.

A quotation from Lwoff's lecture in Stockholm where he received the Nobel Prize on December 11, 1965, illustrates his mode of thinking and is a sort of corollary to my law. He said: "Here I must make a confession. I was led to this decision because I do not like either mathematics or statistics. I began my career as a protozoologist. I like to see things, not calculate probabilities." The approach to so many problems in the life sciences is often obscured by the wrong application of mathematics or by the application of mathematics too soon.

Life has a way of doing things which is deceptively simple. The apparent simplicity suggests a mathematical explanation and a precision which just aren't there. Even Mendel, whose early experiments showed an underlying mathematical understanding, was confused by his later study of the Hawk Weed Hieracium, in which his ratios did not show up. He did not know, and no one did for many years, that some plants can produce embryos that are not the result of the union of egg and male gamete. Thus there was no recombination of characteristics and hence no ratios of one color to another, or tallness to shortness. Mendel died a confused man.

The greatest revolutions in human thought, from Aristotle to Einstein, have come from people who were basically not experimentalists. We must admire Aristotle's attempt at classifying nature, the boldness of it; Linnaeus' more refined classification of plants and animals; Darwin's deep thought about natural selection and the origin of species; and Einstein's probing of the relationship of space, time, and matter. These great thought-produced and thought-provoking ideas have greatly changed our view of ourselves and the world. All these intellectual achievements were done by essentially non-experimenters. Thus, my law operates to its fullest; since there is essentially no equipment, the significance side of the equation attains its maximum.

At the very time when there is a growing awareness of

nature and man's place in it, so many departments of the life sciences are abandoning the study of life in relation to its environment. This seems to be in the general trend of hate expressed in so many ways in this country. We are confronted with artists who hate art, composers who hate music, and now biologists who seem to hate life. I know of one so-called botanist who wouldn't have a greenhouse because it was too much bother. He replied to my question about a greenhouse by saying that if, by some remote chance, he wanted to grow a plant, he would do so on the window sill of his office!

There are two cross currents in our American culture: One is the desertion of the farm for the increasingly urbanized life. The other, perhaps bred partly of nostalgia, but now desperately urgent, is the need for conservation of our land, water, and air. The urban college and university need more than ever to study whole plants and animals in their environments. Instead of spending huge sums on equipment and personnel in trying to foster the "central dogma" of DNA, how much better it would be for the education of our college youth to some first-hand experience under able scientific leadership with living nature, in the laboratory and in the field.

The central dogma, however, like all dogmas, is beginning to crumble. Barry Commoner, speaking at Bowdoin College, August 1966, gave evidence that DNA is not the master code of life, but is part of a complex living whole, whose synthesis depends on the nature of enzyme catalyzing DNA synthesis as well as the DNA primer itself. In some experiments where no primer is present, the enzyme alone can apparently catalyze DNA synthesis of a peculiar biochemical specificity. He points up the absolute need to study the whole intact cell and that to ignore this is to do so "only at the price of self-delusion." Elsewhere he has also written that instead of DNA being the secret of life (the central dogma), life is the secret of DNA.

In my article in Bio Science, February, 1965 ("Molecular Botany—A new Anti-Intellectualism?"), I pointed out that extracting DNA from chromosomes and indicating that this is all we need to know about the function of chromosomes would be comparable to taking the bones out of a living arm and saying this is all we need to know about how an arm functions. In this article I have also shown the absurdity of statements made out of ignorance of the well-known facts of life.

If we do not watch out, the life sciences in their obeisance to the physical sciences may develop the same sort of irrelevancy as the medieval scholastics when they wrote and argued about how many angels could dance on the head of a pin or whether Adam had a navel. Anyone who has worked with living plants and animals knows that the problems involved in their study are infinite and that biologists are in danger of becoming myopic, if they are not already so, because they have picked up the wrong prescription from the optometrist.

The life sciences are young enough and healthy enough not to need any aids for the mind's eye. Let the physical sciences work on those problems which the life scientist has taken to a point where these essentially simpler sciences can attack simple problems. It is no accident that most Nobel prizes in medicine and physiology go to workers in their 50's and beyond. It takes years of thought and experimentation to arrive at the significant matter of life.

If we try to apply Zuck's Law outside of science, we begin to see that it has a wider range. If we consider Viet Nam, the validity of the law is painfully apparent. Here we are spending billions on what should be a minor conflict. The military hardware is enormously complex. We are the twentieth century version of the British redcoats up against the back country man with his squirrel rifle. We may and probably will win by sheer waste. There may be so much wrecked machinery lying about in Viet Nam as to impede both sides to a stand-still. This will be unique solution in the annals of war.*

*Note date of publication.

If we apply my law to ourselves directly, we come to the position of Thoreau when he admonished us to "Simplify. Simplify." What paroxysms he would be thrown into by today's fantastic irrelevance!! Perhaps we should add a word, repeated, to Thoreau's, namely "Avoid. Avoid." About the only way we can simplify our lives and thus make them as significant as our brief journey allows, is to avoid as much of the onrush of twentieth century trivia as possible. Putting our lives into my law, where "**The Significance of My Life Varies Inversely with the Complexity of Living,**" I can only conclude that we should do all we can to reduce the right-hand side of the equation to bring up the quality of the left-hand side.

As a final generalized version of Zuck's Law, I would put forth "Significance varies inversely with complexity." This does not mean that life should be dull and monotonous. Variety should not be confused with meaningless complexity. Consider the fundamental scheme of the universe with atoms of certain kinds and number producing the great beauty of inanimate and animate nature.

Robert K. Zuck

FORT AND SANDERSON

(Robert J. Durant has offered the following thoughts on Charles Fort and Ivan T. Sanderson, and we present them here by way of commemorating the centenary of Fort's birth—August 9, 1874.)

Fort was the ultimate bookworm, literally reading himself nearly blind in the great libraries of New York and London. Some idea of the staggering volume of material that Fort read in his search for anomalous data can be inferred from the notes that he took and which the Society is attempting to preserve. There are estimated to be about 50,000 of these, and by Fort's account he destroyed an approximately equal number of notes at an earlier stage in his research. A very small proportion of the notes were ultimately used in the famous four books. He quite correctly perceived that if all the recorded instances of falls of fish or flesh or huge blocks of ice were to be presented to the reader the resulting work would be about as manageable and readable as a collection of telephone directories.

While reading the Books we are often reminded that the events Fort details are bizarre but nevertheless commonplace, or at least that they have occurred so often that they can almost be called commonplace. Fort saw this pattern, systematized it, and then sprung it on the world in his superb books.

Fort has often been criticized for his "theorizing," and one might be inclined to agree with this if it weren't so delightfully apparent throughout the Books that he really wasn't being serious at all in this respect. For example, flesh has fallen "from a clear sky" on a number of occasions. Fort gives us a list of these and then goes on to have a bit of fun with the data. The data are genuine, the theorizing plainly otherwise.* It is really rather simple-minded to maintain that Fort actually believed his "explanation" for the falls of flesh, namely, that they were the result of mortal combat between beasts the size of the Queen Mary in a stratospheric battleground.

There are several dangers to such a humorless and literal reading of Fort. First, he was obviously dead wrong on several of his theories, and there are others so abstruse that there is no way of checking on or even understanding them. Second, if his theorizing is faulty, and if this is to be taken as a serious objection, it follows that the remaining 99% of his writing must be suspect. This is a case of throwing the baby out with the bathwater, and is precisely the sort of thing that Fort was fighting.

*Some of this is undoubtedly deliberately outrageous and simply Fort's sly way of saying, "OK, you come up with a better idea." But one really must feel sorry for anyone who takes it seriously. S.W.S.

Third, if one takes the theorizing too seriously, the Books cease to be fun. And that is the last thing that Charlie would have wanted.

Fort's theorizing was a species of counterpoint. It was absolutely necessary in order to make the Books readable. It was used to illustrate by example the wild theorizing of Sacred Cow Science. A measure of the man's literary genius is the manner in which he was able to use this literary device to provide a measure of humor, spice, and occasionally profound thought in what by all rights ought to have been four of the most boring books ever written.

Was Fort a scientific genius as well? There are aspects of his work that resemble the methods and perhaps the results of some of the foremost scientific minds. One is reminded of Freud searching through endless case histories of the psychologically anomalous and eventually succeeding in a synthesis that provided the first practical psychological theory. Darwin sought to bring order out of "the tangled brush on the riverbank" and did so by finding the correlations in the biologically enigmatic. Einstein produced his theory of relativity as a result of a very deliberate study of the anomalies of modern physics. Freud, Darwin, and Einstein produced workable theories in their fields. They succeeded where Fort ultimately failed. Granted that all these theories have to some extent been disproved or superseded, but they remain as the preeminent logical and practical explanations for most observed phenomena in psychology, biology, and physics. Fort, alas, went only half way. The explanation, the great synthesis, never quite came to him.

There is nevertheless a very strong claim to be made for Fort as a seminal thinker. Isaac Newton gave some thought to the development of scientific ideas and to the role of the great minds of history that preceded him. Newton put it thus: "We are all pigmys standing on the shoulders of giants." The problem in assessing Fort is that there is no precedent for the man. He is the giant. His field was not physics or biology or psychology or any other art or science previously practiced or defined. Fort was a fortean—and that is precisely the sort of circular definition that he so loved to exploit and explode.

It is interesting to note that with all of the developments since Fort's death we have yet to see a physical or psychological theory that even begins to explain the central problems of forteana. For all the attention given to 'psychic' phenomena (Fort's "Wild Talents"), we still have not a clue to their workings, and Fort's writings on the subject remain probably the most comprehensive and sensible presentation of the field. Some forteana may be explained by the ufological investigators, if their extraterrestrial hypothesis is indeed correct, but even this extraordinary matter represents only a minute fraction of the fortean mystery. It would seem that Charles Fort was simply so far ahead of his

time that even now, more than forty years after his death, our civilization has not even begun to understand the fortean riddle. Arthur C. Clarke once remarked that any sufficiently advanced technology would appear indistinguishable from magic. The fascination that Fort's writings hold for us must derive from an unconscious and subjective understanding that there is an underlying truth of most profound significance to be found there. Fort wrote about magical things. Intuitively we know, or feel deeply, that these magical events hold the key to the ultimately advanced technology.

Ivan Sanderson was also a voracious reader and, like Fort, he had an exceptionally keen mind. But Ivan was above all else an active person. His literary output probably totaled something on the order of five to ten times the amount written by Fort. And Ivan generally did it on the run, writing from personal experience in the field. The authority with which he wrote of zoological matters derived from firsthand experience.

The compulsion to come to grips physically with the subject matter of his research characterized Ivan's investigations of unexplained phenomena. Fort systematized the study of anomalies, but left it as a rather abstract business best pursued in a library. Sanderson was an extrovert, gregarious, chasing "Three-Toes" through Florida swamps, investigating ABSMs in British Columbia, organizing SITU, forever in the public eye. Many have called him Fort's "heir", but this designation fails to do the man and his contributions justice. Ivan did indeed "stand on Fort's shoulders," but he added a new dimension to the study of unexplained phenomena by shifting the emphasis of research from the abstract toward the concrete. By accomplishing this, Sanderson ensured the viability of fortean research—and search. Ivan always called himself a fortean, but those of us who were privileged to work with him in the extraordinary enterprise of "investigating the unexplained" should not blush to call ourselves sandersonians.

