

### World Patterns

Presumably there are cluster areas, in which unexplained disappearances are reported more frequently. Ivan T. Sanderson (1971) described these areas. A modification of his original map is shown in Figure 40. Five elliptical-shaped areas in the northern hemisphere, separated by about seventy-two degrees longitude, can be seen. Within these areas, often termed "anomalies," unusual events are more probable. A similar series of five areas shifted about twenty to twenty-three degrees east of the northern counterparts can be seen in the southern hemisphere. Our data do not show remarkable coincidence with these areas; however very little of the present data files are derived from shipping and related sources.

chapter 11

## Unusual Animals and Animal Behaviour

One of the largest categories of infrequent and unusual events is concerned with the sudden increase in observations of large unknown animals. A total of 616 cases were classified in this division. Further subcategories were formed that included: 1) unknown humanoids or primates, 2) feline-like creatures, 3) unknown flying creatures, 4) sea serpents/lake creatures, 5) unclassified animals, 6) non-habitat animals, 7) sudden clusterings of large groups of animals, 8) peculiar or abnormal animal behaviour, 9) unusual animal deaths, 10) known mutations (verified), and 11) molds and related "globs." The spatial distribution of this category in the United States is shown in Figure 41.

### Unknown Humanoids or Primates

A variety of primates exist over the surface of the earth. Most non-human primates live primarily in rain forests or in tropical areas. These have been classified and are established branches of the zoological tree. However, there are other reports of primate-like creatures which exist throughout the world. Such creatures have not been classified, nor have they been systematically studied. They exist as transient phenomena.

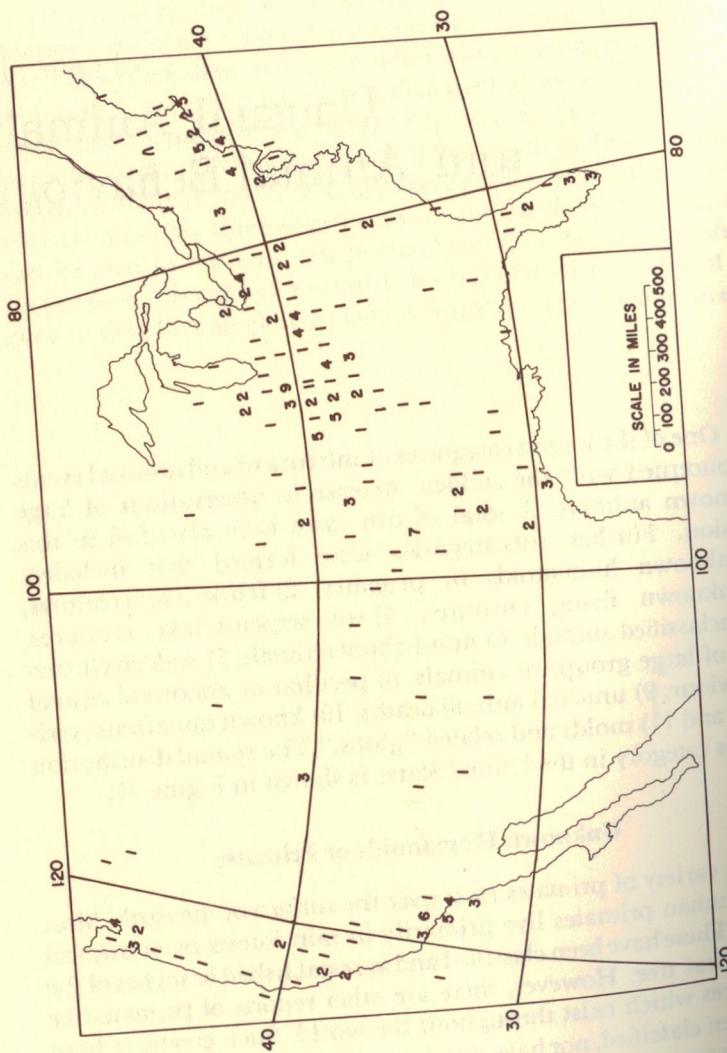


FIGURE 41. Spatial distribution for all "unusual animal" subcategories in the United States.

Such humanoids have received many popular names: Yeti, Abominable Snow Man, Sasquatch, Big Foot, and Hairy Giants, to name a few of the many labels. The global distribution of these humanoids has been investigated extensively by I.T. Sanderson (1968) and the Society for the Investigation of the Unexplained (S.I.T.U.). Some authors, like John Keel (1970), differentiate between types of humanoids, depending upon the type of correlative evidence, for example, fecal droppings, hair, etc. associated with their general appearance.

In general the humanoids reported in the United States sector are taller and larger than the observer reporting them. Typically the large humanoids are observed to be covered with dense black, brown or sometimes white-gray hair. There are several pictures of these creatures on record as well as a small film segment. When observers have not been exposed previously to stock labels for these unusual phenomena, terms such as "chimpanzee-like" or "ape-like" are used.

One hundred one *episodes* of reports of unusual humanoids were classified in the present subcategory. Their distribution in the United States sector is shown in Figure 42. Few of the phenomena displayed behaviours that might place them in other categories. For example, reports of the humanoids disappearing in front of the observer were rare. Similarly, association of these events with classic haunt cases was infrequent, although they have been reported. Usually the humanoid quickly left the observer's visual field by apparent bipedal motion or the observer departed from the area in a similar manner. Putrid smells and "high pitched screams" have also been associated with humanoid observations, but a statistical statement is not available. Humanoid sightings that were obviously involved with UFO landings are not included in this division. Sample cases involved:

1. — March, 1851/Green County, Arkansas/wild man seen; gigantic; known there even in Indian legends.
2. 03 July, 1884/near Yale, British Columbia, Canada/primate-like creature captured.
3. —, 1924/Flagstaff, Arizona/seven foot, 400 pound "man-thing" seen; repeated observations over short period.

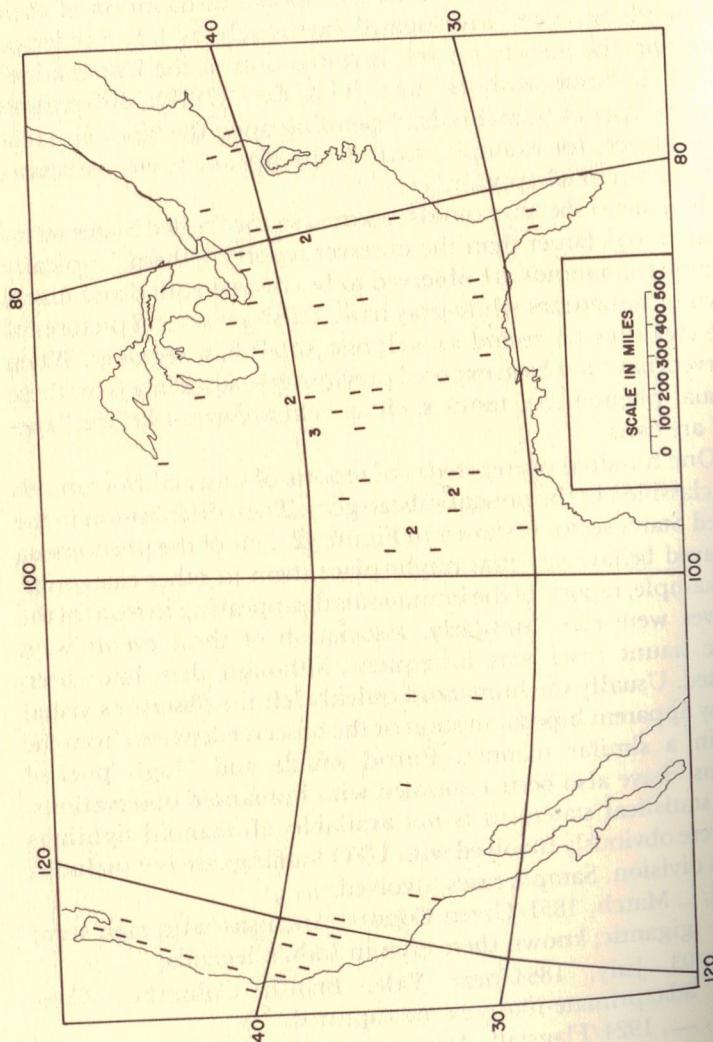


FIGURE 42. Spatial distribution for episodes of unidentified primate reports.

4. 12 September, 1952/Flatwoods, West Virginia/ten foot tall creature; foul smell; possible UFO associated; reported in local Indian legends.
5. —, 1954/Osel Island, Russia/huge human-like thing seen; ten persons killed in area.
6. —, 1956/Wadesboro, North Carolina/large biped seen; reported to be about 650 pounds.
7. — July, 1958/Greggton, Texas werewolf-like creature seen.
8. — February, 1962/Fort Bragg, California/another "Big-foot" sighting; reported in local Indian legends.
9. 26 February, 1971/Lawton, Oklahoma/gorilla-like creature seen; possibly wearing pants.
10. — July, 1972/Louisiana, Missouri/seven foot tall black hairy thing spotted; many reports, stench smell associated.
11. — July, 1972/Cairo, Illinois/ten foot tall monster reported.
12. — August, 1973/Westmoreland County, Pennsylvania/peak of nine foot humanoid reports; stench associated; about fifty encounters; reported in local Indian legends.

### Feline-like Creatures

Ninety-five instances of feline-like creatures have been recorded in our files. These phenomena are described as large cat-like animals, typically yellowish or black. The actual size has been compared to a large puma or lioness. In a few cases alley-cat stripes have been observed superimposed upon a light color.

Those reports which involve details collected at close proximity to the phenomenon indicate that the "animal" does not look like a regular lion or puma. Instead, descriptions of a "very long tail" and a "dog-like" or "pig-like" face are more frequent. During a given episode, which may last about one month in a given spatial locus, increased reports of missing livestock, mysteriously killed cattle, and missing pets are common. Sounds of screeching or roaring may also be reported. Then, as suddenly as the phenomenon began, it stops.

Conspicuously, there are areas in Indiana-Illinois and the northeastern states from which repeatable bursts of reports have

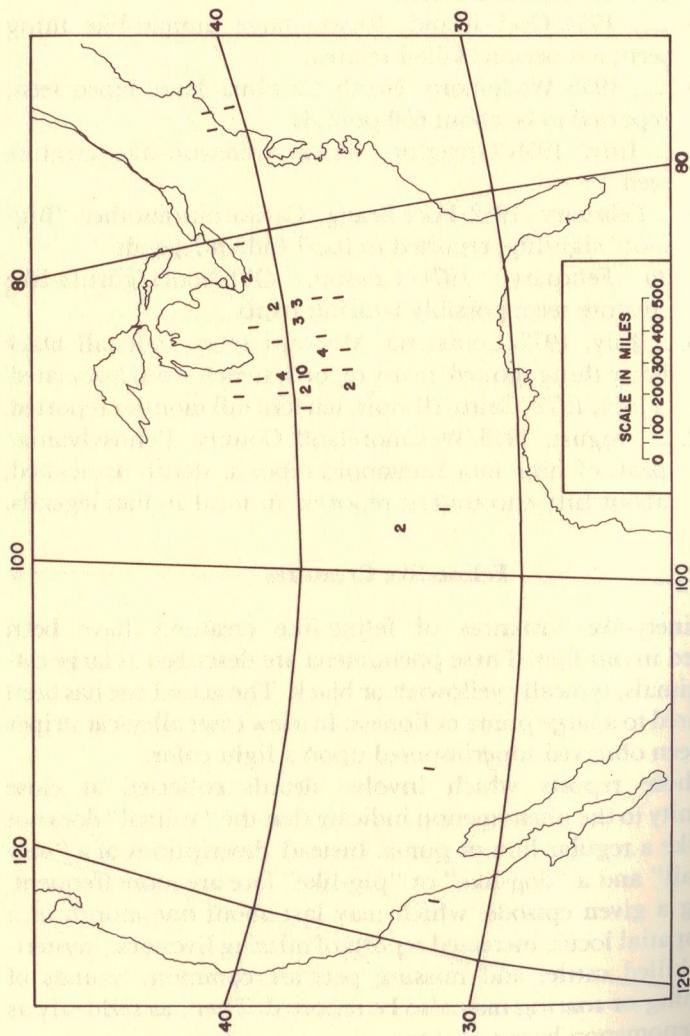


FIGURE 43. Spatial distribution for episodes of feline-like creature reports.

originated for almost a century. These areas are depicted in Figure 43. There have been a number of intense reportings of transients during this period when many people "saw" cat-like animals. Cluster years include: 1877, 1917, 1948, 1958, 1963, and 1970. Cat reports have occurred in other years and involved other states as well. Sample cases included:

1. – January, 1859/Moccasin Creek, Virginia/black dog-like creature chases man.
2. – July, 1893/Trosna (Moscow), Russia/animal with long tail, blunt muzzle, rounded snout seen; women attacked.
3. – July, 1917/around Decatur, Illinois/famous "Nellie the Lion" sequence; unknown animal.
4. – August, 1948/around Richmond, Middleboro, Indiana/cat-like object seen; black color; yellow color; animals killed; cat tracks.
5. – January, 1951/Noblesville, Indiana/giant panther seen.
6. – May, 1959/Lorain County, Ohio/cat-like animal seen; very long tail; dogs and sheep eaten.
7. – March, 1964/Dunbar, Arago, Nebraska/large cat seen; screams heard; dark color.
8. – September, 1971/Wilton, Connecticut/horses and cows eaten; shrieks heard; cat seen.

Since precise information on the time series of observations may be of importance, those years in which at least one report in the Ohio-Indiana-Illinois area occurred should be mentioned. Observation years include: 1877, 1917, 1947, 1948, 1949, 1950, 1951, 1954, 1955, 1958, 1959, 1962, 1963, 1965, 1966, 1967, 1968, 1970. During the years 1956, 1960, 1964, and 1969, cat-like reports originated from Nebraska and Oklahoma. In 1971, a large cluster of cat reports originated from the Connecticut-Vermont regions. The last reports of cat-like phenomena in this sector had occurred in 1909-1910 and 1931, but the number was very small.

#### Unknown Flying Creatures

Forty-five episodes of unknown flying creatures have been collected. These reports can be divided into two easily discrimin-

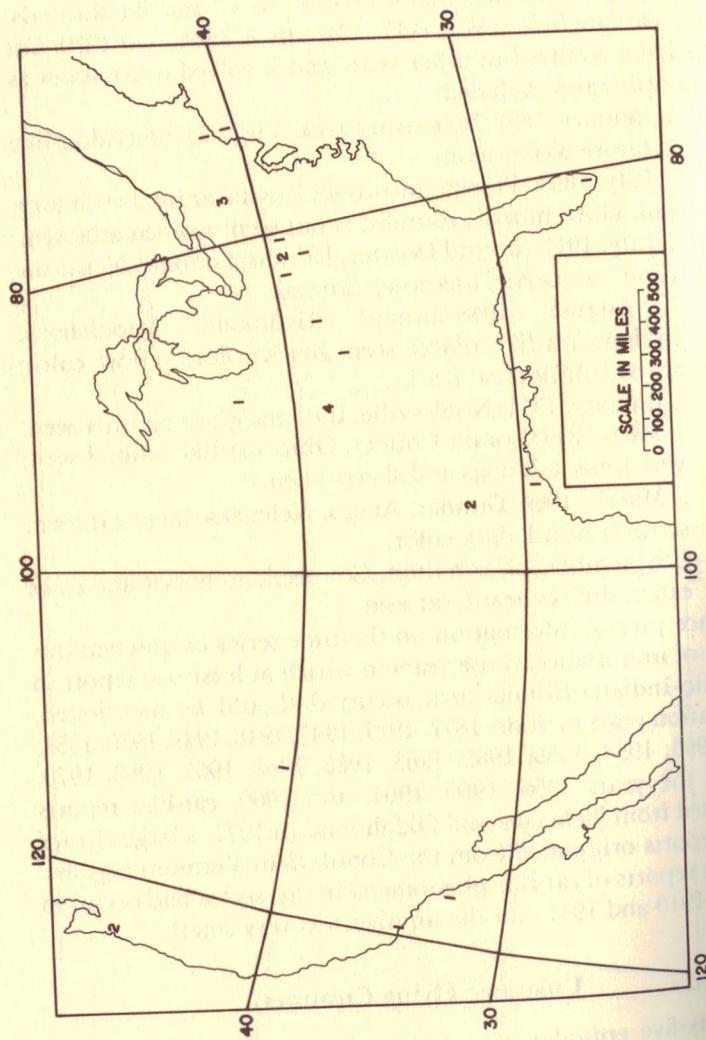


FIGURE 44. Spatial distribution for episodes of "unknown flying creature" reports.

able patterns. The first pattern involves reports of large birds, with wing spans approximating a small airplane. Typically, the description is remarkably similar to extinct flying reptiles of the Jurassic period. The second type of report pattern is significantly different from the first. According to these reports, the unknown flying creature is described as "a winged-man" or "a giant bat." Such observations "of men flying in the air with wings," start around 1880. People who have been in close proximity to these phenomena report that the creatures look like large humanoids, except the arms have been replaced with large bat-like wings. However, it is important to point out that although reports of flying creatures (Figure 44) during a given episode are similar in general, there is great variance in the detail. Sample cases involved:

1. 28 July, 1880/Madisonville, Kentucky/man seen flying with wings.
2. —, 1910/Normandy, France/enormous bird seen diving into the sea.
3. —, 1927/Sausalito, California/enormous bird seen; torpedo-like head.
4. —, 1948/Santa Barbara, California/giant bird seen; head like torpedo.
5. — April, 1948/Alton, Freeport, Caledonia, Illinois/giant, monster birds seen by many.
6. — May, 1961/over Hudson River, New York/giant bird, "prehistoric in shape" approaches airplane.
7. 16 November, 1963/Kent, England/"man" with huge bat wings and "no head" seen flying.
8. — November, 1966/Point Pleasant area, West Virginia/large winged man seen; monster reported flying in the air by many.

#### Sea Serpents/Lake Creatures

The legends of large creatures appearing in oceans, along coast lines, in presumably land-locked lakes, or in major rivers have been numerous throughout the centuries. According to myths, such creatures appear only when some other catastrophic

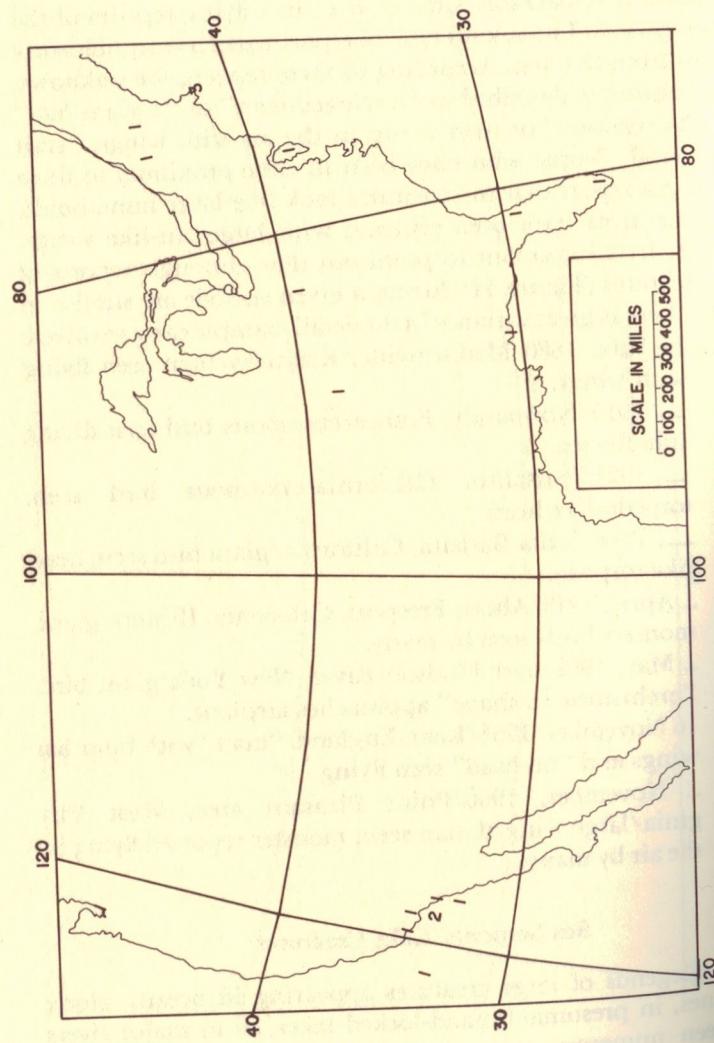


FIGURE 45. Spatial distribution for episodes of "sea serpent/lake creature" reports.

event in politics or in the environment is about to occur. Stated in another fashion, these phenomena are manifested infrequently and are not commonplace.

Ninety-three cases of large unknown swimming creatures have been recorded. Spatial distribution of these phenomena in the United States sector is shown in Figure 45. Descriptions of the phenomena vary, but in general these objects are large, reptile-like, and display very long, thin necks. Speculations on length of these creatures range from twenty feet to 100 feet. Many of the larger phenomena are similar to modern pictorial descriptions of the ancient plesiosaurs, which were among the largest of the seagoing reptiles and dominated the late Mesozoic seas. The creatures which are described as "giant turtle-like" are also similar to the giant sea turtles of the Mesozoic period. A third major subclass of descriptions involves snake-like objects, usually around twenty feet long and estimated at 800 pounds. A number of less frequent report patterns have been classified. Among these are ostensible animals similar to the ancient Tylosaurus, another late Mesozoic creature. This reptile was alligator-like and lived in the pre-historic seas of Kansas. Occasionally, lizard-like creatures have been reported, the most recent report originating from Sicily in 1968. Sample cases included:

1. - August, 1848/Cape of Good Hope, Africa/sixty foot long creature seen; dark brown color.
2. - January, 1852/in Pacific/110 foot long sea serpent reportedly killed by crew of *Monongahela*.
3. 19 August, 1880/Deschene Lake, Ontario, Canada/boat supposedly hits sea serpent; "hair-like substances found."
4. - October, 1883/off coast of Panama/creature with horse-like head spotted; four fins noted from body.
5. - December, 1896/St. Augustine, Florida/huge unknown creature seen.
6. - December, 1905/off Brazil, South America/sixty foot reptile like creature seen; long neck almost sixty feet long; turtle-like eyes.

7. 22 May, 1917/off coast Iceland/black reptile-like creature with sixty foot long neck seen.
8. 10 June, 1928/Salvador, Brazil/reptile-like creature seen; ninety feet long.
9. November, 1947/Vancouver, British Columbia, Canada/sea serpent spotted; "weird feelings" reported by people before creature appeared.
10. \_\_\_, 1953/Bainbridge, Ohio/eight foot long sea creature known in lake; historical accounts.
11. \_\_\_, 1955/Loch Ness, Scotland/"monster" picked up on echograph.
12. \_\_\_, January, 1960/Bordeaux, France/sea monster reported.
13. 19 August, 1963/off coast of New Jersey/sea serpent report; forty feet long.
14. \_\_\_, 1967/Yakutia, Siberia/large creature seen in lake.
15. 15 April, 1969/Kodiak, Alaska/outline of 200 foot long, four-legged creature detected on echogram.

The years 1886 and 1955 contained the greatest number of reports.

### Unclassified Animals

Forty-two cases involved reports of: 1) unknown animals that did not meet the criteria of previous subcategories, or 2) fresh tracks presumably made by some large, unknown organism. About half of these cases involved reports of animal combinations, the most common being "something like a cross between a bear and a dog." It is interesting that similar creatures have been reported during intense poltergeist episodes over the centuries. Fresh unknown animal tracks compose 20 percent of the cases in this subcategory; typically the tracks begin in one area only to end suddenly in another. Sample cases involved:

1. 07 February, 1855/Devonshire, England/hoof-shaped prints eight inches apart found; famous case.
2. \_\_\_, October, 1878/London, England/bear-dog-like combination seen by many.

3. 15 September, 1883/Adelaide, Australia/headless trunk of pig-like animal found.
4. \_\_\_, August, 1886/along Connecticut and Hudson Rivers/horned monsters reported by many.
5. \_\_\_, 1899/Patagonia, Argentina, South America/"blood-beast" seen; like extinct giant ground sloth.
6. \_\_\_, 1905/Hoe Beham, England/dog seen to "turn into donkey."
7. \_\_\_, February, 1921/Orange River, South Africa/huge "black thing" seen devouring cattle.
8. \_\_\_, October, 1925/Edale, Derbyshire, England/large "black thing" seen; sheep with heads torn off found.
9. \_\_\_, 1949 to 1951/Calumet, Oklahoma/reports of animal that was "cross between a deer and wolf."

### Non-Habitat Animals

From time to time known animals are reported in areas that are thousands of miles from and atypical of their normal habitat; these cases are called "non-habitat" events. A total of thirty-seven such events have been tallied to date. In many respects, these events do not have the emotional impact of other subcategories in this chapter. Such animals are known, but spatially displaced. Nonetheless these animals do appear in unusual places and may represent events that are analogous to the human appearance/disappearance subcategory of the previous chapter. Sample cases included:

1. \_\_\_, 1856/Overnorton, England/crocodiles seen.
2. \_\_\_, February, 1892/Janesville, Wisconsin/alligator found frozen in river.
3. \_\_\_, March, 1905/Kent area, England/jackal killed; sheep found dead; no evidence of zoo escapes.
4. \_\_\_, May, 1920/London, England/poisonous Egyptian adders found.
5. 12 November, 1931/Lincoln, Nebraska/African lemur found "in convulsions" in yard, later dies.

6. —, 1953/Springfield, Missouri/twelve cobras and one boa found in small area.
7. 03 September, 1961/Muskegon, Michigan/eight-inch fish found in small puddle.
8. 16 June, 1963/St. Claire River, Michigan/fifty-pound monk fish (salt water species) found alive.
9. 18 August, 1970/Newton, Kansas/ten foot long alligator found in basement of house.
10. 20 September, 1970/Windsor, Ontario, Canada/three-foot-long alligator found walking along street.

In the above instances, concurrent reports of escapes from zoos or private owners were not evident. Naturally, this does not attenuate the possible role of the human factor.

#### Sudden Clusterings of Large Groups of Animals

Single animals, native or not to the locality, may originate from a number of accidental and human sources. When large groups of animals appear suddenly within a small spatial locus, other factors are in operation. This subcategory contains fifty-eight events of the sudden appearance (or disappearance) of large numbers of units from the same species. If during the congregation abnormal behaviours were displayed, the event was placed in the next subcategory: peculiar animal behaviour. Although these cases probably reflect cumulative population densities or peak breeding periods, they do involve sudden transient large magnitude appearances of animals. Unlike the animal-fall subcategory of a previous chapter, the present division involves mammals as well as insect and amphibian classes. Sample cases involved:

1. — May, 1832/Ivernesshire, Scotland/millions of unknown brown and white mice appear.
2. —, 1869/coastal cities of England/moths, butterflies, gnats, flies appear, millions found dead on incoming tides.
3. 15 January, 1877/Memphis, Tennessee/hundreds of black snakes suddenly appear in two-block area.

4. — July, 1910/Colombo, Kalutar, Ceylon/sudden appearance of millions of six-inch snails.
5. — October, 1921/Sussex; Newick, England/sudden appearance of many fish in pond.
6. — Summer, 1927/Kern County, California/"millions" of mice appear.
7. — August, 1955/Bicycle Dry Lake, California/lake filled with water first time in hundreds of years; shrimp found in lake suddenly.
8. — July, 1965/Pine Ridge, Missouri/149 snakes killed in two weeks around church area.
9. — December, 1967/Kamchatka, Soviet Union/sudden appearance of "millions" of rabbits on way to ocean; animals eat kelp.
10. — September, 1968/east coast United States/estimated two million squirrels migrating from Vermont to Georgia.
11. — Spring, 1969/Salonamca, Colombia/"invasion" of 50,000 crabs takes place.
12. — July and August, 1971/Montreal and Toronto areas, Canada/"millions" of grasshoppers and brown moths invade cities.
13. — April, 1972/Atlanta, Georgia/sudden appearance of 100 or more snakes in small area.