It seems like some sort of oversight on the part of Fate, but Fort and Sanderson never actually met. Ivan was one of those extraordinary individuals who seemingly manage to pack a multitude of lives into one, and over the years he engaged in a bewildering number of disparate occupations and in the process met a vast number of "characters" ranging from South American dictators to leading intellectuals. For a very long time I supposed that much of this just had to be embellishment if not outright fabrication. A discussion of some bizarre bit of forteana would often be interspersed with personal recollections of at least equally bizarre persons and Ivan's adventures with them. But as time went by, many of these tales proved to be true, and I was forced to admit to myself that this man had indeed lived a most remarkable life. My initial disbelief was displaced by envy.

One day it occurred to me that I had never heard Ivan speak of meeting Charles Fort. Although Fort died in 1932, he spent many years in London, and the thought struck me that Sanderson, being Sanderson, might very well have stumbled over Charlie amongst the stacks in the British Museum*. I decided to put the question directly to Ivan but chose my words with some care to avoid leading the witness: "Where did you first hear of Charles Fort?" Ivan replied as follows:

"It was in '29, very shortly after I'd arrived in America. I didn't know a soul here, you know, and was frightfully lost and confused in New York. Then one day an acquaintance of mine took pity on me, I suppose, and invited me to accompany him to a lecture that was being

*Wrong British Museum. Ivan haunted the British Museum (Natural History), which is separate from the British Museum proper. S.W.S.

held that evening. It was only out of sheer desperation that I went along at all. A lecture, for God's sake! Well, up there on the stage was this funny looking old man with thick glasses and a big walrus moustache. He was dressed in a tuxedo. It was quite a high class affair, really.

"The old boy began speaking about the question of whether or not the world is round. For about half an hour he gave proof after proof that the earth is not round! That it was flat or square or pear-shaped or something. Then he gave another thirty minutes or so of proofs that the world is, after all, round. I was quite staggered by the whole thing—terribly confused, just didn't know what to make of it all. It wasn't until years later that I learned that the old fellow was Charles Fort. And, of course, by that time he was dead, so I never had a chance to meet him. Queer old duck, though, from all reports."

UFOLOGY

SUBMARINE LIGHTWHEELS

by Robert J. Durant

My previous discussions of the submarine lightwheels stopped short of ascribing any specific cause to the phenomenon. My investigations were prompted by an article in Flying Saucer Review that dismissed the lightwheels as "pseudo-UFO's", i.e. a natural phenomenon resulting from underwater earthquakes. The ufological literature is replete with cases of objects reported entering or rising from waters throughout the world, but the connection between those UFOs and the lightwheel appearances seemed tenuous indeed. A strong case has been made against the "natural" explanation for the lightwheels, but in the absence of evidence linking them directly with UFOs the "pseudo-UFO" designation was not altogether inappropriate. Nevertheless, all the data we have collected seemed to indicate a mechanical source for the lightwheels.

Now it appears that the "missing link" has been found. This is a report of an object rising from the water and having a light configuration that is consistent with what we would expect of a device generating submarine lightwheels. We are indebted for this discovery to Mr. Leonard G. Cramp, the British engineer who authored two classics of ufology, Space, Gravity and the Flying Saucers (T. Werner Laurie, London, 1954) and Pieces for a Jig Saw Puzzle (Somerton Publishing Co., Isle of Wight, 1966). The latter book contains the following report:

"But the strangest case of all occurred in September 1961, 125 kilometres [ca. 80 mi.] eastwards—towards a

place called Leba. This is a pleasant fishing harbour and seaside resort situated on the open sea. There are also coastal lakes in the vicinity. Mr. Czeslaw K. Kawecki, a twenty eight year old textile technician, had just spent his holiday there and this was his last day before boarding the train back to his hometown, Lodz. In order to have a last good look at the sea, he had decided to walk back to the hotel. He took his shoes and socks off and strolled along the sandy dunes that separated Lake Lebsko from the sea, and stopped for a while on the seashore to gaze at the waters lit splendidly by the full moon. Reluctantly noticing the time by his wristwatch (11:35 p.m.) he had turned to move on when 'a sudden noise of rushing waters made me turn towards the sea again and right in front of me, about 300 metres [1000 ft.] from the shore, the surface was rising in one spot. It looked like a round hill—pushed up from beneath. Then splashes of water gushed from the top, and like fountain-jets, fell around the "hole" in the waves. From this opening in the water emerged an object which at first I thought to be an elongated triangle . . .' With a mixture of uneasiness and excitement, Mr. Kawecki said he watched for further developments. Then, 'the object rose a few metres and hovered above the same spot and there was now a whirlpool of water rushing inwards with a loud sucking and gurgling noise. The object itself was black and silent.

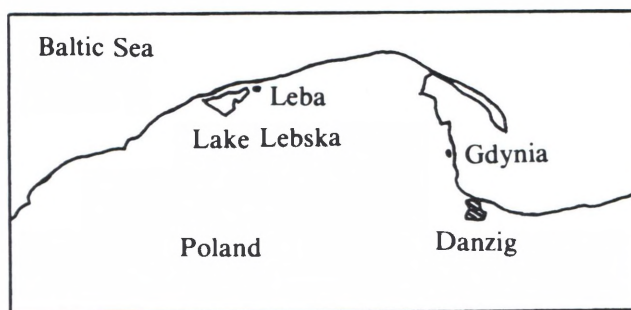
"Suddenly there appeared a belt of steady white light segmented by a number of convex dark streaks. This light made glowing reflections on the lower rim of the object. It also lighted considerably the upper rim and all the rest. Now it became apparent that "the thing" had the shape of a huge funnel with two rims, separated by a

belt of segmented light. About half way up the upper part was a thin strip of something whiter than the rest, of a rather dark body. The slim end of the “funnel” had a rounded top, from which protruded a stump, thinning upwards, and bent in the middle on one side.

“The stillness of this object lasted about a minute, then there appeared the glow of a second light under the object. Also a white one, but much stronger and sharper than that emitted by the segmented belt, and almost immediately the “funnel” tilted slowly northwards revealing the bottom. After remaining in this position for about half a minute without changing, it glided about 50 metres [165 ft.] eastwards, stopped but soon glided back and stopped again. All the time the bottom of the object was visible and consisted of a dark circular perimeter corresponding to the lower (and wider) rim of the “funnel”. Towards the centre was a wide ring of strong white light, with a number of dark, hookshaped streaks upon it. Next was a dark ring with three evenly spaced triangular spikes, which protruded over half the width of the lit, streaky ring. Finally, there was a central disc which looked as if it was made of highly polished silver or crystal. It reflected the light with great brilliance.

“Mr. Kawecki said he was ‘certain that there was some rotating movement involved. I could not make out whether the spikes were moving or the dark streaks gyrated under them. But I had no doubt that one or the other rotated. The light now became bluish and more intense. Then the object moved towards the north and upwards at an angle of about 45°, with a speed not exceeding that of a jet. It became just a diminishing spot of light until it finally disappeared. There was no sound. The entire observation lasted not more than four to five minutes.’ Mr. Kawecki estimated the width of the object at about 5 metres [16.5 ft.], and its height (without antenna) at about 6 metres [about 20 ft.].

“Recovering from his surprise, he then realised that standing only a few paces from him was a young couple—gasping with amazement. They were Mr. and Mrs. J. H. and A. Poniewicz—who were also returning to their hotel. Mr. Kawecki started to talk with them, when they were joined by two men who arrived hurried-



ly from the opposite direction. Both were local and rather scared. They did not want to give their names, and went to inform the coastguards about the happening.”

The significance of this report in the lightwheel puzzle is immediately obvious when one notes the band of segmented lights located in the middle of the object. We presume that this band of light—and in general all lights associated with UFOs—is a secondary effect of the propulsion system of the device, much as the “rocket’s red glare” is merely a side effect of the burning gases that provide the motive force for the rocket. The segmented band of lights, therefore, should be thought of as the secondary effect of some powerful energy discharge rather than simple light generation. We don’t propose that the segmented band on the object is capable of sending rays visible for miles through the ocean. Instead, it would seem that the dark and light segments are the visible indications of alternately strong and weak radiations of another sort. These energy emissions manifest in the water as mechanical vibrations, probably in the sound frequency spectrum.

(Note: It is generally agreed that the light in lightwheels is produced by *Noctiluca miliaris*, a tiny marine organism that lights up when subjected to certain stimuli, and it is the source of the stimulus that is primarily in question. The most common suggestion has been that sound waves are the ‘trigger’ that causes the *Noctiluca* to light up. Mr. Durant’s article presents evidence concerning the source of the sound waves. S.W.S.).

A Pretty Kettle of Fish!

There probably are very few persons who have not ‘worried’ about this phrase at one time or another. Recently we ran across an explanation of its origin and reprint it here as a public service.

The date is a bit uncertain, but circa the 1400’s or earlier. In those days the large religious houses had fish ponds in which they kept and bred fish, while the lords of the manors had all rights to fishing in rivers, millstreams, and the like. “A ‘kettle of fish’ was originally a ‘kiddle for fish’—a large fish trap set in the river, and strictly illegal. If one was found, the entire community was under suspicion, and punishments were widespread, involving innocent and guilty alike. It was a very serious ‘kiddle of fish!’” These traps were little more than large wicker baskets and were legal when used in “runs” of fish, “or to stop some mill race in private waters; but when they were set up at random, in open rivers, they could ruin the fishing of an entire district in one season.”

(Source: Dorothy Hartley, Food in England, London: Macdonald, 1954)

CHAOS AND CONFUSION

CHARLES FORT'S VANISHING CLERGYMAN

by Carl J. Pabst

Occasionally Charles Fort filed a fragment of typed manuscript among his Notes. A very few of these pieces of typescript can be traced to his books.

The accompanying illustration is long enough to be compared with both the original source and the printed version, which appears in Chapter 18 of Lo! (The Books of Charles Fort, p. 697). Unfortunately, we do not have the preceding and following pages of the manuscript, so the beginning and ending paragraphs are fragments. At any rate, only the central paragraph appears in Lo!

"In the Journal of the S. P. R. [Society for Psychical Research], November, 1893, Miss M. W. Scott [Fort later dropped the "W."] writes that, upon the afternoon of the 7th of [May, 1893 (Lo!)] [Fort's typo—"The incident I am about to relate occurred on the 7th of May, 1892." (Miss Scott, Journal, p. 146)], between five and six o'clock, she was walking upon a road, near St. Boswells (Roxburg[h]shire) when she saw ahead of her a tall man, who, dressed in black, looked like a clergyman. [In Lo!, Fort implied that the figure may have been a living human being: "There is no assertion

that this 'figure' looked ghostly,"] [and] there is a little circumstance by which we shall accept that this man was more than casually observed [Fort's revision: "and there is a little circumstance that indicates that the 'figure,' or the living being, was looked at more than casually."]

"Having considerable distance to go, in little time [Fort later deleted the last three words], Miss Scott started to run: [but] it occurred to her that it would not be very [Fort later dropped the adverb] dignified to run past this man [in Lo!, he is a "stranger"]: so she stopped and stood still. She stood, watching him, until the distance between them should increase [Fort later eliminated the redundancy: "so she stood still, to let the distance increase"].

"She saw him [in Lo!, he is "the clerical-looking man"] turn a corner of the road, the upper part of his body remaining visible above the low hedge at the roadside [Fort's revision: "the upper part of his body visible above a low hedge"]—"he was gone in a second" [in Lo!, he disappeared "in an instant"]."

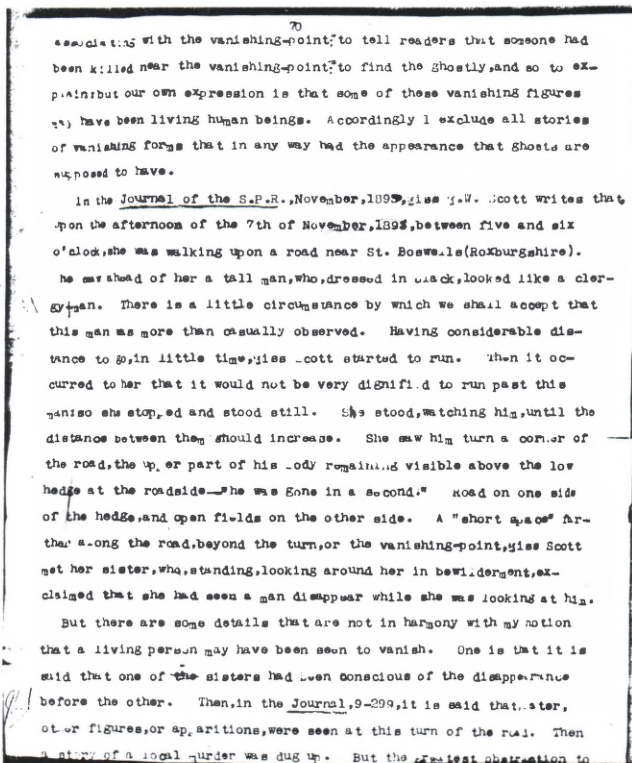
[This version closely approximates Miss Scott's: "Fancying he would think mine an extraordinary proceeding, I finally stopped altogether to permit of his getting on further, while at the same time watching him turn the corner and pass on where his figure was still distinctly defined between the hedges referred to. He was gone in a second—there being no exit anywhere—without my having become aware of it." (Journal, p. 147).]

"Road on one side of the hedge, and open fields on the other side [Fort later deleted this description of the surroundings.] A "short space" farther along the road, beyond the turn, or the vanishing-point [Fort later tightened this: "Not far beyond this vanishing point"], Miss Scott met her sister, who, standing [in Lo!, she "was standing in the road"], looking about her in bewilderment while she was looking at him."

That is the end of the account in Lo! Fort omitted Miss Scott's curious remark (Journal, p. 147): "But here the strangest part of it all is that we found that when the man became invisible to her, he appeared to me between the part of the road where she and I were standing."

But this was not the only sighting of the figure. In July, 1892, Miss Scott and another sister saw it again; and in June, 1893, she saw it once again, this time alone. Other people in the neighborhood also saw it, at various times, and some of these accounts were published in the Journal, October 1900.

This ghost story has a common explanation—a local murder. In her original letter, Miss Scott writes (Journal, p. 148): "No cause can be suggested for the strange proceedings, though legend hath it that a child was murdered close by, but this fact is quite beyond the



Reproduced from a photocopy of the original manuscript page.

recollection of the oldest inhabitant of the neighbourhood.”

So we see that the figure was, after all, only an apparition. But this is not the impression one might get from reading the single paragraph in Lo!

On the back cover of a paperback edition of Lo!, the publisher listed some of the more incredible of Fort's stories. One of these is “the clergyman who stepped behind a hedge—and was never seen again”. We now know that this was not the case.

AGDY?: A couple of theories on the Tunguska event get blasted!

by 'X'

(Ed. Note: “The Tungus meteorite” is the name given to the strange cosmic body that invaded the Earth's atmosphere over Siberia on 30th June 1908. The exact nature of the object that exploded is as yet unknown, and the results were not typical of a meteorite impact. Trees were uprooted over an area of about 6,000 square miles; there was no crater; and in the very centre there were dead trees standing, though without either bark or branches. The following article examines various theories that have been advanced to explain this phenomenon.)

Lately there have been a few clammerings in scientific and Fortean circles about what it was that occurred in Siberia about 7 A.M. on June 30, 1908. One wishes that some diligent scientist would examine all the evidence and come up with a logical explanation, but there are always a few conspicuous ‘authorities’ who cannot wait to announce their discoveries or look up past records on the very event they have “solved.”

The latest theory on the Tunguska event was announced by the Associated Press from Washington, D. C. (source: Kingston Whig-Standard, April 27, 1974, p. 14). Dr. B. B. Sinha, a Canadian physicist from the Institute of Science and Mathematics in Guelph, Ontario, announced to the American Physical Society on April 25th that the Tunguska event was the result of a ‘Jugman Bomb’. This ‘bomb’ was composed of particles known as Jugmons which are anti-matter that come from outside our galaxy and travel at speeds faster than light. When it hit the top of a tree in Siberia, the collision set off an explosion of tremendous magnitude that could account for the destruction.

From the article, it appears that Dr. Sinha was not challenged by any of his colleagues, but the author wrote a letter which was published in the Whig-Standard on May 6, 1974, pointing out a few flaws in this ‘bomb’. First, it is a bit hard to believe that a Jugman bomb travelling faster-than-light would generate radiation “emitting a column of blue light toward the earth”

before itself; and second, the explosion was estimated to have been only equivalent to about 60 kilotons of TNT at tree-top level, but the explosion had to have taken place at a much greater height and was closer to 0.2 to 20 megatons of TNT. This is not to say that the Tunguska event was not caused by a Jugman bomb; there is a possibility that an anti-matter bomb could have caused it, but Dr. Sinha's hypothesis needs considerable self-examination and should have taken into consideration the records of other investigations of the event.

Another popular hypothesis on the Tunguska event was put forth by A. A. Jackson IV and Michael P. Ryan, Jr. (Nature, 245: 88-89, Sept. 14, 1973). Here it is suggested that a “black-hole” entered the earth's atmosphere and shot into the earth at Tunguska producing the destruction there before shooting through the earth's interior and exiting somewhere in the Atlantic Ocean with equally devastating effects which have not been found because the postulated exit hole is covered by the ocean. It has been suggested that a proof of this hypothesis lies in any micro-barograms that may have been taken that day which would indicate the disturbance in the Atlantic, or records of ships at sea witnessing some of the effects, or ships that may have been lost in the disturbance. The author has taken up the pursuit of this evidence and found more than had been hoped for.

In 1908, a number of rumors were heard that there had been a meteor fall near Kansk in the Yenesei region of Siberia; but this was not considered at the time to have been of any importance nor was it readily perceived as being connected with the Fortean events around June 30th to July 2nd.

The brother of a Tungus [tribesman] called Iliia Potapovich was living on the Chambe River when a terrible explosion occurred, uprooting trees for miles along the river's banks, blowing his tent apart, deafening him, and scattering his reindeer. By the time he regained his senses he was only able to collect a few of his reindeer, and later he became ill for a long time.

S. B. Simianoff, a Tungus living at Wanawara (or Vanovara) which was about 40 miles from the site of the blast, stated that he felt as though he had been enveloped in flame to the point at which he thought his shirt would catch fire. He saw a flame not less than two kilometers wide, and then after “the flame disappeared there was an explosion which threw me off my feet a distance of seven feet or more. The glass and frames of the house broke and clods of earth were spit up from the square in front of my hut.” Another Tungus of Wanawara, Kosolapoff, testified that the door of his stove flew across his room and that the glass burst inward after which thunder was heard from the north.

I. I. Illinski, who was at the Lialka Siding at Kansk (about 400 miles distant), stated: “Suddenly I felt what

seemed to be a violent vibration of the air and heard a loud noise. I was terrified. The engine driver of Number 92 was so scared that he stopped the train, fearing it might be derailed, and when he reached us at the siding asked us to examine the train to see whether some of the goods might have exploded." Another Tungus at Kansk was washing wool at the Kan River when he heard a sharp thud followed by underground noises and observed that some of his workers were so shaken by the thud that one actually fell into the river.

At Turokhansk (600 miles distant) an observer reported having heard three or four dull thuds in succession, "like artillery fire". Another observer near the Arctic Circle also reported four dull thuds. The noise extended over long distances and was heard to the south of Lake Baikal in Mongolia (2000 miles distant) probably as the result of the phenomenon known as the anomalous propagation of sound.

An earthquake was recorded at Irkutsk (589 miles distant), Tashkent (1890 miles distant), Tiflis (2727 miles distant), and Jena, Germany (3240 miles distant) which centered in the Yenesei region of Siberia, which was odd, since the area was dormant so far as earthquakes were concerned. The disturbance lasted for an hour-and-a-half on the Irkutsk seismograph.

Between 5 and 6 A.M., six micro-barograph stations in England each recorded "four fairly plain maxima, as if there had been four disturbances or explosions somewhere in the earth's atmosphere during that (20 minute) period." This was announced as a curious atmospheric wave-motion at the Dublin meeting of the British Association for the Advancement of Science by Dr. W. N. (Sir Napier) Shaw, who had invented the self-recording micro-barograph in 1903 with W. H. Hines. Other micro-barograph stations at Djakarta and at Washington, D. C., also recorded these disturbances.

An hour after sunset, the sky over Gothenberg, Sweden was illuminated by "an extraordinarily strong light" which grew in brilliance until a book could be read by it, and lasted until two the next morning.

At 10 P.M. the sky over Aberdeen, Scotland began to grow brighter until it was the same as "daylight". It was noted during the night of June 30th, 1908 that "a strong orange-yellow light became visible in the north and northeast, causing an undue prolongation of twilight lasting to daybreak on July 1st, when the eastern sky was an intense green to yellow-gold hue. The entire northern sky on these two nights, from the horizon to 40°, was of a suffused red hue varying from pink to an intense crimson," and, "At 1 A.M. on July 2nd small print could be read without the aid of artificial light." These phenomena were observed across Britain and on the Continent at Copenhagen, Berlin, Konigsberg, and Vienna, as well as other locations.

The light was noticed by the scientific community, for one staff member at Greenwich Observatory took an ex-

cellent photograph of the Royal Naval College by it, and the astronomer Wolf could not take star photographs due to the light.

At 7 P.M. on June 30, de Veer of Haarlem, The Netherlands, sighted what appeared to be an undulating mass in the northwest sky; it was not a cloud, but the blue of the sky actually appeared to be undulating. There was some speculation if this mass was seen by Wolf on July 2nd, but the 'meteoric dust cloud' would have had to travel at enormous speeds, well beyond the 220 miles per hour Wolf had calculated.

Charles Fort also recorded some unusual phenomena that may in some way be connected with the Tunguska event. In chapter 13 of Book of the Damned (Holt: 187), he notes:

"Symons' Met. Mag., 43-154:

"A correspondent writes that at Braemar, July 2, 1908, when the sky was clear overhead, and the sun was shining, flat pieces of ice fell—from somewhere. The sun was shining, but something was going on somewhere: thunder was heard."

And in part II, chapter 19 of New Lands (Holt: 490), he notes:

"In Country Notes and Queries, 1-138, 417, it is said that in the sky of Gosport, Hampshire, night of Sept. 14, 1908, was seen a light that came as if from an unseen moon . . . Upon this evening of Sept. 14, 1908, David Packer, then in Northfield, Worcestershire, saw a luminous appearance that he supposed was auroral, and photographed it. When the photograph was developed, it was seen that the 'auroral' light came from a large, moon-like object. A reproduction of the photograph is published in the English Mechanic 88-211."

Could this photograph be a reflection of the sun on the same meteoric cloud observed by Wolf? The author has seen this reproduction, which appears to be a second moon or a reflection of the sun off a very high cloud, if not a hoaxed double exposure.

It was not until 1921 that Kulik, Oldenburg, and Wernatsky of the Academy of Sciences in Russia could get support for their preliminary expedition to discover the rumored "meteorite". A second expedition was led by Kulik in 1927 and finally arrived at the site of the destruction; they noted the extent of the damage done almost twenty years before, but it was only upon the return of this expedition that the "meteorite" of June 30, 1908 was announced outside Russia. A third expedition was made in 1929 but did not add much information to the earlier discoveries, nor were any meteoric fragments located.