#### Peculiar or Abnormal Animal Behaviour

During certain disease states, such as rabies, animals display unusual behaviours; they may appear abnormally friendly to the naive human observer or they may play in the grass and engage in similar deviations from the norm. In this category, however, these instances were not considered. Instead we have included reported events of bizarre behaviours. Most of the events involved the bizarre behaviour displayed by a group of individuals from the same species. Again, they may reflect consequences of high population densities or transient biochemical changes induced by the modern environment. The mass migrations and drownings of lemmings

are well known in this context. A total of seventy-one events were placed here. Sample cases involved:

1. 17 June, 1754/Windham, Connecticut/"the great frog war"; frogs fight each other.
2. 03 November, 1888/Thames Valley, England/sheep display peculiar behaviour; fear responses; suddenly whole packs break into running.
3. \_\_\_, 1949/unspecified areas of England/forty birds dive onto express train.
4. \_\_\_, November, 1954/Bakar Arang, Malaysia/two species of frogs fight, kill each other.
5. \_\_\_, 1960/Hinckley, Ohio/5000 chickens keep displaying abnormal behaviour.
6. \_\_\_, December, 1961/South Wales, Australia/hundreds of fish "jumping out of water"; evidence that water has become aversive.
7. 01 May, 1964/Riverside, California/hundreds of birds fly down chimney.
8. \_\_\_, May, 1966/Leicestershire, England/magpies attack school children.
9. \_\_\_, 1969/Petersborough, England/"1,000" starlings attack house.
10. \_\_\_, January, 1970/Fort Pierce, Florida/100 whales beach on land.
11. 17 January, 1971/Penang, Malaysia/frogs kill each other, hundreds reported to die.
12. 11 August, 1971/Broadstairs, England/seagulls attack children.

### Unusual Animal Deaths

The forty-nine cases involved with unusual animal deaths might also be classified under previous topics since the role of a large predator was obvious in some situations and the antecedent condition of abnormal behaviour was apparent in others. Invariably, the events in the present topic were concerned with death of groups. More recent cases of group animal deaths are often

obscured by stock explanations of poison, wild dogs, or vandals, when in actuality such causes have not been thoroughly evaluated or tested. Sample cases involved:

1. \_\_\_, January, 1874/Limerick, Cavan, Ireland/many sheep killed; "blood drained."
2. \_\_\_, August, 1903/Staffordshire, England/cattle mutilated.
3. \_\_\_, April, 1925/Kenya, Africa/sheep slashed, cattle mutilated; no evidence of lion, etc.
4. \_\_\_, 1941/Central California/record 250,000 water fowl die of "botulism."
5. \_\_\_, November, 1958/Cleveland, Ohio/fifty birds found dead in one place.
6. 25 June, 1962/Monument City, Indiana/ten pigs found dead; blood sucked out; hearts eaten.
7. \_\_\_, July, 1968/Lamar, Colorado/1,500 sea gulls found dead in reservoir.
8. \_\_\_, October, 1969/Wales, England/estimated 10,000 birds die; explanation of starvation given..
9. 21 January, 1971/Garrison, Utah/thousands of sheep die bleeding from mouth.
10. 15 September, 1973/Detroit, Michigan/200 purple grackles fall from trees.

### Known Mutations

Ten cases exist of verified mutations; these involve proliferation of normal limb numbers or exaggeration of certain tissues. Sample cases involved:

1. \_\_\_, Pembroke, Ontario, Canada/cat with long ears and "hops" reported.
2. \_\_\_, May, 1956/Leamington, England/deer two-feet high found in area; never before seen.
3. \_\_\_, October, 1958/Tunica, Mississippi/six-legged frogs reported.
4. \_\_\_, 1959/Gainesville, Florida/certain creek contains multi-legged, multieyed frogs.
5. \_\_\_, April, 1973/Clyde, Alberta, Canada/two-headed calf born; photographed.

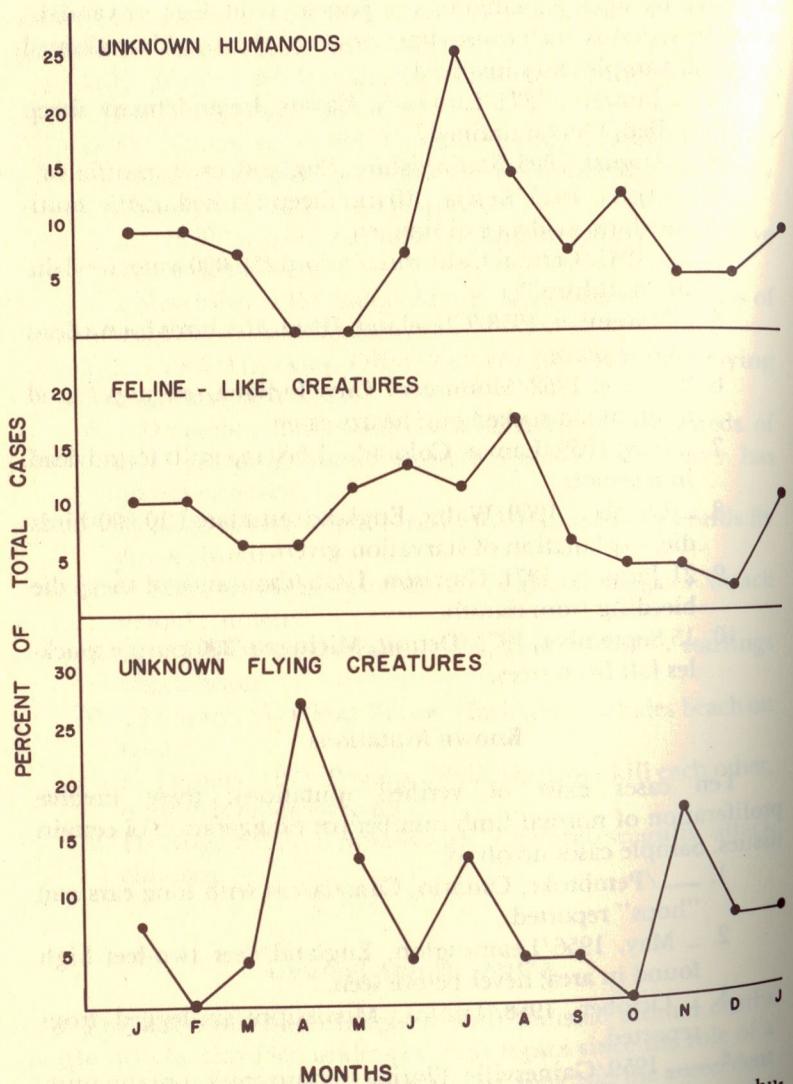


FIGURE 46. Monthly distribution for *episodes* of unknown large humanoid reports, feline-like creature reports, and unknown flying creature sightings in the United States only.

### Molds and Related Globs

Comparatively few instances of amoeboid creatures have been reported; these resemble small jellyfish. Only fifteen cases of this nature have been classified in our files. Included with them are instances of spontaneous and excessive mold growths. Sample cases involved:

1. —, 1945/Wha Chee, China/giant amoeba-like creature spotted.
2. — October, 1950/Philadelphia, Pennsylvania/purple globs found; dissolve when touched.
3. —, 1955/Oahu Island, Hawaii/yellow blob washed ashore.
4. — March, 1957/Philadelphia, Pennsylvania/green slime covers everything in house.
5. —, 1961/Surrey County, North Carolina/local epidemic of "molds"; people leave houses.
6. —, 1963/Lake Erie, Canada/jelly-like creatures found; living in colonies.
7. — May, 1973/Dallas area, Texas/blobs reported growing in several places; "pulsate."

### Temporal Patterns

The monthly variations of various episode types over the years for humanoid, feline-like and flying creatures are shown in Figure 46. It can be seen that the first two subcategories are summer phenomena, with peaks in July and August. Conspicuously, the unknown flying creature subcategory peaks in April for the years analyzed. Although figures are not presented, the summed data of the unusual behaviour, non-habitat and related subcategories also showed definite increases in the summer months. On the other hand, the sea-serpent type reports are more evenly distributed over the year.

## chapter 12

# Unusual Archeological Finds

We have presented data and the reports of data concerned with artifacts and objects which appear in times and places where they typically should not be found. Such events and objects have been left out of the maze of scientific patterns; they are the orphans from the last scientific revolution.

Whereas data patterns of the present can be verified and tested, patterns of the past must remain open to speculation and the consolatory but limited framework of data trends. However, the application of a best-fit equation to a variable array of data points excludes the extreme and deviant points. At the cost of losing the few exceptions, one gains a palatable, smoothed prediction. This chapter deals with the deviant points of archeological patterns: the human bones found in wrong places, the skeletons too tall for acceptability and the petroglyphs of prehistoric monsters carved by recent human hands. It deals with the reports of sophisticated instruments deposited in coal beds and vessels of unknown metals found in solid rock.

Considerable space is also allocated for descriptions of large finds or digs that have been discovered in recent years. Many of these are unusually old or contain many artifacts of cultures which were sophisticated for their time. The loci of these ancient technologies and people have been mapped.

This is a necessary chapter, for, if some theorists are correct in their speculations, parausal aspects of human behaviour and unusual descriptions by human observers should have continued to occur century after century. In total, 242 "discoveries" have been placed in the category contained in this chapter. Spatial distributions of these finds in the United States are shown in Figure 47. Four basic subdivisions have been derived from these data and include: 1) "impossible" or "pseudo-fossils," 2) ancient writings and artifacts (found in inappropriate areas), 3) unusual sites and digs, and 4) peculiar fossils of non-human animals.

## **Impossible or Pseudo-Fossils**

Thirty reports were placed in this subcategory. Two patterns were evident. The first pattern dealt with discoveries of human bones that were extremely large and old. The second pattern was concerned with apparent manufactured objects or materials known to have been made by sophisticated technology, in rock strata millions of years old. Distributions are shown in Figure 48. Sample cases involved:

1. \_\_, 1833/Lompock Ranch, California/human skeleton found twelve feet in length; double row teeth.
  2. \_\_, 1883/Warren, Minnesota/ten gigantic human skeletons found.
  3. \_\_, 1968/Delta, Utah/fossilized sandal print found; estimated 250 million years old from rock formation.
  4. \_\_, 1845/King Quary, England/iron nail found in solid rock.
  5. \_\_, 1851/Springfield, Massachusetts/nail found inside quartz rock.
  6. \_\_, 1869/Treasure City, Nevada/two-inch screw found inside feldspar.
  7. \_\_, 1891/Morrisonville, Illinois/gold chain found in coal bed.
  8. \_\_, 1891/Crittenden, Arizona/granite "mummy" case found; made for twelve-foot tall man.
  9. \_\_/Baxter Springs, Kansas/human footprint found in sandstone; forty-four by twenty-one inches.

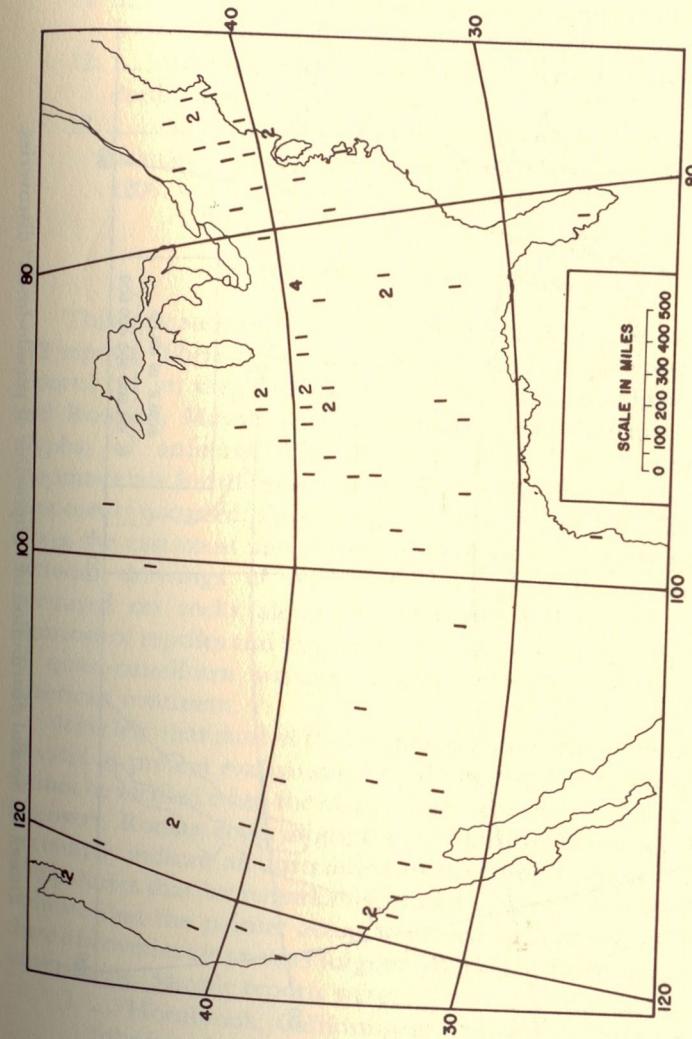


FIGURE 47. Spatial distribution for “unusual” archæological finds.”

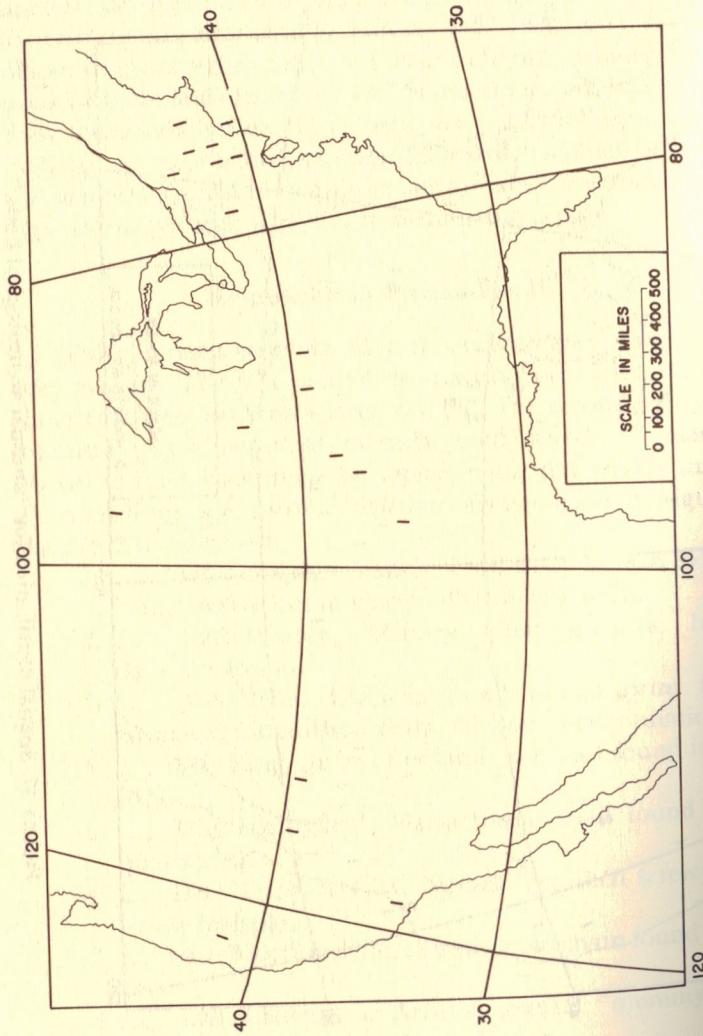


FIGURE 48. Spatial distribution of "impossible or pseudo-fossil" discoveries.

10. —/Western Missouri/huge human bones found, including lower jaw.
11. —/Potato Creek, Indiana/nine foot tall human skeleton found; sophisticated copper work near by.
12. —/North of Utica, New York/skeletons of giants with double row of teeth found.
13. —/Sayre (Bradford County), Pennsylvania/skeletons of humanoids more than seven feet high; buried about year 1200.

### Ancient Writings and Artifacts

This subcategory is the largest of the division and contained 142 reports. There is nothing unusual about the content of the reports, per se; they include discoveries of ancient coins (Arabic and Roman), Mayan writing, pyramids and drawings (petroglyphs) of animals. The difficulty is that the reports are inappropriate for the space discovered or the time in which they supposedly occurred. This list involves discoveries of Roman coins along the east coast and in the midwest of the United States; it includes drawings of reptile-like and giant flying creatures portrayed on rocks along the Mississippi River; it involves figurines of reptiles and humanoid-like objects; it contains reports of quasi-cuneiform writings found on rocks on the North American continent.

It is clear that most of these artifacts and writings are valid, or as valid as present evaluation procedures can detect. However, it cannot be verified *when* the objects were deposited in their place of discovery. Roman coins along the foot-hills of Tennessee do not necessarily indicate an unrecorded arrival of these people. Reptile-like pictures that are remarkably similar to extinct species do not indicate that the painter actually viewed such creatures. In all, these discoveries are another forgotten pocket of the borderline and unverifiable. Sample reports were:

1. —/Hornbrook, California/mysterious sandstone monoliths found.
2. —/Los Angeles, California/estimated 34,000-year-old "writing" found on bones.

3. \_\_/La Tonala, Mexico/pyramid found; unlike anything in North America.
4. \_\_/Columbia, Georgia/writing of Indians similar to that of Crete (Mediterranean Sea).
5. \_\_/Cairo, Egypt/model of air glider found; estimated 2,000 years old.
6. \_\_/Hammondsville, Ohio/"hieroglyphs" found in coal.
7. \_\_/Alton, Illinois/petroglyphs of monsters found on limestone.
8. \_\_, 1833/Norfolk, Virginia/Roman-like coin found at thirty foot depth.
9. \_\_, 1838/Grave Creek, West Virginia/tablet stone found with "alphabet."
10. \_\_, 1925/Potato Creek, Indiana/"giants and monsters" found painted on ancient Indian bowls.
11. \_\_, 1956/West Texas/human skull found; 10,000 years old.
12. \_\_, 1962/Santa Barbara, California/10,000-year-old human skeleton found.
13. \_\_/Rockwall County, Texas/wall estimated at 5 million years; drawings on it.
14. \_\_, 1952/Mysore, India/instructions to build "air vehicle"; estimated 3,000 years old.
15. \_\_, 1954/Buttons, North Carolina/Arabic coin found; dated 1215.
16. \_\_, 1960/Little Salt Springs, Florida/fossilized bones of hundreds of people found.

#### New or Unusual Digs and Finds

This subcategory contains information on major archaeological digs that have been recently uncovered and include new information about man's past in the particular area concerned. Their systematic recording is also important in light of the discovery of an unclassified (and possibly biologically potent) bacteria in a recently opened Egyptian tomb. Fifty-one sites have been recorded. Sites distributed in the United States and artifact

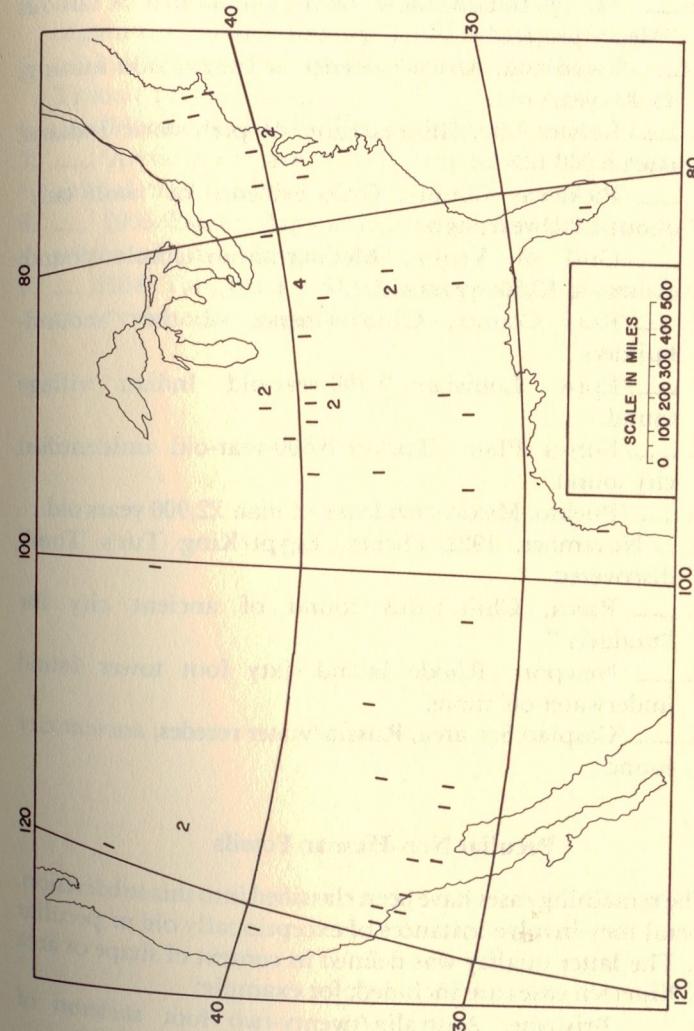


FIGURE 49. Spatial distribution of unusual digs and artifact loci.

areas from the previous subcategory are shown in Figure 49. Sample sites included:

1. \_\_/Mecca, Indiana/new fossils found; area of famous "Mecca project."
2. \_\_/Swaziland, Africa/evidence of site for iron mining, 43,000 years old.
3. \_\_/Kolster Site, Illinois/ruins of prehistoric Indians, circa 6,000 B.P.
4. \_\_/Pickaway County, Ohio/evidence of "wolf cult" about 1,000 years ago.
5. \_\_/Gulf of Venice, Mediterranean/temple found; estimated 12,000 years old.
6. \_\_/Ross County, Ohio/evidence of the "mound-builders."
7. \_\_/Epps, Louisiana/2,700-year-old Indian village found.
8. \_\_/Konya Plain, Turkey/8,600-year-old unidentified city found.
9. \_\_/Pueblo, Mexico/evidence of man 22,000 years old.
10. \_\_ November, 1922/Thebes, Egypt/King Tut's Tomb discovered.
11. \_\_/Raica, Chile/ruins found of ancient city for "midgets."
12. \_\_/Newport, Rhode Island/sixty foot tower found underwater off shore.
13. \_\_/Caspian Sea area, Russia/water recedes; ancient city found.

#### Peculiar Non-Human Fossils

The remaining cases have been classified into this subdivision. In general they involve instances of exceptionally old or peculiar fossils. The latter quality was defined in context of shape or area found. Nineteen cases are included; for example:

1. \_\_/Brisbane, Australia/twenty-two foot skeleton of giant *tadpole*-like creature found.
2. \_\_/Mazon Creek, Illinois/strange cat-like fossils found; other strange animals found.

3. \_\_, 1906/Pakenham, Ontario, Canada/skeleton of 11,000-year-old whale found in Ottawa Valley.
4. \_\_, 1954/\_\_, Ontario, Canada/fossils of simple organisms found; estimated 2 billion years old.
5. \_\_, 1960/Bergen County, New Jersey/flying lizard fossil of Triassic period found.
6. \_\_/Marion, Iowa/fossil of large ice-age bison found.
7. \_\_/Arctic area/cave found with fossils of prehistoric animals and reptiles.
8. \_\_, 1955/Esashi, Japan/skeleton of four-legged whale; estimated 2 million years old.
9. \_\_, 1958/Tanganyika, Africa/many animal bones found; show evidence of gigantism.

## chapter 13

# Summary of Results and General Discussion

Before we pursue the various hypotheses and theories concerned with the unusual and transient events discussed in this book, a short summary of the data patterns is in order. From a generalized overview of the total data, a perspective of the patterns and phenomena can be more easily achieved. In Figure 50, the number of all *non-UFO* events reported to occur in all partitions of the United States are shown according to various intensities of a grid pattern. This was done to accommodate visual inspection. UFO patterns from the present data pool have been presented in Figure 18. It can be seen that major clusters of high intensity areas ( $>11$  events) exist along the New England coast, in a northeastern oriented ellipse through Illinois, Indiana and Ohio, and along the Los Angeles-San Francisco regions of California. Less frequent event partitions cluster around these areas. Isolated high intensity event areas in Washington state, Texas and Florida are also apparent.

The actual numerical statements for each partition are quite wide in range. For example, the highest event number for a partition in the Los Angeles cluster was forty-six; the other three areas ranged from twelve to eighteen. All other high density areas, including the New York City area, typically averaged between fifteen and twenty.

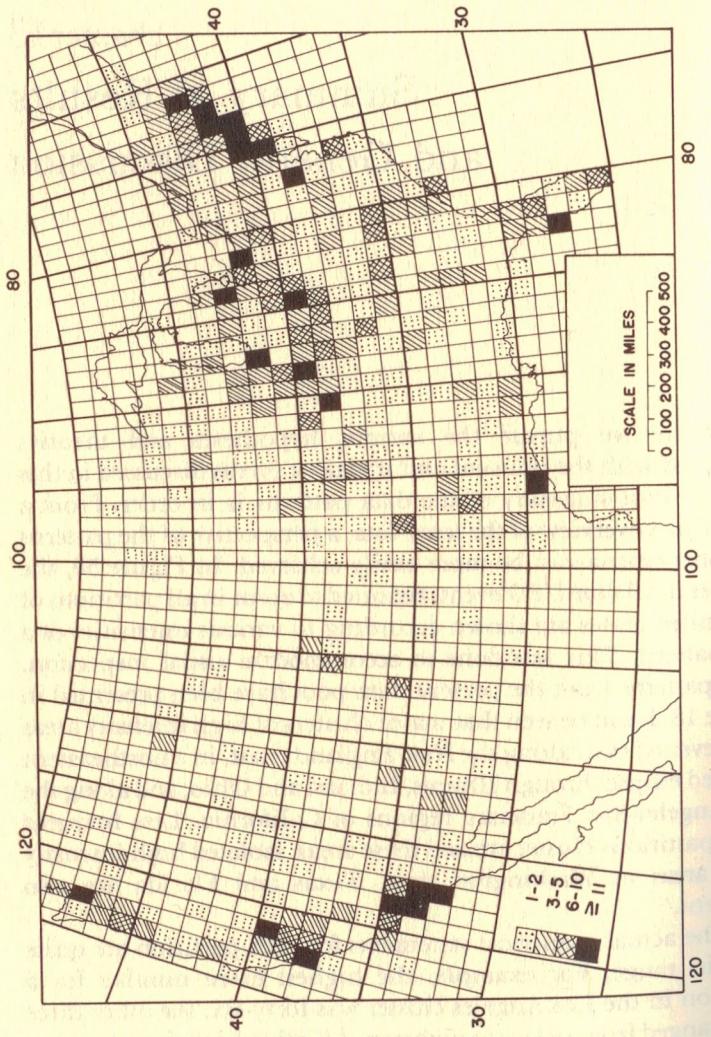


FIGURE 50. Frequency matrix for the total number of all unusual event categories (except UFO's) for all partitions in the United States.

The overall map strongly overlaps with major population centers of the United States, a not surprising result. Since the human observer has been the primary recorder of these phenomena, the number of unusual and transient events, because of their typical localized manner, should reflect the number of measurement devices (human observers) in the locality. Significant deviations from population distribution do exist, however, especially in the midwestern portions of the United States.

In order to determine the relationship between different unusual event categories, correlations were made between the following categories: object falls (FALLS), electromagnetic peculiarities (ELECT), sound peculiarities (SOUND), unidentified flying or landed objects (UFONO), unusual human-oriented forces (HUMAN), peculiar-unusual animals (ANIMA), object-oriented forces (TELEK), unusual geophysical events (GEOPH), unusual meteorological events (METEOR), and peculiar archeological findings (ARCHE), as well as total population and population density (total population/area), for thirty states bordering and east of the Mississippi River. State analyses were completed for simplicity and because population data were available at this level of spatial organization; population statements were not available for partition segments. The states bordering and east of the Mississippi River were selected since they were more predominantly populated than more western states during the last half of the nineteenth century, during which time a significant portion of the unusual events in our data files ostensibly occurred. The results are presented in Table 2.

For the thirty states considered, fall phenomena were significantly ( $p < .01$ ) correlated ( $r > 0.46$ ) with all categories except the sound, animal and archeological categories. The electromagnetic peculiarities were correlated with all categories except the sound and meteorological divisions. The peculiar sound division was not correlated significantly with any other category. The UFO category showed one of the highest correlation clusters with all others except for the sound and meteorological phenomena. It is interesting that human forces were correlated with all phenomena divisions except sound, animal, meteorological and archeological

TABLE 2: Correlation coefficients between the numbers of Fortean events for different categories and total populations and population densities (number of people/unit area) for thirty states.

	FALLS	ELECT	SOUND	UFONO	HUMAN	ANIMA	TELEK	GEOPH	METEOR	ARCHE	P1900	D1900	P1960	D1960
FALLS	1.00	0.73	0.33	0.78	0.78	0.27	0.74	0.70	0.52	0.27	0.83	0.20	0.84	0.16
ELECT		1.00	0.34	0.90	0.80	0.51	0.82	0.73	0.21	0.46	0.74	0.08	0.86	0.09
SOUND			1.00	0.29	0.35	0.01	0.13	0.33	0.09	-0.03	0.20	-0.06	0.21	0.24
UFONO				1.00	0.80	0.55	0.85	0.80	0.34	0.50	0.80	0.12	0.89	0.11
HUMAN					1.00	0.34	0.81	0.64	0.16	0.23	0.72	0.29	0.85	0.25
ANIMA						1.00	0.42	0.42	0.25	0.88	0.54	0.05	0.57	0.02
TELEK							1.00	0.66	0.23	0.37	0.68	0.25	0.81	0.30
GEOPH								1.00	0.47	0.43	0.68	-0.02	0.80	0.03
METEOR									1.00	0.17	0.52	0.00	0.43	0.40
ARCHE										1.00	0.52	0.14	0.51	0.10
P1900											1.00	0.18	0.91	0.10
D1900												1.00	0.19	0.95
P1960													1.00	0.17
D1960														1.00

divisions. Animal reports were correlated with all divisions except falls, sound, human and meteorological effects. The animal division was highly correlated, however, with archeological sites. Object-oriented forces were correlated with those divisions mentioned previously and geophysical phenomena, but not with meteorological and archeological areas. Similarly, geophysical phenomena showed correlations with the groups mentioned and the archeological category, but not with the meteorological category.