The collective amnesia of the scientific community about the events of June 30th to July 2nd, 1908, was finally broken by the meteorologist C. J. P. Cave who

remembered that the date of the "meteorite" fall was the same as that of the micro-barographic disturbances previously announced by Shaw. These micro-barograms were studied by F. J. W. Whipple in the Quarterly Journal of the Royal Meteorological Society in 1930 (56: 287-304) and in 1934 (60: 505-513).

The six micro-barographs in Britain were located at South Kensington, the Meteorological Office, Leighton Park, Cambridge, Shepherds Bush, and Petersfield. The distance of these stations from the site of the Tunguska event is about 3550 miles; and the disturbances were recorded about five hours and ten minutes after the earthquake recorded at Irkutsk, Jena, and the other seismographic stations, or the time it would take for sound waves to travel from the site. It seems quite apparent that the shock wave passed over Britain from the north almost in a line from Cambridge to Petersfield, which follows over the globe from the site. Yet, there is no record of any disturbance of a similar nature having occurred elsewhere, such as in the Atlantic as Jackson and Ryan's "black-hole" hypothesis suggests. The micro-barographic stations at Djakarta and Washington, D. C. recorded the Tunguska blast but no other, and it would be expected that both the British and the American micro-barographs would have recorded such an event in the Atlantic. As for the disappearance of any ships, the author only knows of the mysterious disappearance of the Waratah* somewhere along the coast of South Africa in 1909 which seems a doubtful victim of any black-hole exit. If a black-hole crashed into the earth in Siberia, it must still be with us, buried in the earth's interior; or we must reject the black-hole hypothesis altogether.

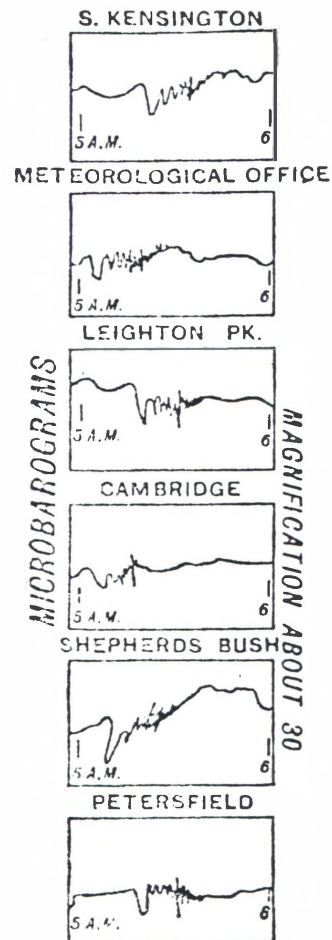
What then could have caused the Tunguska event?

In a recent article by John B. Carlson, (INFO Journal, 12: 18-19), five theories for the Tunguska event's cause were given: (1) a meteor swarm, (2) a comet, (3) a crashed spacecraft, (4) an anti-matter meteor, and (5) a black-hole encounter. The most orthodox of these are the meteor swarm and the comet; but while both would be welcome explanations, the magnitude and the results of the explosion would appear to discredit them and favour the more unorthodox theories.

As for a meteor swarm, this hypothesis was first suggested by Kulik because of the numerous craters that were found: but the difficulty is that no meteoric fragments have yet been found. Some meteoric dust and magnetite globules provide the only evidence for this hypothesis. An example of a meteor swarm is the Chicora meteorite. On the evening of June 24, 1938, a meteoroid weighing approximately 500 tons blazed

across the sky over Pittsburgh, Penna., before exploding at the height of 12 miles. Pittsburgh was rocked by the explosion followed by drawn-out thunder, and it was rumored that a West Winfield powder magazine had exploded. The blast, had it hit Pittsburgh, would have been equivalent to about 10 kilotons of TNT or a small atomic bomb. Yet, despite the elevation of the explosion and the power released, fragments of the Chicora meteorite were recovered. Kulik excavated numerous 'impact craters' which were in permafrost extending to a depth of 30 feet without finding a single fragment at the Tunguska site. It is very doubtful that the whole meteor swarm vaporized or disintegrated in the explosion.

The comet hypothesis was first put forward by Whipple and later taken up by various Russians and by Donald H. Robey, but the explosive force released would seem to rule out something with as little mass or density as a comet is believed to have. The atmospheric effects observed in Europe would seem to favor the dust



Oscillations at several points in England, June 30, 1908—until recently these were unexplained

* Probably not too mysterious either. She was reported to be very top-heavy, and her captain grossly incompetent.

left by a comet's tail, and Kulik believed that if his meteor swarm came from the north it may have been connected with the trail of debris following the Pons-Winnecke comet, if not the comet itself. The author gladly invites any astrophysicist to consider this and either point out that this comet has been seen since or report its location during the Tunguska event.

The crashed spacecraft and anti-matter meteor are both suggestive of a thermonuclear explosion which would have consumed the source of the explosion. This is supported by the similarity of the micro-barograms made when the Russians exploded a 30-megaton bomb near Novaya Zemlya on October 23, 1961. But could even a thermonuclear blast of this magnitude send enough debris into the upper atmosphere to produce the night-illuminations observed throughout Europe? The author is not aware of any nuclear blast having caused any such illuminations even approaching this intensity. Thus, with the black-hole hypothesis being in a somewhat defunct state, there does not appear to be a suitable explanation of the Tunguska event.

The one explanation with which the author has no argument was given by the Tungus people who believed the Tunguska event to be a visitation from their god named "Agdy" (meaning Fire) who punished the wicked and cursed the site of destruction. This does seem to fit the facts; for whole families were wiped out by the blast, and the forest or 'taiga' was destroyed to such an extent that the area has not yet recovered in vegetation or wildlife. But there are probably a number of scientists and Forteanes who would not accept this as a valid or complete explanation, so there is still a lot more research needed to find a convincing cause for the Tunguska event.

It is the opinion of the author that the most interesting phenomenon of the Tunguska event was put into words by J. G. Crowther (Scientific American, 144: 314-317; May, 1930):

"How strange that a cataclysm leaving traces in many parts of the earth should pass almost unrecognized for 20 years, and then require geologists, seismologists, meteorologists, even air-men and anthropologists for its elucidation."

Sources included Frank W. Lane's The Elements Rage (New York: Chilton Books, 1965); Scientific American, May, 1930; and Literary Digest, March 16, 1929, (100: 33-34).

Additional Notes (ex RJD & SWS)

Four of the theories concerning the Tungus catastrophe are covered fairly thoroughly above, though it should be noted that there are additional very technical data that support the conclusions reached. One point which must be made is that E. L. Krinov made

a more detailed inquiry into the nature of the explosion, using the laws of motion of a spherical explosion. This resulted in several truly remarkable conclusions, namely, that the velocity of the "body" during the last 11 miles of flight averaged no more than 2700 miles per hour, and that the body which exploded had a diameter of roughly 70 yards. Furthermore, the energy released by the explosions was extraordinarily high. In Kirov's words: "The concentration of energy released...exceeds the energy concentration of the usual explosives by two orders of magnitude." In fact, according to Krinov (these figures vary), the energy released was equivalent to that of a 20 megaton hydrogen bomb. Eyewitness reports of the appearance and trajectory of the object confirm the relatively low velocity of the object and thus tend to confirm the validity of Krinov's other conclusions. These also indicate that Dr. Sinha's theory of a Jugmon bomb—composed of anti—matter and traveling faster than the speed of light—can be tossed out altogether.

The spaceship theory does require further consideration. First, in addition to evidence supplied by micro-barograms, one of the direct results of the Tungus explosion was residual radiation retained by trees. This was confirmed in 1967 by physicist Vladimir Mekhedov, though Russian radio-chemists are still "examining the ashes of the Tungus trees to obtain more facts. If it turns out that the explosion was set off by the fission of heavy nuclei (as in an atomic bomb), or by the fusion of light nuclei (as in a hydrogen bomb), it will then be almost proved that the event involved the participation of intelligent beings—extra-terrestrial designers who made an interplanetary flying machine. Natural explosions of this kind are inconceivable" (Sputnik, June 1968).

This quotation is from an article by Alexander Kazantsev, who goes on to say:

"Until recently it was considered that the Tungus body had moved in the atmosphere from south or north. That was what eye-witnesses said [see further below]. But the trunks of the fallen trees indicate that the body reached the point of its destruction from the east.

"Soviet scientists Igor Zotkin and Mikhail Tsikulin re-enacted the catastrophe in laboratory conditions. A long fuse with a detonator at the end imitated the movement and explosion of the Tungus body.

"With the fuse in certain positions, the miniature trees fell in a pattern that resembled the pictures taken by aerial photography and land surveys. This gave Zotkin and Tsikulin reason to believe that the body had followed the easterly trajectory.

"In 1966, Felix Siegel [elsewhere spelled Zigel] insisted that neither of the two trajectories could be ignored. Both are accounted for if one assumes [emphasis ours] that the original course of the Tungus body changed twice. This complicated manoeuvre could

have been executed only by a piloted flying machine or by remote control."

One statement which is pounced on by the spaceship enthusiasts is as follows:

"A correspondent for the Irkutsk newspaper, Sibir, reported on July 2, 1908 for example: 'The peasants saw a body shining very brightly with a bluish-white light in the northwest quite high above the horizon. The body was in the form of a pipe, that is, cylindrical.' " (Apparently quoted from *Giant Meteorites* by E. L. Krinov, translated by J. S. Romankiewicz, London, Pergamon Press.)

This is not an eyewitness report, and until all the facts concerning this statement are known—who said what to whom, and when—it is not really evidence; it is hearsay. The eyewitness reports quoted previously do not say anything of a pipe-shaped object. The evidence so far does seem to support the idea of a controlled object rather than a 'natural' one, but unless, or until, Soviet scientists can prove beyond doubt that a nuclear explosion took place, the only possible verdict at the moment is that of "not proven".

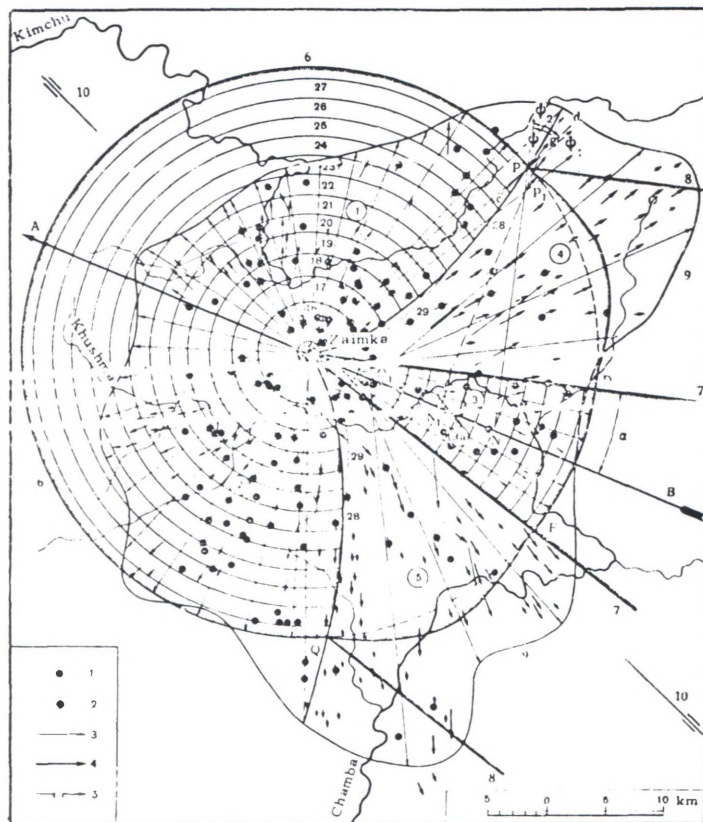
References:

Alexander Kazantsev, "The Tungus Catastrophe", *Sputnik*, June 1968.