Table 2 also shows that falls, electromagnetic, UFO, human, object-oriented force and geophysical categories were *highly* correlated with state population for the years 1900 (P1900) and 1960 (P1960). Animal, meteorological and archeological divisions were less associated with total population of the state; sound occurrences were not correlated with population. Population density for those years (D1900 and D1960), however, does not seem to be significantly correlated with the report of unusual events.

Clearly the data can be grouped into three clusters with respect to intercorrelations. The FALL, ELECT, UFONO, HUMAN, TELEK and GEOPH categories were highly intercorrelated while the ANIMA, METEOR, ARCHE triad clustered by themselves with only occasional correlation with categories in the first group. A conspicuous example of this pattern was the high correlation (0.88) between ANIMA and ARCHE categories; other correlations with ANIMA were much less intense. The SOUND category did not correlate with any of the other clusters to any significant extent. Comparison to population values further indicated an interrelationship between categories within clusters. The FALL, ELECT, UFONO, HUMAN, TELEK, GEOPH categories were also *highly* correlated (0.8 to 0.9) with population of the thirty states analyzed. The second cluster of variables correlated with population only at a marginal level, while the last cluster did not correlate with population.

### Implications

The correlation with total population but lack of correlation with population density can lead to a number of interpretations

about the nature of the Fortean events. It is not surprising that a high correlation exists between Fortean events and total population since the human being is the primary reporter of these phenomena; consequently, the greater the number of human observers, the greater the number of possible events reported. However, the lack of correlation with population density suggests at least two properties of Fortean events.

First, the phenomena may be very frequent in occurrence and display a high space-time density, such that there is a high probability any given human observer will encounter an event. A pictorial expression of this possibility is shown in Figure 51. If the Fortean phenomena had a low *density* distribution (Figure 51A and 51B), then the greater the density of human measurers the greater the likelihood these sparse events would be recorded. Consequently, the events would be associated with population density in any given locality. However, the data suggest a relationship depicted in Figure 51C and 51D; that is, the phenomena display high densities of occurrence. As a result, the greater the *number* of observer measurers, the greater the number of events reported.

The emphasis on the last interpretation places a greater burden on the measurement devices themselves. The existence of the population-Fortean correlations may really reflect a consistent artifact or error in the population measuring the events. In other words, if one had a battery of measurement devices to record natural events, and it was known that one percent of the instruments would produce erroneous data, then increasing the number of instruments would inflate the erroneous data by a predictable amount. With 100 instruments one would expect one erroneous data statement, while with 1 million instruments one would expect 10,000 erroneous statements. Density of the instruments would be important only in that it reflects a greater number of instruments involved.

These data imply the second possible property of Fortean events: they are persistent artifacts of defective "instrumentation." Indeed, the human population can be viewed as a vast network of recorders and measurers that span the earth's surface in varying

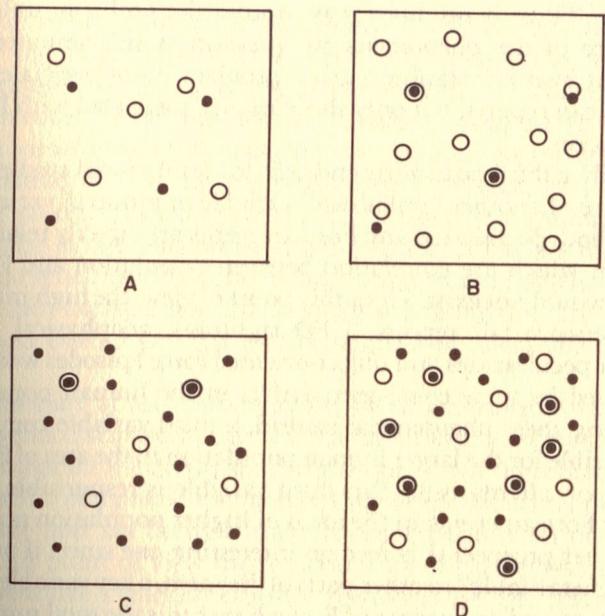


FIGURE 51. Diagrammatic representations of human observers (open circles), Fortean events (shaded circles), and the detection of Fortean events (depicted by a shaded circle inside an open circle), in situations where there are: (A) low density Fortean events and low density human observers, (B) low density Fortean events and high density human observers, (C) high density Fortean events and low density human observers, and (D) high density Fortean events and high density human observers.

numbers and densities. By probabilistic demands there are deviant units in this network. They do not report or perceive normal phenomena in the same manner as other units of the system. Such deviant units may be called "neurotic" or "untrained observers." They would be monotonic sources of percentage error.

The latter possibility seems to indicate that the study of Fortean events merely reflects the degree of abnormality in the population reporting the events. This of course is a limit to any scientific study, since any scientific study must depend upon some degree of instrumentation even if the measurer is the experimenter

himself. There is no direct way around the problem, unless the existence of the phenomena in question is substantiated with different instrumentation. Such a problem is not associated with all Fortean reports, but only those highly correlated with human population.

Still, a third possibility endemic to correlational studies is the existence of another "unknown" variable or group of variables to which both population and Fortean events are directly related and without which the correlation between population and Fortean events would not exist. From this point of view, the high interrelation between fall reports, UFO sightings, geophysical events, human peculiarities and object-oriented force episodes would not be caused by some consistent artifact in the human population reporting these phenomena; instead, a third variable complex is responsible for the larger human population in the area of Fortean reports or, alternatively, this third variable is responsible for the higher Fortean events in the areas of higher population numbers. The latter prospect is indeed an interesting one since, if our data are "generalizable" to other parts of the earth, a key variable for the prediction and occurrence of Fortean events is the total number of human beings within the space studied. The separation of the human beings in space (for example, the population density) would not be a central issue.

Let it not be forgotten that not all Fortean categories correlated with population to a significant degree in the states analyzed. Visual inspection of the scattergrams also indicated this finding was not due to some intrinsic non-linear function of the variable in question. Consequently, there are still Fortean reports not centrally involved with population.

### **Homogeneous and Heterogeneous Theories**

The means by which one approaches the understanding of a phenomenon requires a certain perspective concerning the nature of knowledge, and, consequently, the nature of unusual and infrequent events within that structure. The assumptions made about any given phenomenon determine the verbal labels applied

to it and these verbal labels in turn determine the context within which the phenomenon is evaluated. Through the semantic assumptions implicitly or explicitly evoked, the concept of a phenomenon and its mechanism is shaped. Suppose an experimenter views a moving triangular-shaped luminosity in the sky and, instead of labeling the phenomenon as such, he calls it a "flying saucer." By using this label, certain presumptions about the nature of the phenomenon are implied. If one assumes that Fortean events are involved with non-physical and non-traditional forces, then the tools selected for study will be different from those employed from a premise that demands a physical and discrete basis.

There are at least two extremes by which unusual and transient events discussed in this text can be viewed. First, by virtue of the fact that all the events share the properties of short occurrence and absence of a prediction matrix, they are consequently the same in nature and are derived from the same population of events. From this point of view the respectability of a geophysical transient event like a volcanic eruption relative to the "precipitation of stones" is only a value judgement based upon some arbitrary criterion such as an accepted scientific theory. Although two such events might differ in magnitude of display, they are the same in importance and validity. This approach would presume a homogeneous theory of Fortean event explanation.

The antithetic approach would contend there is a wide array of different phenomena, with different mechanisms and different levels of validity. From this perspective, unusual events have *only the verbal label: "unusual"* in common; they share a semantic descriptor but not a conceptual source. Transient volcanism would indeed be different from transient displays of phantom sniper episodes or rock falls. One would dismiss one phenomenon as "unreal" and accept another because of its compatibility to a preferred model.

Although both perspectives are excessive, both have appropriate advantages. The homogeneous concept allows the ease of psychological closure and conceptual unity for those individuals who prefer an ordered and totally explained universe. The

heterogeneous concept endorses the fragmentation of the phenomenon, a prerequisite condition for scientific evaluation. It is hard to test a concept that assumes a homogeneous and amorphous state; modern science labors under the supposition that a phenomenon can be broken into units and subunits, into groups, reflexes, cells, molecules, atoms and neutrinos.

Both approaches have limitations as well; they are the human species' constructs, synthesized in an attempt to impose some structure upon an uncertain environment and to reduce the biologically-based unpleasantness evoked when such an environment is not structured. At present, we assume that unusual events, indeed single events of any kind, can be grouped into classes sharing similar mechanisms. No doubt such an assumption is valid for 99.9 percent of all events we measure and record. The limitation must be recognized that the remaining 0.1 percent of events recorded may each have unique mechanisms that occur only once, never to be repeated again. Any similarity among events would be illusionary.

## chapter 14

# Repeated Space and Transglobal Impulse Hypotheses

The area of "the unusual" has evoked a number of interesting hypotheses concerning the nature of space and time on the earth's surface. Four basic types of hypotheses have emerged concerning unusual events: 1) unusual events tend to happen in the same locality, decade after decade; 2) clusters of unusual events in one locality are paralleled with similar clusters in other localities around the world; 3) there are serial patterns of unusual events that precede and follow instances of geophysical-meteorological cataclysm and 4) some of these patterns are associated with stellar "changes." In this chapter, these hypotheses will be qualified, extrapolated and tested against data, where possible.

### Repeated Space Theories

In the southwestern corner of Pennsylvania, remains have been reported of large humanoid skeletons; local Indian legends describe these creatures with considerable precision. Over the years UFO flaps have passed through or concentrated near these areas and in 1973 an outbreak of ten-foot-tall humanoid sightings was recorded. Certain areas of New York state have been typified by repeated reports over centuries of luminous lights, non-human creatures, and rashes of Fortean events. Along the banks of the

Mississippi River, bones remain of prehistoric animals; petroglyphs of these creatures exist along those same banks. There are reports by early explorers that strange flying creatures were seen on a bright day. Today, centuries later, people still report observations of unusual and unclassified creatures.

These kinds of data have prompted many theorists in the area of borderline phenomena to postulate various forms of the repeated or recurrent space theory. Essential to this concept is that unusual events of different categories recur in the same spatial area over time. Charles Fort mentioned parts of England, France and the United States in which unusual events apparently took place quite frequently. John Keel has elaborated this concept; he calls such areas "magnetic windows," which is presumably a metaphorical description and not a technical one.

At face value, the repeated space hypothesis and its various ramifications are quite palatable. After all, there are localities in which orthodox phenomena occur year after year, century after century in some semisystematic way. There are earthquake pockets that show remarkable persistence over long epochs of measurement, though they may be subject to idiosyncratic periodicities. There are geographical areas with unique topography that demonstrate a proneness for intense and vigorous meteorological disturbances, decade after decade. Many times, the understanding of these spatial clusters has helped us elucidate the nature of the phenomenon in question. Whether clusterings of unusual events exist reliably and can be informative will depend upon a number of control concepts.

### Conceptual Problems of Recurrent Space

There are at least two limiting factors with regard to the application of this concept. First, the perceived difference among spatial sectors or areas must be greater than the statistical variation within the areas concerned. A case in point would be both illustrative and clarifying. During World War II, a young and naive observer noted that certain parts of London tended to show a greater number of V-2 rocket hits. At first, before the data were

properly analyzed, there was some speculation that the "high risk" areas might have some unknown propensity to influence rocket propagation, or more foreboding, the enemy had developed a homing device so sensitive that specific blocks could be eliminated. However when appropriate statistical analysis had been completed, it was found that the "high risk" areas were the occasional peaks in a random series of numbers; they were merely expressions of chance. When emotional associations are attached to numbers (for example, numbers of human deaths, cases of personal trauma), statistical fluctuations seem to lose their autonomic neutrality.

A number of simple statistical procedures, like "chi-square" tests, can be applied to the data. Such tests can be found in any elementary statistics text. By applying these tests the authors and the reader can evaluate the acceptability of the data statement. Calculations can be made to determine if the data pattern would occur, by chance alone, once every twenty times, hundred times or million times. The higher the odds against chance, the more reliable the data statement.

For example, the data pattern displayed in Figure 50 shows a distribution that would occur by chance alone only once every one million times. These data are not a simple random scatter. However, let us emphatically state that this does not mean unusual events are *actually* occurring year after year in these areas nor does it prove that unusual events exist as a real population of phenomena. The statement allows us to conclude only that the *report* of unusual events in our data array is considerably different from chance expectancy. No conclusions can be made with respect to mechanism or causal relationship. As noted in the last chapter, the major controlling factor is most likely the population number. However even this correlation does not elucidate the mechanisms responsible for the reports.

A second problem involved with the recurrent space concept is "how large the space?" The total area of the space is important from the perspectives of both predictive power and reliability. No doubt one can more accurately predict the occurrence of unusual events by increasing the space area, but as the space increases the power of the prediction decreases. For example, one could proba-

bly predict with some accuracy that an unusual event will occur in New York state sometime within the next month. One could expand the area to include the entire United States and forecast, probably quite accurately, that an unusual event will occur within the next twenty-four hours somewhere in that area. However, the *power* of the prediction is very small; the precision is weak. On the other hand, if the area of observation is very small (for example, 10 km by 10 km), then the capacity to predict the occurrence of unusual events within that area is a very powerful tool. With greater prediction, more frequent observations can be made; the more frequent the observations are made, the closer the mechanism approaches the grasp of the measurer.

The situation is analogous to catching fish in a small pond. To make a statement that fish are somewhere in the pond is trivial, if not moronic. But to be able to predict when to dip the hand deep into the murky water and catch a fish, is an important accomplishment. To state that unusual events occur within an area so large that nearly the entire population of measurement must be included is almost totally meaningless. The critical question is "how big is the window?"