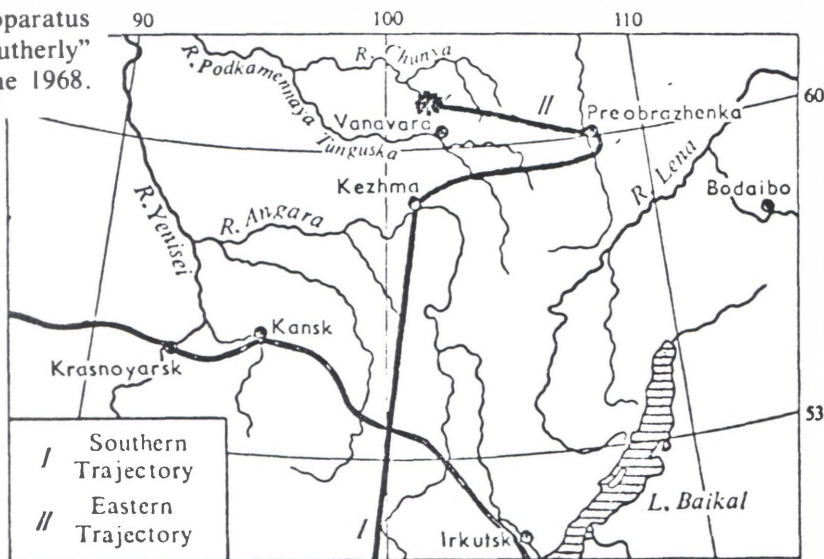
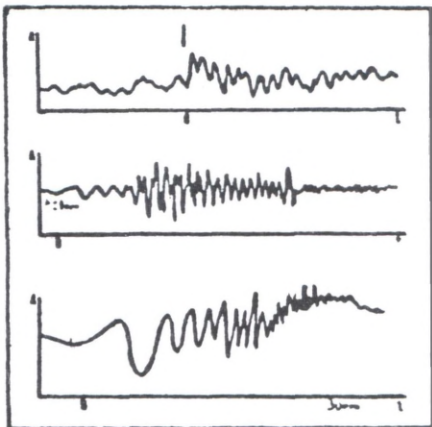
A.V. Zolotov, "Estimation of the Parameters of the Tungus Meteorite Based on New Data", *Soviet Physics*, August 1967. "The Possibility of 'Thermal' Explosion and the Structure of the Tungus Meteorite", *Soviet Physics*, August 1967.

"Micro-barograms of blast from different kinds of explosions: top, ordinary (chemical); middle, nuclear; bottom, the Tungus explosion. The bottom graph bears far greater resemblance to the middle graph than to the top one." *Sputnik* June 1968.

A map tracking the movement of the space visitor. The pattern is more characteristic of a guided apparatus than of a natural celestial body. "I" shows its "southerly" trajectory and "II", its "easterly". *Sputnik*, June 1968.



The pattern of the devastation in the area of the Tungus catastrophe has been minutely studied by the scientists. Here is a key to some of the symbols used on this diagram: 6—limit of blast; 7 ballistic wave front at the instant of the explosion; 8 the same front on encountering blast; 9—limit of area in which trees were felled; 10—trajectory of cosmic body; 11-12—trees which fell in strictly radial direction; 13-14—trees which did not fall strictly radially; 29—line of intersection of blast and ballistic wave at successive instants. From *Sputnik*, June 1968.



THE DERELICTS OF FIVE OCEANS

Among the "Calif. Clippings from (Loren) Coleman" there is an interesting article (dated 19 April 1974) by Michael Hellier of the San Francisco Chronicle Foreign Service concerning the dozen or so abandoned, derelict ships that drift about the oceans and pose a constant hazard to other ships. We are not certain that this is truly fortean, but it does have a bearing on one of our chronic problems: the oft-repeated question, Why don't more people see sea-monsters, or catch one? It seems to do no good to point out that there is an awful lot of ocean, with really very narrow traffic lanes, and that the surfacing of a sea-monster must be random in relation to the passing of ships, so that the chances of seeing one are very small indeed. Mr. Hellier's point is simple, and will perhaps make clearer just how difficult it is to find anything on or in the oceans of this earth. He notes that

"The British plan to ask the United Nations to organize a determined seek-and-destroy campaign against the ghost ships.

"Only a few weeks ago a Greek cargo ship, the Herakos, on a southbound course through the North Sea was rammed by one of the drifting derelicts. Coastguard helicopters from Denmark photographed the tenfoot dent in the Harakos' bow but despite a three-day search by planes and ships from four nations, the phantom ship was never found.

"Last year, the crew and dozens of passengers on the Italian liner Capa Verde cruising in the Caribbean clearly saw the 3000-ton Colombian steamer Duarte with its distinctive tall stern funnel, which disappeared 26 years ago [1947] during a storm off the coast of Venezuela."

Mr. Hellier lists several other ships: the notorious Baychimo which was abandoned near Point Barrow, Alaska, in October 1931, and has been seen sixty times but which has always eluded "capture"; and the Montlucon, a 6000-ton French ore carrier, abandoned in the Indian Ocean in 1951, taken in tow several days later but lost and presumed sunk, and finally spotted again and successfully towed to a wrecker's yard in 1973.

When ships of several thousand tons and considerable elevation above the water can drift for years without detection, why not heaven knows what else that is animate and at the waterline?

But perhaps there is something fortean about these ships that stay afloat despite ice and storms and the initial injury that caused the captain to order abandon ship, that can damage another vessel and then defy widespread search, only to reappear later. The grandest old lady of them all is the freighter Dunmore. It was abandoned leaking and listing heavily to port, its engines stopped, after its cargo shifted in a mid-Atlantic storm. It has been seen a dozen times "drifting eerily

through the northern icefloes but it still eludes the air and sea searches of the International Ice Patrol." The Dunmore was abandoned in 1908.

S.W.S.

CYCLES

It is a matter of common knowledge that animals living "in the wild" exhibit large changes in population with the passage of time. Hunters, farmers bothered by pests, game wardens, and so forth are well aware of the fact that in the absence of large-scale human intervention, the number of animals of various species increases and decreases periodically. In certain instances the increase results in bizarre behaviour that brings the matter to public notice. Such is the case with the Norwegian lemming, a small rodent that exhibits explosive population growth followed by a rather spectacular form of population control. Every 3.86 years the lemmings swarm out of the Norwegian hills in what is in fact a simple attempt to "emigrate" though it appears to be "mass suicide" since the sea lies in their path and they simply drive straight on, oblivious to all obstacles. A few lemmings always remain behind and form the nucleus for the next wave 3.86 years in the future.

The lemmings represent an extreme case. In other animals there is an apparent cyclical change in fertility. Some cases are explained in terms of changing food supply, variations in protective foliage, a prior variation in the number of natural enemies and, recently, to environmental disruptions. These are the standard textbook explanations for the cyclical changes in animal population and, though they may strain the imagination a bit in the extreme instances, and though there is something of a "chicken and egg" circularity to the explanations, they have been generally accepted as logical and consistent with the observed events.

The suggestion that there may be an altogether different cause for population variations will surely take biologists aback, but there is nevertheless a veritable mountain of data that leads us to question the commonly accepted explanation. This is not, as in most fortean phenomena, a case of individual anomalies that bring into question the general rules. Rather, it is quite the opposite: the data that challenge the standard explanation have been gathered by taking the widest possible view of cyclical variations of not only animal populations but also of almost every other conceivable parameter and occurrence. Put another way, by studying one particular species it is possible to make a good argument for its population variation strictly in the conventional terms. But what does one do to account for the congruence of that particular species' cycle with a multitude of other cycles, most of which have nothing to do with ecological considerations?

That there are such cycles is an established fact, thanks to an organization that was founded thirty years ago for the specific purpose of studying cycles. This remarkable institution is called the Foundation for the Study of Cycles (124 South Highland Avenue, Pittsburgh, Pa. 15206). An excellent presentation of the Foundation's accomplishments in discovering cycles in nearly everything from wars (from 600 B.C. to date) to the abundance of the Canadian Lynx (9.6 year cycle from 1735 to date) to solar radiation at Calama, Chile (it coincides precisely with the barometric pressure changes at Calama), can be found in *Cycles* by Edward R. Dewey (Hawthorn Books, New York, 1971).

An adequate discussion of these cycles is well beyond the scope of this short article. Suffice it to say that the discoveries made by the Foundation are really quite extraordinary—and they have proven to be very useful to a variety of businesses as well. This last is the key to the Foundation's longevity and its ability to weather attacks from quarters that object to the very idea of externally modified behaviour. Mr. Dewey seems a bit embarrassed by the fact that he has been associated, despite his vehement protestations, with astrology. The Foundation is most tentative in reaching any conclusions about the causes of the cycles they have discovered, but it appears that some connection does exist between the cycles and the movements of the planets and perhaps other astronomical phenomena. There is, however, absolutely no rigorously defined explanation for any of the cycles.

On the other hand, the existence of the cycles has been demonstrated beyond reasonable doubt. That is to say, the cycles are not random behaviour that only appears to have regularity. Furthermore, all cycles of the same periodicity, i.e., all 3.86 year cycles or all 9.7 year cycles, tend to turn at the same time. Some of the 9.6 year cycles are ascending while others are descending, but the critical direction changes all occur nearly simultaneously. But the real crux of this matter is the staggeringly wide range of periodic phenomena. The list given below is a partial collection of examples from the 9.6 year cycle, as prepared by the Foundation for the Study of Cycles.

Science	Phenomenon	Period in Years
Mammalogy		
	Colored Fox abundance, Canada	9.7
	Coyote abundance, Canada	9.67
	Cross Fox abundance, Canada	9.7
	Fisher abundance, Canada	9.67
	Lynx abundance, Canada	9.6
	Marten abundance, Canada	9.67
	Mink abundance, Canada	9.67
	Muskrat abundance, Canada	9.67
	Rabbit abundance, North America	9.6
	Red Fox abundance, Canada	9.7

Ichthyology		
	Salmon catches, Canada	9.6
	Salmon abundance, England	9.6
Ornithology		
	Goshawk abundance, Canada	9.7
	Grouse abundance, Canada	9.7
	Hawk abundance, Canada	9.6
	Owl abundance, Canada	9.6
	Partridge abundance, Canada & U.S.A.	9.6
Entomology		
	Caterpillar (Tent) abundance, New Jersey	9.67
	Chinch Bug abundance, Illinois	9.6
	Tick abundance, Canada	9.6
Agronomy		
	Wheat acreage, U. S. A.	9.6
Sociology		
	War (international battles)	9.6
Economics		
	Cotton prices, U. S. A.	9.65
	Financial crises, Great Britain	9.6

And in case you are still wondering about the lemmings, their cycle corresponds to the second decimal point with the growth of the North American Limber Pine!

R.J.D.

(We have in our files an undated and unidentified (though probably Life Magazine) article on the work of the Foundation. This includes an interesting but not very comforting chart showing "social upheavals".

"Teeth on rim of chart show intensity (height of teeth) and duration (width of teeth) of cold-dry periods in world climate, which occur approximately every 100 years. Professor [R. H.] Wheeler [of the University of Kansas] says social revolutions occur at fairly regular intervals, coincide with many of these cold-dry periods. Red arrows show how 100-year cycles operate within 510-year cycles, which in turn operate within cycles of 1,020 years. When several cold-dry cycles end together, unrest and cold are extreme. Wheeler says world is approaching such a climax now."

The year 2000 marks the end of both a 100-year cycle and a 510-year cycle. The last time this happened there were insurrections and civil wars in Europe, India, Japan, Islam. But take heart, the 1,020-year cycle isn't included in A.D. 2000 (though the last time it was, it apparently "caused" nothing but the Wars of the Roses: the previous occasion marked the fall of the Roman Empire!). Let's face it: things are pretty rotten now and are likely to get worse before they get better, but the world has survived such climaxes before. S.W.S.)

VII. BIOLOGY

THE JERSEY DEVIL

by Robert E. Jones

Frequently, when I am lecturing, someone in the audience argues that there is so little unexplored territory left in the United States that it is difficult to believe that any large animal can remain undiscovered. As a quick but effective example of the fallacy of this point of view, I like to mention the situation in New Jersey. In this heavily populated state (most densely populated—1970) there exists an area of over 2000 square miles which is virtually uninhabited. What's more, half of that area is virtually unexplored—1/7th of the state!

The area referred to is known as the Pine Barrens and is well described in the January 1974 National Geographic. What is not mentioned in the National Geographic article is one of New Jersey's most famous pieces of fortaena—the Jersey Devil.

For some 200 years there have been some strange goings-on in this part swamp /part scrub pine/ all uninviting area. The goings-on are a conglomerate of 'footprints-screams in the night-unearthly sightings-strange disappearances' sort of thing. A number of hoaxes have been clearly indicated, but so have a number of phenomena worthy of fortean categorization.

There is a legend in the picture: something about a woman cursing her (as yet unborn) 13th child; and you know what that means. One stormy night (naturally) in 1735 the child was born, promptly metamorphized (if that's what demons do) into a gargoyle-like creature, flew up the chimney, and out into the barrens where it has set up its haunt. A considerable number of the sightings have been of this type of creature, that is, demonic...a winged, hooped, unearthly being.

*For those not familiar with this term, "ABSM" is our generic term for what are called "abominable snowmen"—Bigfoot, Sasquatch, and heaven knows how many other names, and the original Yeti of the Himalayan area. Unfortunately, it seems to be impossible to do away with the abominable term.

The legend itself, together with the known hoaxes, the variations in size and capabilities attributed to the creature, and the general treatment by the press can dissolve interest in the phenomena or in any investigation thereof. A more careful examination, however, reveals some interesting aspects in this apparent jungle of fantasies.

Some of the stories of the flying creature (for 'non-flight' types, see below) are related by what we can only call reliable witnesses. These tell of an eagle-like creature with a great wingspan and a shrill cry which has been observed carrying off small animals. This general description fits the elusive Thunderbird, of which reports are still being made in many area in the northeastern United States. The Thunderbird was described by Ivan T. Sanderson as probably a "very giant Condor-type-New World Vultures or Cathartids..."

Of particular interest to those of us who are especially interested in ABSMery* is the occasional report of another version of the Jersey Devil. These reports (I have interviewed two separate witnesses) concern a 6-8 foot, hairy, man-like biped with a forlorn cry or bellow.

Bigfoot-like creatures in New Jersey? It is not impossible. A thousand square miles of virtually unexplored wilderness offers possibilities. In any case, the situation certainly seems to warrant further investigation, and plans are now being made to "go look-see". Meanwhile, data are being gathered (I would appreciate any information on the subject that any member may come up with) and analyzed. We will have much more to say on this subject in forthcoming issues of Pursuit.

MORE ON LOCH NESS

The following article appeared in the Department of Zoology Newsletter, University of Maryland, College Park Campus. It is a bit technical, but we believe it to be one of the best summaries of the ecological considerations of the Loch Ness Monster problem that we have seen, and very much worth bringing to the attention of the readers of Pursuit. The dimensions used in this article are hectares (HA) for area, Kilograms (KG) for weight, and meters (M) for length. A hectare is 2.47 acres, a kilogram is 22 pounds, and a meter is 3.28 feet.

Cartoon Quips

One clergyman to another: "If there is life as we know it on other planets I'm not interested." (Air Force—Space Digest)

Auto mechanic to customer: "Of course I can fix it like new, but if you want it right it'll cost you a little more!" (Saga)

THE POPULATION DENSITY OF MONSTERS IN LOCH NESS.

R. W. Wheldon, S. R. Kerr. Fisheries Research Board of Canada, Marine Ecology Laboratory, Bedford Institute of Oceanography, Dartmouth, Nova Scotia.

It is well known that there are monsters in Loch Ness. Their most characteristic features are that they are rarely seen and never caught, but there are records of sightings extending back many centuries. The fact that they are rarely seen suggests that the population is small. It is known from direct observation that the animals themselves are large and it follows from this that the population must be small. It can be demonstrated quite easily from trophic-dynamic considerations that many large animals could not exist in Loch Ness; but a few could. It has been suggested from time to time that as the monsters are never caught it must therefore follow that they do not exist. This is both irresponsible and illogical.

Many accounts have been written of Loch Ness and its monsters (e.g. Holiday 1968) but very few quantitative observations have been made. We know nothing of their distribution. The population structure of the monster community is also unknown to us. As they are rarely seen and never caught (characteristic features) it is particularly difficult to study their population dynamics. However, it is our purpose to show that it is possible to estimate the number of monsters that can exist in Loch Ness.

The production rate of oceanic organisms is size dependent, but in ecologically stable areas the standing stock is constant at all sizes (Sheldon et al. 1972). It is not unreasonable to assume that similar relationships exist in large bodies of freshwater. If this is so then the standing stock of monsters, taken over logarithmic size intervals, should be similar to that of other organisms (e.g. fish or plankton).

We have not been able to find any information on the standing stocks of Loch Ness, but an estimate of the fish stock can be made if the probable yield is known. A deep oligotrophic lake such as Loch Ness should give an annual yield of rather less than 1 kg ha⁻¹ yr⁻¹. This estimate can be refined by calculations based on Ryder's (1964, 1965) morphoedaphic index (total dissolved solids/mean depth). Again, we could not find data from Loch Ness and have used a value for total dissolved solids for the northern part of Loch Lomond (Darling and Boyd 1969). The estimate of mean depth was taken from Hutchinson (1957). By using this information in Ryder's (1964) equation we calculate that Loch Ness should give an average fish yield of 0.55 kg ha⁻¹ yr⁻¹. The ratio of biomass to production of a fish producing system will range from about 1 to 5, so that the standing stock of fish in Loch Ness should lie in the range from 0.55 to 2.75 kg ha⁻¹. The concentration of monsters should be similar.

The area of Loch Ness is about 5,700 ha. The total mass of monsters in the loch is therefore in the range 3,135 to 15,675 kg. In Fig. 1* we show the number of monsters the loch could support relative to individual size. The minimum average size is taken arbitrarily as 100 kg; anything smaller is not suitably monstrous. The number of monsters in the loch could vary from 1 to 150 depending on the standing stock and average size. The largest number would occur in the situation where high standing stock and small average monster size coincide; however, we believe that such a situation is unlikely. The smallest number must be more than two if the species is to be maintained. Monsters have been seen in the loch for hundreds of years so that there must be a breeding population. The alternative possibility, a single monster of great age, is unlikely, and inter alia is not in keeping with the wide range of size estimates reported in the literature. A viable population could be quite small but probably would not be less than 10.

We will now attempt to show that some of the individual monster weight and population combinations are more probable than others. Much of our reasoning is based on observational evidence.

The trophic position of the monsters is probably that of terminal predators feeding on fish (Holiday 1968). The growth efficiency of many aquatic predators is around 10%. If the monsters are similarly efficient and if a major part of the fish production is used by them, then their production must be of the order of 300 kg yr⁻¹ or more. The average number of deaths per year is determined in a stable population by the ratio of production to mean size. On this basis monsters weighing 100 kg would have to die at a minimum rate of about 3 per year. Larger monsters would die less frequently.

Two lines of evidence support the view that monsters do not die frequently and must therefore be large. Firstly, corpses are never found. Secondly, a relatively large number of juveniles must exist if adult mortality is high, but although small monsters have been seen from time to time they are not common. It seems therefore that Loch Ness must contain a small number of large monsters. These could weigh as much as 1,500 kg with a population of 10-20 individuals. A 1,500-kg monster could be about 8 m long, a size that agrees well with observational data. We are aware that in these calculations we have not taken migratory fish into consideration. These will increase the effective standing stock of the loch and this could result in there being either more or larger monsters than we have shown. However, Sheldon et al. (1972) suggest that standing stocks are not absolutely constant. There is probably some decrease at the higher trophic levels which could result in there being either fewer or smaller monsters than we have

* Not shown here.

shown. These two factors are antipathetic, and although we do not know the relative magnitudes, they will tend to cancel each other and it is not improbable therefore that the population density that we have described for the monsters in Loch Ness is near to the true value. It is not unknown for sightings of monsters, both in Loch Ness and elsewhere, to go unrecorded (Heuvelmans 1968; Holiday 1968). Fear of ridicule is the main reason why many observers do not make their observations known to science. But it is the skeptics who are at fault. Monster observers should be encouraged. The occurrence of monsters is quite reasonable and is by no means fantastic. We would like to thank Kate Kranck for drawing our attention to this problem, because until she mentioned it we were unaware that monsters were a problem.

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ALARM TRANSMISSION BY ODOR AMONG MAMMALS

by Dr. Richard A. Sherman

One of the most widespread examples of folklore is that animals, including humans, can smell each other's fear. Authors frequently write about their hero being able to smell fear in a room; many soldiers claim they can smell their fellow's fear during a battle. Dogs are supposed to be able to sense a person's fear of them by smell. If animals can sense fear by smell then they are probably reacting to a change in body odor. This is not only a legitimate unsubstantiated biological phenomena but is also one of the rare instances when folklore can be examined in the laboratory.

There is no doubt that animals can often tell when another member of their species has been frightened. The problem arises in attempting to show that the information is being passed by a change in odor rather than sounds, muscle tension, physical actions, e.s.p. and etc.

The ideal experiment to show that a chemical left in the air by a frightened animal can be sensed by another animal must separate the two animals physically (to avoid the possibility of information transfer by vision) and temporally (to avoid transfer by sound or e.s.p.). Thus, an animal must be frightened under circumstances which permit any chemicals given off by the frightened animal to be drawn off and stored until it is removed from the test area. After the animal has been removed, a second would be exposed to the chemicals and its reaction recorded. Unfortunately, it is prohibitively expensive to properly store the air surrounding an animal because of the enormous volume which must be quick frozen and kept free of contamination to prevent deterioration of components. Because of this, any secretions the animal gives off when frightened must be taken and preserved before they fully evaporate into the air.

Of the seven experiments which have attempted to show that alarm can be transferred by odor among mammals, four do not meet the strict criteria for showing that the frightened animal could not have communicated with the reacting one in some other way.

Muller-Velten (1966), working with house mice and Valenta (1968), with rats, passed a stream of air from stressed animals to unstressed ones and found that receiver acted "frightened". The basic problem with these two experiments is that the animals were being stressed at the same time others were reacting, so auditory and other vibrations could have traveled through the connecting air hoses.

Nichol (1938) and Mueller-Schwarze (1971) found that when deer are alarmed by dogs they secrete a substance from their tarsal glands which can cause other deer to react. As these experiments were basically done in a single enclosure, the deer could have been reacting to visual, auditory, and other cues as well as olfactory stimuli. Thus, it is not clear what, if any, effect the secretions had. Mueller-Schwarze also observed that fawns rub their bodies against something while urinating when they are afraid (1969) but this may not serve as a way to attract the mother because of the same problems the previous experiments have.