#### Size of the Window

Preferably the size of the recurrent space area should be small; the smaller the area of high prediction, the more powerful the prediction. However, some technique must be used to determine the maxima and minima of the window's limits. A procedure must be utilized to clarify the boundaries of the recurrent space. One technique that can be effectively used with some data arrays is what we call the "changing grid technique." The procedure is pictorially represented in Figure 52. Starting with the largest grid pattern one reduces the grid areas until the data begin to show clusters in specific areas (for example, Figure 52C). Statistical analysis is applied to indicate at which grid size the data points in the grids are distributed significantly different from randomness. The grid pattern which shows the first capability to statistically separate the data is the upper boundary. As the grid sizes become

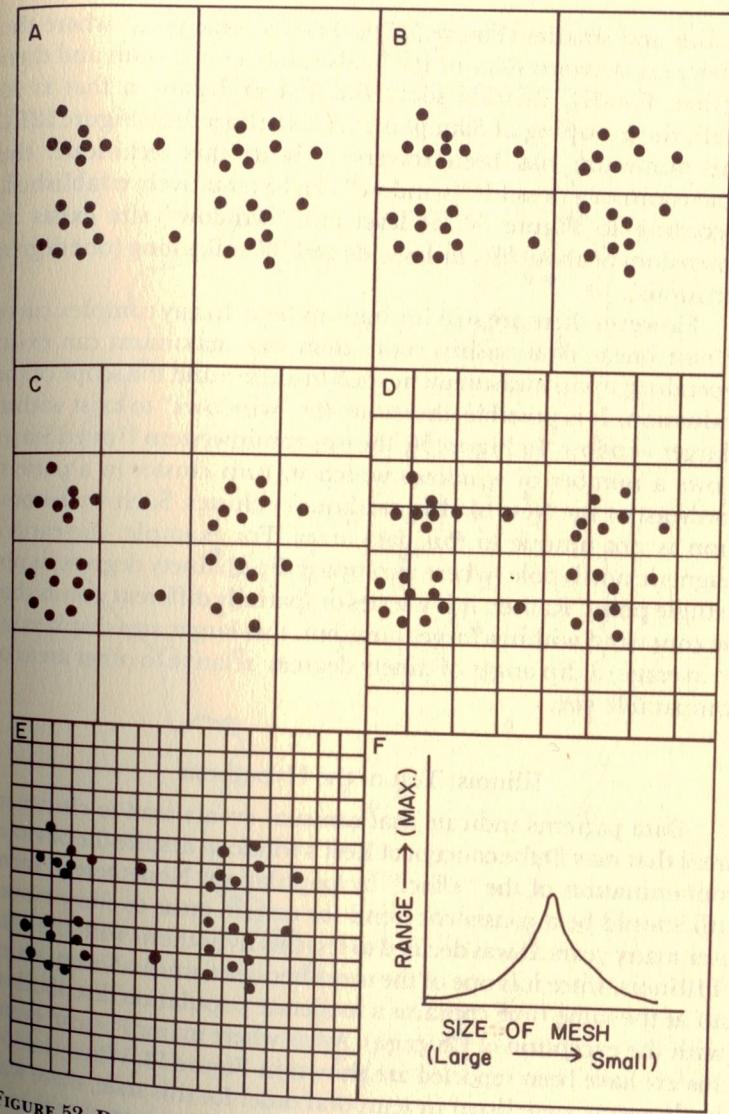


FIGURE 52. Demonstration of the "changing grid pattern" used to isolate "window" or cluster areas of unusual events.

smaller and smaller (Figure 52D), there is some point where the differences between data in the grids reach a maximum and then decline. Finally, there is some smallest grid pattern that is so small, the grouping of data points is lost altogether (Figure 52E). The minimum has been traversed. With this technique, the dimensions of a possible "window" can be tentatively established. According to Figure 50, at least one "window" size exists in dimensions of about fifty miles wide and 100 miles long (one degree partitions).

However there are still limitations here. In any complex curve or non-linear relationship more than one maximum can exist, depending upon measurement sophistication and the scope of the evaluation. It is possible, therefore, for "windows" to exist within a larger window. In Figure 50, the upper midwestern United States shows a number of windows which in turn cluster in a pattern northeast of the New Madrid earthquake cluster. Such a phenomenon is not unique to this data array. For example, the earth's magnetic north pole (where a compass dip is ninety degrees) is not a single point. Rather, it is a series of spatially different points that are contained within a larger area; but, this larger area displays (as an average) a dip angle of ninety degrees relative to other areas of comparable size.

#### Illinois: Test of the Hypothesis

Data patterns indicate that unusual events tend to cluster in areas that may fit the concept of Keel's window, despite the obvious contamination of the "effect" by population. Nonetheless, there still should be a consistent trend for certain areas to show events over many years. It was decided to test this hypothesis with the state of Illinois, since it is one of the more frequent unusual-event states but at the same time contains a moderate population distribution (with the exception of Chicago). Areas where major Fortean event clusters have been reported are shown in Figure 53. When the 150 single events were listed in temporal order for this state, there was no evident recurrence (greater than chance expectancy) within a given city or county, with the exception of Chicago. However, a

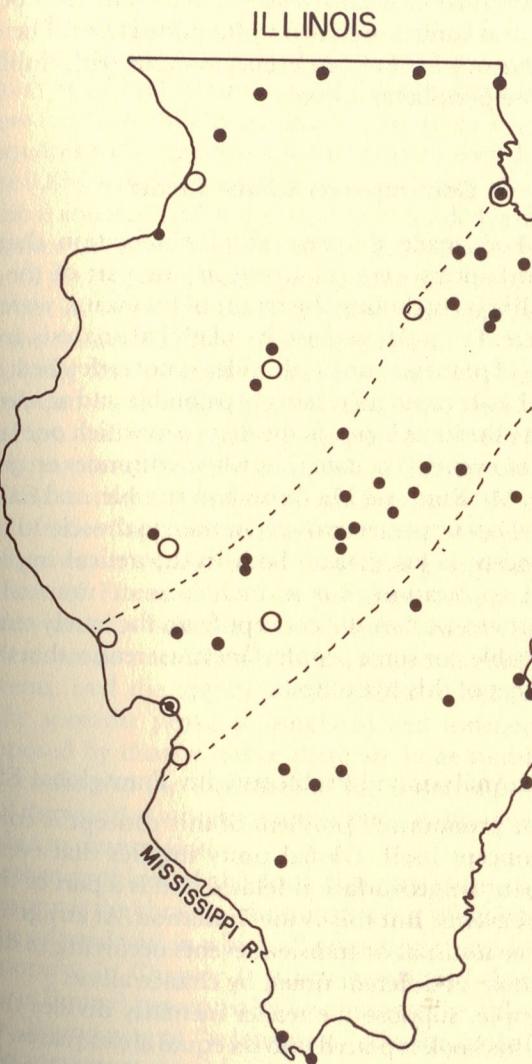


FIGURE 53. Major unusual event clusters (dark circles) and unusual archeological sites (open circles) within the state of Illinois.

persistent recurrence of events between 1851 and 1973 occurred within the central band designated by the dotted lines. There was a significant tendency for Fortean events to occur within this band relative to more peripheral areas.

### Contemporary Spatial Events

Charles Fort made the interesting observation that when massive perturbations were occurring in one part of the world, other disequilibria (including the report of his events) were taking place elsewhere. From the perspective of global analysis and from the viewpoint of planetary unity, this idea is not farfetched; indeed, it is one that has become increasingly palatable and academically attractive. The limiting factor is the degree to which one includes the category of events. To state that when volcanoes erupt in the South Pacific, Mt. Etna and Mt. Stromboli rumble, and California shakes is novel but not necessarily repugnant to the scientific status quo. The concept is fascinating both in theoretical implication and practical application. But to include more unusual events within the pattern pushes the concept from the barely tenable to the unconceivable, for some people. One must realize that there are different degrees of this hypothesis.

### Conceptual Analysis and Problems with Transglobal Effects

The most pronounced problem of this concept is contained within the concept itself. Global unity implies that everything occurring upon the geosurface is related and is a part of the total population of events. But this is the limitation. At any given time there should be unusual or transient events occurring in different spaces than those of different times, by chance alone.

For example, suppose the reader mentally divides the table upon which this book is placed into six equal area squares. Within each square a single die is placed. For the sake of illustration, let us assume that every time a "two" is rolled, this represents the occurrence of a transient event (sudden flood, earthquake, heat

wave, etc.) or the report of a more unusual event (blood falls, rock falls, etc.). Now roll each die in each space once. The probability is  $1/6$  that any single space will show a "two," however, the probability is 0.67 (67 percent possibility) that *one* of the squares will show the "two" by chance alone. If the table were divided into twelve squares and a die thrown in each square, then the probability would be 0.88 (88 percent possibility) that a "two" would emerge in *one* of those squares; and, if the table were divided into twenty-four squares, then the probability would be 0.99 (99 percent possibility) that *one* of the squares would demonstrate the "two." In the latter case, 99 out of every 100 times the dice were thrown, *one* of the squares would show a "two" by chance alone.

Applying this concept to transient and unusual events, the difficulties can be seen quickly. If during one week, earthquakes occur in Peru and volcanoes erupt in Iceland, a UFO flap occurs in Missouri, people are "bitten" in Manila and a monster is sighted in Siberia, but during the following week a quake shocks Pakistan, millions of mice "appear" in the fields of Salisbury, fish fall from the sky over western California and whales ground themselves on the beaches of Florida, how do we know that the nuances of probability are not being expressed again? From the model presented here, we do not. The presumed temporal parallels between those events, and the apparent transglobal relation might only reflect the sporadic peaks of unrelated and independent events superimposed by chance. Since there are large numbers of these events occurring in the total area of the earth's surface, different sectors of the world at any given measurement time would correlate merely due to chance alone.

Another problem of the contemporary space or transglobal event concept is the choice of time increment. What interval of time should be selected within which all occurring events are considered contemporary? In Chapter 1, it was mentioned that the human observer is limited perceptually by a number of different built-in temporal boundaries of "relatedness." On the global level, what desirable increment would encompass the effects from a single "global-genic" event? These increments must be established and verified by data patterns.

### Test of the Hypothesis

If the concept is valid, then significant correlations should occur between global manifestations of orthodox and unorthodox transients when many successive intervals of time are analyzed. As mentioned, however, a major difficulty is the selection of the time interval. Too small a time interval would not include response lags in the various structures involved. Variations and delays in human observation or in responses of appropriate meteorological/geophysical factors might not be included. Time intervals that are too large would be cumbersome for analysis, since extraneous contributions from random fluctuations would be increased. However, a first order inspection of time series in the total data array indicated that events tend to cluster within one-month intervals.

Unfortunately, the systematic surveillance of global occurrences is only a recent endeavour begun by the Center for Short-Lived Phenomena, a division of the Smithsonian Institution. This center, an important step towards global data detection, recently published its results for the years 1968 to 1971 in *The Pulse of the Planet*. Data for more recent years are published as annual reports by the center. The data selected from this text included monthly global occurrences of new volcanic eruptions, major earthquakes, fireballs/meteorites, and animal kills due to (apparent) non-human sources. Monthly variations of these events were correlated with UFO, unusual force (human and object-oriented), unusual animal, and unusual meteorological categories, as well as the total number of unusual events for the years 1968 to 1971 (forty-eight months). The correlation matrix is shown in Table 3. Significance levels of 0.01 or less were used only; this means that any correlation coefficient marked with an asterisk would be due to chance alone no more than once every 100 times of occurrence.

For a pilot study, the results are promising: First, it can be seen that a weak but significant correlation existed during the months of these years between global earthquakes and volcanic eruptions. A relationship between volcanism and seismicity has been known for centuries, and is even evident in the conspicuous overlaps of the "Ring of Fire" and the high seismicity profile around the Pacific

TABLE 3: Matrix of correlation coefficients ( $r$ ) for monthly occurrence numbers of different event categories between 1968 and 1971. Variables included are: Volcanism, Quakes (earthquakes), Meteors (meteors and fireballs), Ancats (animal catastrophes), UFOs (UFO reports), Xforces (unusual forces), Xanimals (unusual animal observations), Tweather (transient weather changes) and TFort (total Fortean events).

Variable	Volcanism	Quakes	Meteors	Ancats	UFOs	Xforces	Xanimals	Tweather	TFort
Volcanism	1.00	0.33*	0.21	0.22	0.11	0.30	0.05	0.41**	0.46**
Quakes		1.00	0.04	0.22	0.05	0.06	0.26	0.10	0.18
Meteors			1.00	0.45**	0.03	-0.09	-0.05	0.14	0.03
Ancats				1.00	-0.04	-0.11	0.08	-0.09	0.04
UFOs					1.00	-0.02	-0.05	0.08	0.33*
Xforces						1.00	0.04	0.02	0.53**
Xanimals							1.00	-0.11	0.26
Tweather								1.00	0.65**
TFort									1.00

Ocean. An unexpected relationship also existed between the number of fireballs reported and the number of large animal kills for that period.

With respect to the unusual transient events, no significant relationships existed between global earthquakes (the ones reported in the Smithsonian data source) and Fortean frequencies. However, very impressive relationships existed between volcanism and unusual meteorological events, and volcanism and total unusual events. In principle, a relationship between unusual meteorological events and volcanic eruptions is not surprising, since much of the category reports during these years were concerned with large area weather extremes. The role of volcanic ash has been a suspected source in many weather fluctuations. However, the fact that volcanic eruptions, even as many as six within the month, should influence weather patterns thousands of miles from the activity area, has interesting implications. Or, does a third variable produce both the weather extremes and the upsurge of volcanic expression?

The significant correlation between monthly volcanic eruptions and monthly total Fortean reports for the forty-eight-month interval is by no means eclipsed by the other correlations. Since unusual force, unusual animal and UFO groups were not strongly correlated as single categories, then the suggestion is posited that all unusual events, as a population of manifestation, are correlated with these infrequent natural events.

In context of the theories that will be suggested later in this text, the weak relationships (marginally statistically significant) between volcanism and unusual forces, and, unknown animal appearances and earthquakes are required. Such a parallel between the energetic geophysical processes and these unusual event types allows for some interesting speculation concerning periodic appearances of freak physical forces upon the earth's surface.

For reliability purposes, the data were split into two portions (1968-1969 and 1970-1971), and correlated separately; similar data trends were seen. However, the correlations shown in Table 3 were much stronger during the 1968-1969 interval than the later interval. It is interesting, even with the limited data, that correlations

between volcanism and unusual events fluctuate with the correlations between volcanism and earthquakes. Years in which the correlations between the latter two were high, also display stronger correlations between volcanism and unusual events.