These experiments strongly suggest that there is an alarm chemical transferred by air but do not prove it. Several experiments do seem to meet all of the criteria to demonstrate its existence. Donovan (1967, 1969) observed that if gloves covered with secretions from the anal glands of frightened dogs were later placed near dogs in another area they would "recoil and appear apprehensive".

Sprott (1969) found that mice would leave a grid more quickly than usual if it had just been occupied by a frightened mouse.

I carried out a number of experiments on hamsters (Sherman, 1974) which demonstrated the existence of an alarm chemical by temporally and physically separating the producer and receiver. The test ani-

mals were housed in a different building from the one the experiments were done in to avoid any problems with possible communication not taken into account by the experimental design. The first experiment was carried out in a glass cage mounted on an activity sensor which automatically recorded various types of movements. A hamster was placed into the cage and was removed after two minutes. It was immediately replaced by a second who was given a mild electric shock at the end of two minutes. After a total of four minutes, this hamster was replaced by a third who remained in the cage for two minutes. The point of all this was to be able to compare the reactions of the second animal to being placed in a cage just occupied by a normal animal with the reactions of the third animal to being placed into a cage just occupied by a frightened animal. Control runs in which the second animal was not shocked were carried out to make sure no unknown factors were entering into the experiment. Statistical analysis of the results of 103 experimental runs and 72 control runs showed that there was no difference between the activities of the first two hamsters in the experimental runs and the three hamsters in the control runs. Only the third hamster in the experimental runs, the one who was exposed to the cage just occupied by a frightened hamster, behaved differently from the others (Significance at the 0.001 level). These animals spent most of their time showing typical "alarm" responses such as vigorous attempts to escape and freezing absolutely still.

Other experiments showed that the same response could be elicited by exposing a hamster to the tiny drop of urine always released by an animal seconds after a shock. This urine still caused the same response after being frozen for eight days so there is no doubt that the alarm chemical was in the urine. Urine produced under normal circumstances in the test cage did not produce this effect.

The hamsters probably sense the chemical by smell because they spent significantly more time sniffing at air containing the alarm chemical than at air passed over a normal hamster or room air.

All of this confirms that at least some animals can sense each other's fear by odor. As this is true, there is no logical reason why they should not be able to sense our fear if a similar chemical change takes place in our body odor when we are alarmed. There does not seem to be a practical way to really frighten a person under controlled conditions with his prior agreement so it is not yet possible to carry these experiments out with humans. Suggestions as to how this could be accomplished under humane conditions would be greatly appreciated.

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VIII. ANTHROPOLOGY

THE VINLAND MAP—A HOAX?

by Robert C. Warth

In 1957 a book dealer from New Haven, Connecticut, bought a rare map for \$3,500 from a book dealer in Barcelona, Spain. The map was alleged to have been drawn about 1440 A.D. by a monk in Basel, Switzerland, and therefore to predate Columbus' historic voyage to the western world by half a century. The map was, and is, unique in that, besides the then known continents of Europe, Asia, and Africa, it shows an outline of Greenland (with unusual detail of its ice-covered northern coast) and a large island labeled Vinland representing the North American continent.

The Vinland Map, as it came to be called, was painstakingly examined by a team of international experts and in 1965 was declared by them to be genuine. The price of the map promptly soared to \$250,000 and still later it was reported to be valued at nearly a million dollars. On the eve of Columbus Day, 1965, it was announced that the 11-by-16-inch map had been donated to Yale University by an anonymous benefactor, and the map was hailed as "the most exciting cartographic discovery of the century".

However, not all scholars who examined the map were convinced of its authenticity. Two investigators, Dr. Robert S. Lopez, Sterling Professor of History at Yale, and Dr. Konstantin Reichardt, Leavenworth Professor of Germanic Languages emeritus, said they

uncovered evidence (after the map came into Yale's possession) to support the belief that the map is actually a forgery and could be attributed to Professor Luka Jelic of the seminary at Zadar, Yugoslavia, possibly to support his claim of a Roman Catholic hierarchy in Vinland hundreds of years before Columbus' voyage. Inconsistencies were noted between the map and other historical documents, encouraging further debate. The latin word "Icelanda", for example, was written as "Icelandia".

The authorities at Yale decided in 1972 to turn the map over to Walter C. McCrone Associates of Chicago, experts in small-particle analysis, for examination. McCrone removed twenty-nine nanogram-size (nanogram—one-billionth of a gram) samples from the map, and several more samples from two other documents that had been earlier bound with the map.

Initial ion microprobe tests* showed the map ink to be different from the gallotannate ink used on the other documents, in that it had a high titanium content. In fact, it was "different from all known inks so far tested", according to McCrone.

With most organic inks of that time, on vellum the vehicle of the ink soaked into the vellum and stained an area below the ink pigment and solids nearer the surface. McCrone found with the aid of a polarized microscope that the brownish-yellow line on the Vinland Map was not a stain but was apparently applied as such to give a stained effect and that a thin, shiny black ink had been applied on top of the brownish-yellow line when the map was drawn to simulate an old appearance.

Continuing with micro x-ray defraction, the McCrone team found that the samples contain anatase (a form of titanium dioxide). A high concentration of anatase could conceivably have been used, being ground up and added to a 15th century ink. However, scanning electron micrographs showed the anatase in these ink samples to consist of spheroidal particles as found in 20th century precipitated pigments (ground pigment particles are rougher and irregularly shaped) in an organic matrix.

To determine whether the spheroidal particles were indeed anatase, they were subjected to examination by a transmission-electron microscope and energy-dispersive x-ray analysis. These tests showed conclusively that the particles were anatase and that they were indistinguishable from commercially prepared pigments.

It was not until the 1920's that precipitated anatase pigments were first prepared. Therefore, the McCrone experts concluded that the Vinland Map is a fraud and a 20th century product. Certainly, their evidence seems

*We will not attempt to explain these tests or equipment named; they are all used to examine minute particles.

overwhelming, though this may not end the controversy over the origin of the map. And the true identity of the (at least presumed) forger may never be known. Those connected with the initial sale of the map are dead, and the New Haven dealer, who is reported to have "described details of the acquisition in a letter", is stated to have said that for discretion's sake, the letter must not be opened for 9,000 years. That is being so frightfully discreet that it lends extra credence to the belief that the map is fraudulent.

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VIMANAS

A subject that we have labored long to clear up is the business of the Vimanas, alleged to be flying machines operated by, or at least known to, the ancient inhabitants of the Indian sub-continent. A great many of the early books on ufology cited the Vimanas as described in certain hoary Sanskrit texts as proof of the existence of "saucers" in past ages. The current wave of books dealing specifically with the theme of extraterrestrial visitation in the distant past, and urging the thesis that these visitors established the main cultural traditions of our forebears, have not failed to include the Vimanas as a prominent feature of their argument.

Quite naturally, we wanted to know more about all of this. Unfortunately, we have been less than successful in our attempts to locate either definitive texts or complete translations of those fragments which do mention the Vimanas. What little we have been able to establish to date has been intriguing but seems not to interest Sanskrit scholars sufficiently to goad them into producing the kind of detailed examination that is clearly called for here. In sum, it appears that there are in fact authentic ancient texts, of a quasi-religious nature, that describe flying machines and certain military applications for the craft. The motive power for the machines is said to derive from mercury. But whether these texts are really technical descriptions of craft observed at close hand millenia ago, or merely striking examples of poetic and religious imagery, is a question still unanswered.

How it can be that a matter so fascinating as this fails to excite even a modicum of interest amongst those Sanskrit scholars who might be in a position to nail it all

down once and for all, is beyond us. The only consolation we can find in this sorry state of affairs is the thought that if specialists generally were to begin taking a good hard look at the bizarre and anomalous events in their fields, SITU would be out of business.

It seems that Pursuit is read in India, and that our interest in Vimanas somehow came to the attention of an organization called the International Academy of Sanskrit Research in Mysore, India. The Institute was engaged in preparing a translation of a Sanskrit text dealing with Vimanas, and they sent us an advance brochure which we published in Pursuit (Vol. 3, No. 4). (See also Vol. 5, No. 3, for other comments on Vimanas.)

When the book arrived, we were pleased to note that the publisher mentioned the interest shown in the subject by SITU as one of the reasons that the book had been published. However, certain other comments in the Introduction rather puzzled us, as it seems that the volume is something other than the long-awaited definitive word on Vimanas that we had anticipated.

Mr. G. R. Josyer, Director of the Academy, explained the origin of the manuscript as follows: "There is no written material for the vast volume of Vedas, Upanishads, Shastras, and Puranas, which have come down for over 10,000 years as a patrimony, not only for India, but for mankind in general. They remain embedded in the ether of the sky, to be revealed—like television—to gifted mediums of occult perception." Elsewhere the author of the manuscripts is described as a man "gifted with occult perception", and his manuscript as a "revelation". The composition of the manuscript is described thusly: "On 1-18-1918 he began to dictate 'Vymanika Sastra' to Mr. Venkatachala Sarma, who took down the whole in 23 exercise books up to 2-8-1923."

This book, then, is not a translation of an ancient Sanskrit text, but a manuscript produced between 1918 and 1923. It is apparently one of that class of clairvoyant productions known as "automatic writing". In any event, the occult or psychic source of the book is clearly described and acknowledged by the editor and translator, and as such it falls into one of those fields of knowledge that SITU eschews.

We would not, however, dismiss this book merely on that point. It is the material lodged between the covers that is our primary concern. In this regard we can say that "Vymanika—Shastra or Aeronautics by Maharashi Bharadwaja, propounded by the Venerable Subbaraya Sastry" (the official title of the book) strikes us as being fairly typical of the quality and usefulness of "revealed" literature in general. Rather than comment further on the specifics of the construction and operation of Vimanas, as revealed to and by the Venerable Mr. Sastry, we herewith reproduce a few passages from this elaborately bound volume:

"Next the pratibimba-arka-kiranaakarshana naala, or tube for attracting the reflection of the solar says (sic; rays?):

"According to 'Naalika-nirnaya,' the essence of squash gourd, juice of momardica, 2 parts of the salt of the two wheeled root vegetable, 3 parts of salt of simhamoola, 122nd type of glass, essence of white mica, jelly stone, borax, root of Bengal-madder, thorn at the root of bamboo, lead, mercury, these 15 ingredients are to be mixed in the proportion of 5, 12, 4, 3, 7, 3, 11, 4, 9, 12, 20, 18, 12, 5, 20. The mixture should be filled in the crucible known as samayargika, and heated in the furnace of the same name, and heated to the degree of 315, with the aid of bellows called suraghaa. The resulting liquid should be poured into the mirror-making machine. The resulting product will be a fine bimbaarka-kiranaadarsha, or reflected solar ray attracting mirror. This should be fixed in the central portion of the vimaana and in the 10th kendra, with five circled screws.

"Now we deal with the crest crystal of the vimaana. The crest-crystals are of 103 kinds. They are named in 'Mani-kalpa-pradeepika' as belonging to the 12th class of 32 groups of crystals. Their names are shankara, shaantaka, kharva, bhaaskara, . . . [99 more names]."

And so on.

(R. J. D.)

[The book is available from UBS Publishers' Distributors Pvt. Ltd., 5, Daryaganj, Ansari Road, P. B. No. 1882, Delhi-6, India, for 150 rupies plus postage—about \$21.00. The first half of the book contains the Sanskrit text, the second the English translation. There are also a number of drawings (vertical sections, plans, etc. of various vimanas) by T. K. Ellappa, dated 1923, and all "Prepared under instruction of Pandit Subbaraya Sastry, of Anekal, Bangalore". None is very helpful.

Hans Stefan Santesson has investigated the International Academy of Sanskrit Research and finds that, despite its grandiose title, it can best be described as a "store-front operation" and is a source of embarrassment to reputable scholars. The IASR, however, is convinced of the virtue of its work, as witness the following statement from the Introduction to this book:

"The 20th century may be said to be made historic by 2 achievements, the bringing of Moon-rock from outer space, and the publication of 'Vymanika Sastra' from the unknown past. The Moon-rock is just rock, not a cluster of shining pebbles from Kimberley of South Africa. But the 'Vymanika Sastra' is a cornucopia of precious formulas for the manufacture of Aeroplanes, which should make Lindbergh, Rolls, Zeppelin, De

Havilland, Tupolev, and Harold Gray of Pan American, gape in astonishment, and if duly worked up, herald a new era of Aeroplane manufacture for the benefit of Mankind!"

We do not doubt that Messrs. Lindbergh et al. would "gape in astonishment" though we suspect that their reasons for doing so would not be those suggested by the IASR. S.W.S.]

Robert R. Lyman

It is with deep regret that we must record the passing of Robert R. Lyman on the 2nd of April of this year. He was a true fortune teller and an indefatigable researcher into the folklore and the fortune tellers of north-central Pennsylvania, vide his two books Forbidden Land and Amazing Indeed. His presence will be missed.

SITU PROJECTS

The major effort planned for late this summer or early fall is another 'expedition' to western Pennsylvania in connection with the many reports of ABSM-type creatures in that area. Obviously, we cannot take everyone who might like to go on this field trip, but everyone can be of help in this undertaking. The Society is much better off financially than it has been in the past, but we still need funds specifically for this project, both for general expenses and for special equipment that will increase our chances for success. Any amount you can spare—and keep in mind that all such contributions are tax deductible—will be of help to us; and all those who do contribute can consider themselves as being in part responsible for any success we do achieve.

Also, and we are sorry to have to keep harping on this, but can't anyone come up with that (censored) photograph of a thunderbird?? (See our April 1972 issue for the story on this one.)

Carl Pabst is still engaged in the laborious task of transcribing all of Charles Fort's Notes (see his article in this issue) and we feel strongly that these, when completed, should be microfilmed, along with our fortune teller files. This also requires special funds—quite apart from the fact that we wish we could provide Mr. Pabst with a reward more substantial than a pat on the back. SITU pays for supplies, but the labor (which is not tax deductible!) has been provided gratis. The literary-minded may wish to support this project rather than a field trip.

ADMINISTRATIVE CHANGES

Allen V. Noe, formerly "Director of Operations", has been forced to resign from both the Executive Board and the Governing Board for reasons of health. We are grateful for the help he has given the Society during his term of office.

Robert C. Warth remains Administrative Director and, because the current Board works as a team in planning projects and carrying them out, we do not, for the moment at least, contemplate electing another "Director of Operations". The headquarters staff includes Mrs. Sanderson and Mrs. Albena E. Zwerver, the latter now Secretary of the Executive Board (all members of the Governing Board are members of the Executive Board, though only the officers are listed).

ADVICE TO INVESTIGATORS

We have been much distressed to learn that at least one of our members is apparently unaware of the basic 'rules' for investigations and therefore must point out several facts:

1) It is simple courtesy to write or telephone a "witness"—even if there has been considerable publicity given him—to ask if he is willing to see you and when it will be convenient for him to do so.

2) If a witness asks for anonymity, this must be granted, and in no circumstances should the name be given to anyone. Reports sent to our headquarters should indicate whether the witness, if he is willing to have his name on file here, wishes to remain anonymous or not, so that we may take appropriate action.

Bear in mind that discourteous behaviour, or worse, reflects on both the individual investigator and on SITU and all its members. The old adage about one rotten apple is unfortunately true.

DEPARTMENT OF LOOSE ENDS

Pennsylvania ABSMery

Dr. George A. Agogino reports that the samples sent him, thought by the finder to be possible blood samples, were not and "appeared to be saliva and apple juice. Possibly from a bear or another animal who had been stealing apples and slobbered on the road. No other explanation seems valid."

And a telephone report from Fred Ulmer, now retired from his post at the Philadelphia Zoo, is that none of the hair samples was unidentifiable. So far as the samples of feces submitted to him, one suggested the stool of a skunk or raccoon. Others were inconclusive. The full report will appear in our October issue.

Expanding Light Bulbs

Our member #1071 writes: "I have never seen this phenomenon before but I have seen something somewhat similar, upon which I can build a hypothesis,

though it is hard to believe that spherical deformation could be perfect. While working on a stage crew in high school I learned to my dismay that if you put a base-down floodlight in a base-up or horizontal (socket) the glass would 'blister' (deform locally) and then burst.

Now then, given this, and given that (a) glass is a liquid and flows (old New England windows), (b) light bulb glass is quite thin, and (c) the bulb in question was stored in an attic (how long?), then it is possible that when used in the basement the glass had 'flowed' while stored in the attic (leading to the concave depression at the top, since it was probably stored base down in the lamp). When put into use (presumably base up in a ceiling fixture) the neck heated up, and the bulb, thin from 'flowing', expanded due to normal residual gases and/or gases (air) leaking in through the base during storage. The other bulb may well have burned out by coincidence."

Anyone else have any suggestions? We have learned nothing further from the original source.

BOOK REVIEWS

Sabina W. Sanderson

The following are available in paperback editions:

J. Allen Hynek. The UFO Experience. Ballantine Books, \$1.50.

John Fuller. Interrupted Journey. Berkley Medallion, \$1.25.

John Napier. Bigfoot. New York: Berkeley Medallion. \$1.25.

John G. Fuller. Incident at Exeter. New York: Berkeley Medallion. \$1.25.

Also currently available is the second volume of the series being compiled and published by William R. Corliss. This is entitled Strange Artifacts: A Sourcebook on Ancient Man (Vol. M-1) and should be ordered directly from the author: Glen Arm, Maryland 21057. The price is \$6.95 (Maryland residents add state tax). The format is the same as that of the first volume, reviewed in our April 1974 issue.

For those interested in Nikola Tesla: Nick Basura, 3414 Alice Street, Los Angeles, California 90065, has for sale reprints of seven articles on Tesla—\$5.00 the set.

Edward J. Kunkel. Pharaoh's Pump. A third edition of this little book is now available from Mr. Kunkel, 295 West Market St., Warren, Ohio 44481, for \$2.95 (including postage). See Pursuit, vol. 6, nos. 2 & 3, for our comments on this intriguing study. A further opinion, from Philip Kissam, writing in The Geographical Review, Vol. LVI, No. 1, January, 1966, is as follows:

"The problem of how the Egyptian pyramids were built has fascinated scholars and scientists for many years. A reasonable explanation has recently been advanced by Edward J. Kunkel,... he demonstrates that both the pyramid itself and the internal and underground workings were designed and built as hydraulic structures. Based on this convincing conclusion he develops, for the first time, a plausible explanation of how the pyramids and the temples in the area could have been constructed and explains the purpose of, and the reasons for, the design of most of the features of the Great Pyramid...."

Mr. Kissam is the author of four textbooks on civil engineering.

Josef F. Blumrich. The Spaceships of Ezekiel. New York: Bantam Books. 1974. \$1.95 (paperback). (Originally published as Da tat sich der Himmel auf, Econ Verlag GmbH, 1974.)

Josef Blumrich is chief of the systems layout branch of NASA, was co-builder of the Saturn V rocket, received the NASA "Exceptional Service Medal" in 1972, and has spent "the greater part of his professional life with design and analysis of aircraft and rockets". Ergo, his comments on spacecraft design must be respected. He states

that he began this exercise simply in order to disprove theories expounded by Erich von Däniken in Chariots of the Gods:

“I began to read von Däniken with the condescending attitude of someone who knows beforehand that the conclusions presented can by no means be correct. However, von Daniken quotes, among other things, passages from the Book of Ezekiel, whose vague technical information he thinks is a description of a spacecraft. With that he touches on a field very familiar to me,...So I decided to use the statements of the prophet to refute von Däniken and to prove the fallacy of his allegations.

“Seldom has a total defeat been so rewarding, so fascinating, and so delightful!”

The major portion of the book is devoted to a detailed analysis of Ezekiel's descriptions and statements concerning the “spacecraft” and comparisons of these with either current or possible (with improved technology) spacecraft of our own. Mr. Blumrich reaches the conclusion that Ezekiel was a very astute and accurate observer and recorder. Some of this is quite technical, though not so much so as a special Appendix on the subject, and many readers may find parts of it rather heavy going. However, it is possible to skim some of the “worst” bits. I do not have the knowledge to fault this part of the book, if faults there are. The spaceship idea here is hardly new, but Blumrich's credentials do provide considerable added weight to this interpretation.

In the final section of the book the author presents speculations on what the “mission” was and why they chose Ezekiel to talk to. The ideas expressed are worth considering, but there does seem to be a certain personal bias (one suspects that Mr. Blumrich is Jewish) and the entire section is less satisfactory than the technical report. The chapters on this are few and short, and refreshingly devoid of the often exaggerated notions of angelic types sent to save us with platitudes.

There is a very short bibliography, primarily technical, and an index.

Sheila Ostrander & Lynn Schroeder. Handbook of Psi Discoveries. New York: G. P. Putnam's Sons. 1974.\$8.95.

This is a valuable book for those who wish to experiment on their own with various paranormal phenomena. Apart from a general introduction, it is devoted to explaining “how to” perform experiments ranging from such simple items as influencing the growth of plants, requiring virtually no equipment, to such complicated endeavours as Kirlian photography. The instructions are explicit and include information on sources of equipment as well as detailed lists where needed. Some “games” are also described, devised to detect and/or improve, for example, telepathic ability.

The authors make it clear that this book “is in no sense intended as a survey of all the contemporary work going on East and West” and also note that some “very major topics [are] omitted for lack of space...”, but the book still serves as a very useful primer. Section Six is particularly valuable as a reference tool; it includes an extended bibliography, some very technical material, and a lengthy “Where to Find It” department: e.g. “Where to Find Slavic Publications”, “Conferences”, “The Lozanov System—Where to Find Information”, “...Astrobiology”, “Educational Opportunities”, as well as books, journals, tapes, supplies, etc. There is also an index.

The writing style in some of the non-technical sections may be somewhat “familiar” for some tastes but is probably deliberate in that they hope, and say so quite frankly, to reach as wide an audience of potential investigators as possible. Apart from a perfectly natural desire to make money, they note that “Inventions, technological advances, are often not produced by the experts in a field. ...” and “Alexander Graham Bell was a speech teacher and the automatic dialing system for the phone was invented by an undertaker.”

Allen Spraggett. The Case for Immortality: The Story of Life After Death. New York: New American Library. 1974. \$6.95.

This really is outside SITU's field of interests, but it is true that the dividing line becomes less distinct as time passes and more and more so-called psychic events prove to be, at least probably, physical in nature. Mr. Spraggett's book is a slim one and though it covers various types of evidence for survival of the soul, or whatever one wishes to call it, after the death of the physical body, it does so rather superficially. I can hardly agree with the publisher that it is “a truly major contribution to the literature...” but for those who have not read anything on this subject, it provides a rather good introduction. There are a few references in footnotes but no bibliography (this would have made it much more useful), and there is an index; hopefully, in the final published book there is some explanation of why certain index entries are preceded by an asterisk.

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