The above data are interesting, but not conclusive; they are only pilot in nature and must be regarded as significant trends. They do suggest that the inductionist method of Fort, with its limited sampling method, may be reliable at times, and that there may be a number of global peculiarities taking place in clusters at about the same time. However, nothing can be concluded about the mechanism of the events. Volcanism, per se, is not likely to be the causal feature of the events. The matrix of relationships must still be elucidated.

### **Temporal Antecedent and Lag Patterns**

This idea was frequently evoked by Charles Fort in his data patterns. Various forms of this concept have erupted in a number of borderline areas and writings. In general, the assumption is made that major cataclysms are usually preceded and followed by a number of infrequent events, including unusual ones. For example, it is known that seismic stress upon local rock structures can slowly increase for days (perhaps even weeks) before the final event (the earthquake) takes place. After the event, aftershocks can occur for some time until some readjustment is made. Before a disease is manifested, prodromes can be detected. When the disease subsides, occasional mild relapses occur shortly thereafter but subside exponentially in time. Metaphorically of course, this is another description of the concept.

### **Application Difficulties**

Like the other ideas discussed in this chapter, in principle, there are fascinating implications involved. However, the practical application is a bit more difficult. Major problems arise since: 1) unusual events may occur before a major geophysical change as a response to gradually accumulating forces, and/or 2) unusual

events may arise as a consequence of a sudden geophysical change. Both types of phenomena would be associated with a major event, but they differ with respect to their position in the time of the relationship. The first type of event could be useful as a predictor of things to come; the second type is less informative since it is a consequence of things that have already occurred.

From an experimentalist's point of view the earth is not an optimal laboratory since it lacks the manipulative control of the experimental setting. Predictions about the accumulating forces preceding a major geophysical event would be difficult enough since data on changes of forces, rates of change and structural factors would be required. To complicate matters further, the close temporal proximity of several impulses might not only initiate a series of post-impulse oscillations to cancel, summate or lag with each other but also trigger forces already accumulating.

A pictorial representation of this problem is shown in Figure 54. Here a sudden impulse (some highly energetic event, like an earthquake) is instituted upon the fragile stable-state condition of the earth system. Like any homeostat, the earth's servo-system attempts to adjust to the demand or return to the initial baseline. Since the impulse, by definition, is transient, the latter reaction takes place. The return to baseline is not a simple reaction but proceeds in a decreasing oscillation, depending upon the damping factors within the system. With each peak, let us assume that an increase of unusual events takes place.

The first evident difficulty in such a situation would be the lag time of the system. In other words, how long does it take before the system responds to the impulse? Is the latency quantifiable in terms of days, weeks, months, or even more difficult to comprehend, years? Correlations in the last section of this chapter do indicate that events occurring *within* the month are significantly related, but no analysis was made for *phase lag* effects. Conceivably, the increase in fireballs may be more strongly correlated with volcanism or earthquakes occurring two months later, three months later, or even one year later when the earth has returned to the particular portion of *solar* space. Similar phase lag relationships might exist for other categories of Fortean phenomena.

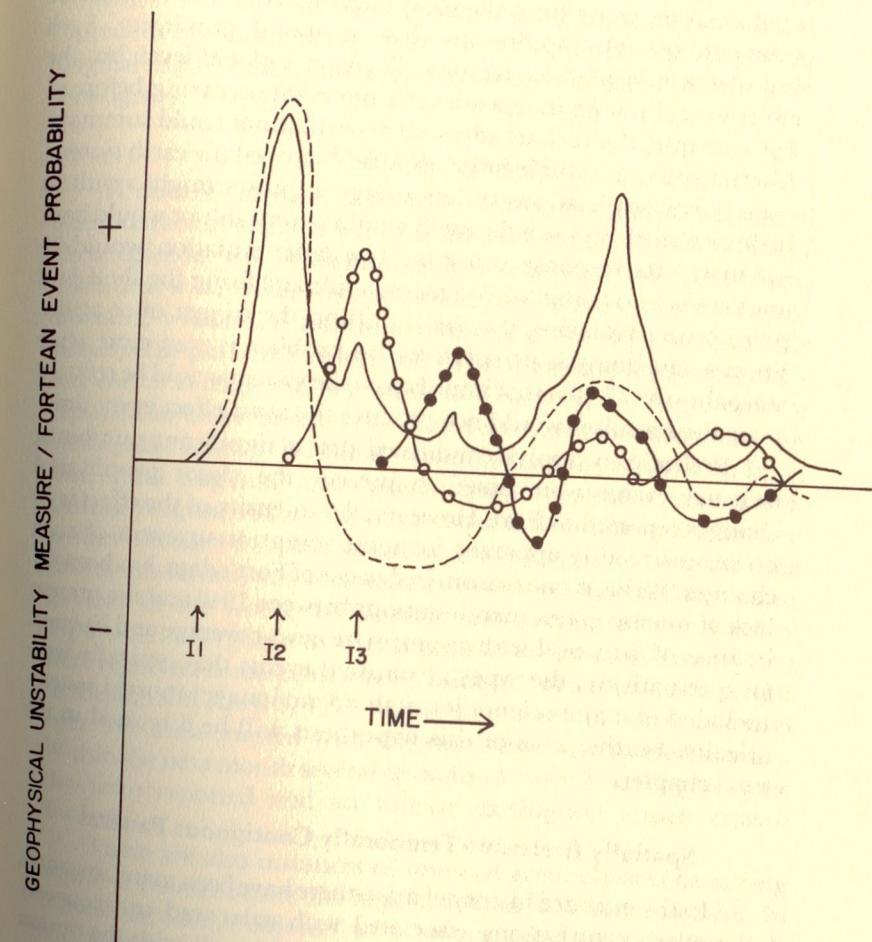


FIGURE 54. Demonstration of three different "impulse" stimuli: I1 (broken line), I2 (open circles), I3 (solid circles), upon the earth and consequent adjustment oscillations upon geophysical structures. The probability of unusual event occurrence (solid line) is displayed as the sum of the oscillations produced by the effects of the different impulses.

A second problem evident in the diagram is the analysis confusion resulting from the superimposition of several response trains to several impulses in close temporal proximity. Each impulse would produce its own effects on a global level, but the effect would not be independent of the event occurring before it. For example, the various adjustment oscillations could summate. Alternatively, if a single large impulse disturbed the earth system, consequent applications of less energetic pulses might result in little overall effect since the earth would be unstable or would have exhausted its response capacity. The latter situation would be analogous to pulling the trigger on a rifle and firing the shell, and then, before replacing the shell, pulling the trigger once again. From a data analysis perspective, this problem is even more acute since the overall effects of impulses on the system would be reduced since the impulses would not produce the same effect every time.

Preliminary analysis indicated that a significant number of unusual events were noted to precede the major geophysical changes reported by Fort. However, the intensity of the effect is by no means readily apparent for more recent occurrences of such changes. Perhaps one reason, in defense of Fort's data, has been the lack of intense major manifestations between 1940 and the present in areas of the world with appropriate news coverage and literacy. Or alternatively, the types of unusual events that typically were included in major science journals are no longer reported systematically. Further tests of this hypothesis will be discussed in the next chapter.

#### Spatially Irrelevant-Temporally Contiguous Patterns

In the recorded history of man, there have been many instances of stellar perturbations associated with solar and consequently terrestrial transient events. Fort amused himself with the option that suddenly appearing stars, light years away, could somehow contribute to the distortions in our space and time. In Fort's data, and surprisingly enough in more recent years, there have been repeated, conspicuous contiguities between stellar events, hundreds of parsecs in distance, and solar-terrestrial changes,

during which time an assortment of space-time transients was recorded. However, in a world where man is the measurer, such apparent coincidences may only reflect the idiosyncracy of psychological significance and the unconscious potency of temporal contiguity.

#### Test of the Hypothesis

A number of event clusters have been temporally associated with marked changes in the measurement of star activity. A few of these episodes will be mentioned for the reader's interest. In May, 1866, a new star suddenly appeared in the constellation of Corona Borealis; within the month, explosions in the sky and rock falls occurred in parts of Europe, and Aristarchus displayed a brilliant red color. During the first week of February, 1872, glares were reported in Orion and meteors were seen above the epicenter of an earthquake in Italy. Within the month, dustfalls occurred in Italy, Sicily and England, and "psychokinetic" episodes were noted. During August, 1885, a new star, nova S Andromedae, appeared within Messier 31 (Andromeda); fowls began to migrate (the earliest on record) and temperature lows were recorded in various sections of the world. UFOs were seen and in the first week of September, afterglows in several parts of the northern hemisphere were reported; some people saw "mirages" of animals and people in the sky. On April 3, 1971, flashes were seen in Polaris; two days later Mt. Etna erupted with the worst intensity in eleven years. Within the next month several episodes of "metal" falling from the sky were reported and an intense earthquake struck eastern Turkey.

There are also instances of unusual event clusters occurring within a month *before* the reported change in star intensity. In September, 1878, "objects" were seen crossing the solar disc, fish fell in several areas of California, "psychokinetic" episodes were reported, and in the first week of October of that year Hyginus N became prominent only to disappear shortly thereafter. During January, 1892, tidal waves were noted in the Atlantic and Pacific Oceans, and earthquakes shook central Europe, India, Japan and northeastern U.S.A. Record-breaking shocks shattered Tasmania

and luminous clouds were seen. Throughout the world, in Europe, India, South Africa, Australia and the United States, "meteors" fell, auroras were seen in the sky and mirages of hunters and Indians were reported from Montana. Floods were reported in the New England states and Alabama received snow for the first time in seventy years. Then a new star became obvious in Auriga during the first week of February. Suddenly, during the first week of August, 1972, the great solar flare episode began, the most massive display in solar history. Throughout that month meteors were seen, brilliant fireballs were reported and UFOs were recorded; Fortean events approached a maximum. Almost one month later, a radio outburst, unprecedented in the history of radio astronomy, struck the earth from Cygnus X-3.

Although these cases imply scientific and environmental importance, their occurrence may only reflect psychological significance. Analysis of unusual event data between 1840 and 1972 resulted in only a marginally significant tendency for "new stars," or more recently, sudden radio bursts, to occur within one month of the unusual event cluster, that is, the event cluster  $\pm 1$  month. The trend is apparent within the Fort data, but is not consistent for more recent data populations.

### Implications of Stellar-Fortean Contiguities

There are many problems involved with the evaluation of the observation of a "new star," especially those which ostensibly appear and disappear, or increase brightness (or radio output) only to suddenly decrease their incident power output. It is difficult to determine if the star actually displayed energetic changes or if something in the vicinity, not at stellar distances, masked the star behind it. Alternatively, some feature of local space within the solar system (or the entire system itself) may have allowed for the selective focusing of the electromagnetic wavelengths measured.

Despite these difficulties, the temporal proximities between sudden increases of incident electromagnetic radiation (light or radio frequency) from distant stars and Fortean events suggest that something besides the radiation left the star at about the same time.

This something approached and intercepted our solar system at about the same time as the electromagnetic component, but was sufficiently intense to produce significant changes in the system; some of these changes were observed on the earth's surface as Fortean phenomena.

Recent concepts in physics and cosmology may give us some hint concerning the nature of that "something." It is now speculated that the fabric of space, within which gravity occurs, consists of extremely small particles, the controversial neutrino sea. What man measures as "gravity" may occur within this milieu as Weberian wavelets. Essentially, the concept is similar to eighteenth century mechanical wave theory and nineteenth century electromagnetic wave theory. Any change within the milieu would be mediated in a wave-like manner. A sudden intense disturbance within the medium would be manifested in a manner analogous to a shock wave, more appropriately, a *gravity shock wave*.

Although the gravity shock is a hypothetical entity, the positing of its existence has interesting implications. First, one would expect that during intense cosmic disturbances, such as nova or supernova, massive changes occur in the space media around the star; these changes would be propagated, not necessarily in a concentric manner, away from the source. For thousands of light years the electromagnetic radiation and the gravity shock would move through space (assuming the metaphor "moving through space" is appropriate). Due to disparities in the intermediate space, the pathways and/or velocities of the two shock waves change and the intercept-times with our solar system shift. In some instances the discrepancy is minimal. The radiation component strikes the earth and is seen by the human eye as light or is recorded by another type of electromagnetic instrument. The gravity component moves through the gravity-mass of our solar system as if it were a single unit; some of the space around and within the earth is influenced, producing changes in unstable areas of matter, such as fault lines, pressure interfaces in the mantle. However, the greatest impact is upon the major mass component of the system: the sun. As the shock wave induces the analogues of ripples within the fabric of the sun's matter, adjustment reactions take place; these are

manifested as solar flares and related solar activities. In turn, these phenomena induce perturbations upon and perhaps within the earth some time later.

In still other instances, the discrepancy between the arrival times of the gravity shock and the electromagnetic surge may be quite significant. Due to changes in the interstellar media, such as electron densities, one might expect the electromagnetic forms associated with the stellar disturbance to be delayed relative to the gravity shock. Such differentials in arrival time may be in the order of a month. Although such temporal lags seem excessive, they are actually quite small when one considers the total (earth) time between the beginning of the shocks and the arrival in solar space.

For example, let us examine the recent Cygnus X-3 episode. Let us assume that some cosmic event occurred in the vicinity of Cygnus X-3 that resulted "simultaneously" in the outburst of radio frequencies and the initiation of the gravity shock. Let us further assume that the shock wave reached the solar system first around August 2, 1972 (earth time). This was the beginning of the massive outburst of solar flares and the greatest solar storm in 370 years of observation. For about a week, the gravity shock passed over the solar system, manifesting its major changes in the geometries of greatest mass. (Even the earth's spin may have been affected but human observers on the earth's surface would have more likely attributed this change to the more blatant solar disturbance). Then, about a month later, the radio frequency component reached the solar system and was detected.

Estimations indicate the distance of Cygnus X to be about 30,000 light-years. Under normal assumptions of present day cosmology, this means the radio frequencies, travelling at light speed, would have left this area 30,000 years ago. Consequently, if the gravity shock left Cygnus X at the same "time," a one month arrival delay would involve a discrepancy of only 0.5 miles/second during the travel period. In other words, the radio frequency component would have to average only 185,999.5 miles/second relative to the gravity shock's 186,000 miles/second in order to arrive at earth one month behind the latter.

Alternatively, slight changes in the curvature of space for the

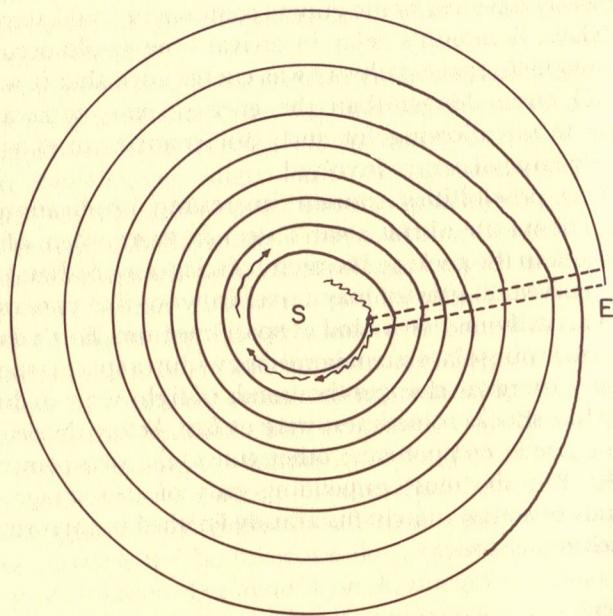
pathway travelled by the electromagnetic component relative to the pathway travelled by the gravity component could account for such delays. A month's delay in arrival time would occur if the electromagnetic space-pathway was curved such that it was only 1.0000027 times longer than the gravity space pathway. The primary factor allowing for such discrepancies to exist is the extremely large distances involved.

These possibilities contain interesting implications concerning the nature of our solar system in space. Men who now highly rank in the pecking hierarchy of science agree that: 1) space may be curved, 2) gravity may travel in wave-like patterns, and 3) there actually may be a kind of space-medium. Fort's data and ideas picture our solar system immersed within a space responding to massive energetic changes thousands of light-years in distance. Gravity-like shocks sometimes strike us first, before the detectable electromagnetic components; other times, the two components coincide. But the most impending part of this image is the thousands of stellar cataclysms already finished in their time and approaching us *now*.

### Implicit Assumptions of Stellar Space

Before this chapter concerned with popular Fortean concepts is closed, we must emphasize again that the homo sapiens implicitly assumes certain properties about space. No matter how sophisticated the astronomer, the physicist or the psychologist, these assumptions are a part of the personal equation. No matter how elaborate the machine, the ultimate measurer is still a member of the man species. We assume distance linearly moves out, away from the source of measurement; we assume that, under given velocities, predictable time intervals occur for particular spaces. We assume we are isolated from the "distant" events of interstellar space.

In the previous section, a hypothesis was made to explain the apparent relationships between Fortean events and stellar changes. It dictates that, although we are separated in space and time from certain cosmic events, we may still respond to their consequences.



ANOTHER SPACE FORM

**FIGURE 55.** A hypothetical view of space independent of our usual sense references in order to demonstrate ostensible "space-independent" event series. The distance around the coils from S (a star) to earth (E) is normal space; the line between S and E is the relationship in another space form.

But this supposition still employs an assumption of distance based upon an expansive space and time. Suppose, instead, there are other functional relationships between events not employing the latter mode of expression. In such a situation, a cosmic event in the vicinity of a star thousands of light-years away may traverse a completely different functional path and impinge upon earthly space in a manner violating normal assumptions of space-time and causality.

It is hard to conceive such a premise. How could such relationships exist over long and apparently unrelated distances? If we assumed, for illustrative purposes, that the average star was the size of your thumbnail, then the average distance between each of the stars in our galaxy would be about sixty miles. We are dealing here with a most unusual concept; one that might be misinterpreted if care is not taken.

One way to conceive such relationships, in an extreme form, is shown in Figure 55. In this figure, the fabric of space is shown as a connected series of concentric multilayered rings, wrapped and rolled layer upon layer like some great myelin sheath. The width between each layer is some distance which cannot be presently measured with a three-dimensional reference. When light is propagated from a star source (S) in this theoretical space, it must trace round and round the repeated rings; with each circumvention the "distance" from the source increases. Finally, the light ray reaches earth (E).

Now we, as perceivers, have evolved in this space; our sensors have been shaped to see light moving in straight lines (or at most as slightly bent ones); any cues that are used to detect the distance of objects are based upon these primary experiences. The concentric spirals of space cannot be perceived since the observer is within the system, so distance is measured only as the linear sum of the vortical space. But suppose some cosmic event occurs at point S that does not follow the usual mode of mediation through "space"? Instead, the event is passed perpendicular to the normal route, outside the usual space form. Then the "distance" between S and E would be of a different order. From this level of perspective the stars would not be isolated entities in a large and empty interspace; they would be related by some unsolved tensor.

## chapter 15

# Large Scale Solar-Geophysical Electromagnetic Phenomena as Contributory Factors to Unusual Events

Of the basic forces of nature, electric and magnetic forms are among the most diverse in their manifestations. Humanly conceived as "fields of force," electromagnetic phenomena exist on a nuclear, molecular, cellular and organicistic level. These phenomena occur as forms of subatomic fragments, the smallest bodies of our scientific perception, and as components of galaxies, the largest concepts we can measure.

Considerable work has been done with the small experimental magnetic fields produced by electrical currents and with the electric fields induced by voltage plates. However, little is known about the precise dynamics of planetary-size fields, or of the displays of these fields in large areas of space and time. More importantly, nothing is known about the small disparities, insignificant compared to the whole, that might be produced. These small vortices in the electromagnetic geometry of large space, magnifications of their experimental miniatures, would exist in a spatial form detectable by the human observer. As eddy currents that inevitably must be produced in a dynamic body like swirls in a stream, these areas could be regions of transient electromagnetic "turbulence."

There is no intent to evoke electromagnetism as the source of all phenomena. For if this was attempted, electricity and magne-

tism would fade into the old order of amorphous, single-source mechanisms that have plagued men for centuries. It would no longer be science, but mysticism. In this chapter a concept is developed involving the role of large scale electromagnetic fields, normal in principle but abnormal in the geometry and size of application.

### Recent Scientific Discoveries

One level of discourse that has been emerging rapidly in the era of satellite telemetry is the solar system as a functional unit. From this perspective, a normal G-2 star (called the sun) is surrounded by a number of planets that are in a dynamic equilibrium with it and each other. The earth is one of those planets, and as such, is susceptible to the changes and perturbations of the system.

During the last decade a number of discoveries were made and verified. First, the sun displays a weak field that moves out through three-dimensional interplanetary space, at least to the distance of Jupiter. This field is divided into four sectors: each sector has a polarity opposite to the adjacent sectors. Consequently, boundaries exist along each sector's edges within which instabilities can occur. The sector sections rotate completely every twenty-seven to twenty-eight days along with the primary solar mass. It is now clear that these rotations are connected with recurrent geomagnetic storms (Fraser-Smith, 1973; Lapointe and Vallee, 1970) and even to the circulation of the earth's atmosphere (Wilcox, et al., 1973). More elusive structures of the solar field contribute to an impressive semiannual variation in geomagnetic disturbance (Russell and McPherron, 1973) with activity peaks during March and September-October.

Periodically, massive instabilities within the sun, perhaps induced by the planets, pump massive amounts of charged particles into interplanetary space. When these "dehse" clouds of energetic particles collide with the earth's magnetic field, oscillations of the field begin like the movements of a large, invisible, bouncing spring. On the earth's surface, such oscillations are measured as geomagnetic storms. During the storm condition a

number of electromagnetic anomalies *transiently* exist in the upper atmosphere. Radio communication and other ionospheric-related processes are damped; northern and southern lights may be seen on the night side.

One of the most spectacular forms of solar instability is the flare. During periods of vigorous solar storm performance, gigantic tongue-shaped protuberances are ejected from the solar sphere. Like huge bolts of energy, preceded by a massive shock wave (Dryer, 1974), their products collide with the earth. Some of these flares, such as the August event of 1972, are so intense that the earth can be minutely displaced from its orbit.

However, the terrestrial consequences do not terminate with the immediate impact effects. For some days later the earth's electrical and magnetic systems continue to exhibit oscillations. These instabilities can contribute to large scale events on the planet's surface. It is known now that the amount of geomagnetic disturbance is systematically related to the degree of wind turbulence (Beynon and Winstanley, 1969). Low-pressure troughs in the embryonic stages seem to be directly affected by these geomagnetic excursions; low pressure areas evolving at this time display increased energy and severity (Roberts and Olson, 1973).

The sun's influence upon the earth's surface and electromagnetic events involves even greater time spans. The infamous eleven-year sunspot cycle has been correlated with a variety of terrestrial phenomena, from global magnetic field disturbance, whose mechanisms are in principle clear, to human turmoil, whose mechanisms are not so clear. In recent years, strong and still accumulating evidence suggests that the sunspot cycle and correlative fluctuations in solar disturbance are significantly related with extremities in weather. Periods of droughts, excessive rains and temperature extremes, on a transglobal level, show unexpected dependence upon the "vagaries" of solar disturbance. In 1974, M. F. Stringfellow reported impressive evidence, collected over a forty-three-year period, showing that solar sunspot cycles were highly correlated with the incidence of earthly *thunderstorms*.

Collectively, these data show important patterns in context of

what we have reported in this book. For example, significant correlations between tornado frequencies (a more severe form of turbulence) and Fortean areas have been mentioned. An increase in the amount of atmospheric turbulence might probabilistically enhance conditions required for transient or Fortean manifestations.

But perhaps the most interesting patterns involved with geomagnetic disturbances are concerned with the moon, the earth's closest major body with which a dynamic interaction is continually in progress. Presumably, by blocking or shunting the solar wind and by functionally penetrating the magnetospheric tail, the lunar phases significantly correlate with geomagnetic disturbances (Bigg, 1963) and thunderstorm frequency/severity (Lethbridge, 1970). These effects seem to peak about two days after full moon, although a second peak immediately after first quarter is also evident. A most remarkable relation exists between incoming meteor rates and lunar phases (Bowen, 1963); apparently peak meteor rates occur around first and third quarter.

### **Relevance to Transient and Unusual Events**

These new discoveries concerning the interactions between the sun, the moon and the earth, may help us isolate and understand the mechanisms involved with both orthodox and unorthodox unusual events. Data have suggested that many Fortean phenomena are associated with thunderstorms and freak turbulence, a condition exacerbated by geomagnetic disturbances. Periods of drought and other weather extremes, correlates of changing solar conditions, are also the prodromes to Fortean episodes. Since transient and unusual events tend to cluster in time over different portions of the earth, the existence of a transglobal effect like the geomagnetic relation is required.

Such planetary effects would not induce the required changes for transient events everywhere, but only those areas that, at the time, show the greatest susceptibility. Thus despite the existence of pocket areas for unusual occurrences, the manifestation of any

event at any given time will be a function of a fluctuating susceptibility.

Infrequent and queer distortions in the solar wind and sector sections could be candidates for the "night flashes," "glows" and other localized luminous displays. We must not forget that the moon is also immersed in the solar stream and would also be susceptible to transient fluctuations. Whether by cause or correlation, the moon revolves around the earth and incoming meteors, the first symptom for many unusual episodes, are modified.

But perhaps the most important contribution of the solar complex to unusual events is the *pulse*, the short-term gush of cosmic energy that can send the earth-moon system reeling into long-term instability. Typically, the oscillations are small and the geomagnetic earth only bounces like a shutter in the wind. There are times, however, such as the August event of 1972, when the sun can erupt with sufficient impact to knock the earth "off its orbit."

What happens during and after the impulse events? Presently, it is thought that the surface stabilities of our planet are a consequence of balanced forces beneath the earth's mantle where the giant dynamo induces the geomagnetic field. When a solar pulse strikes the earth's boundaries and the effects are mediated deep into the surface, are eddy-current-like forces induced which upset the surface equilibria and create the various forms of unusual events reported in this text? Are the unusual astronomical, geophysical, meteorological, animal, and *human* events merely expressions of our earth resonating in response?

The consequent events of that particular pulse strongly suggest the possibility. Between August 2 and 7, 1972, massive flare and sunspot series erupted within the solar atmosphere and shocked the earth. On August 10, huge multicolored fireballs were seen over many areas of the western United States and Canada. Were these storm-induced "clots" of magnetic flux lines within the solar wind, striking the upper atmosphere and releasing the energetic and visible plasma? Two days later, people in Alberta reported a stubby-winged metallic object and on August 19 the United States began one of its largest UFO flaps. Objects were seen

emitting light, football-shaped crafts were reported landing in fields. Then on September 2, one month later, Cygnus X suddenly increased its radio power to unprecedented levels only to decrease again about ten days later. Was the *detection* of this increase also related to some distortion in the solar field? The semiannual variation of sudden stars appearing/disappearing and the solar sector sections have already been shown to have a remarkable overlap.

The above event pattern is not unique in the annals of unusual phenomena. Similar manifestations were noted following the solar proton flare of July 7, 1966; northern lights were seen in several states, fireballs streaked through the skies, and UFOs were seen to land. Less spectacular but intense episodes, like the interplanetary shock wave of September 28, 1967, have heralded the onset of many transient and unusual occurrences. Unfortunately, only the recent sophistication in satellite reconnaissance has allowed the required data to be collected.

### Explanations of Unusual Astronomical Events

Models can be constructed and predictions can be cast involving the role of solar perturbations in the occurrences of unusual astronomical events. Only two models will be presented here.

#### Solar Peculiarities

One class of reports noted in early astronomical journals involves the ostensible occurrence of "black objects" crossing the solar disc. It is difficult to differentiate, in these older reports, the exact distance of the objects. Quite possibly, some of these objects may have been very close to the observer. Still, however, occasional reports by astronomers over the decades involve dark, non-sunspot objects moving across the solar disc. Recent developments in plasma physics have evoked some interesting modes of explanation.

Objects that pass between a luminous source and a measurement device are observed because a discrete amount of light is

blocked. Typically, the conclusion is made that an actual object exists, since "matter" is required to block the light. But this is not always correct. Sunspots look like dark objects, merely because the temperature in the sunspot is lower than adjacent areas. It has been speculated that the lowered temperature of the sunspot areas is maintained by tangled solar magnetic flux lines which act as a type of "magnetic bottle" to contain the solar plasma. One concomitant effect of the plasma retention is the temperature reduction.

During times of more disturbed solar conditions, a similar situation might be induced some distance away from the solar surface (Figure 56). Here the solar magnetic flux lines again would be tangled into a "magnetic bottle." Plasma contained or trapped within the bottle would remain at a reduced temperature. From earth, against the background of the brighter sun, the magnetic bottle might look like a dark object. As long as the conditions responsible for the formation of the tangled flux lines were main-

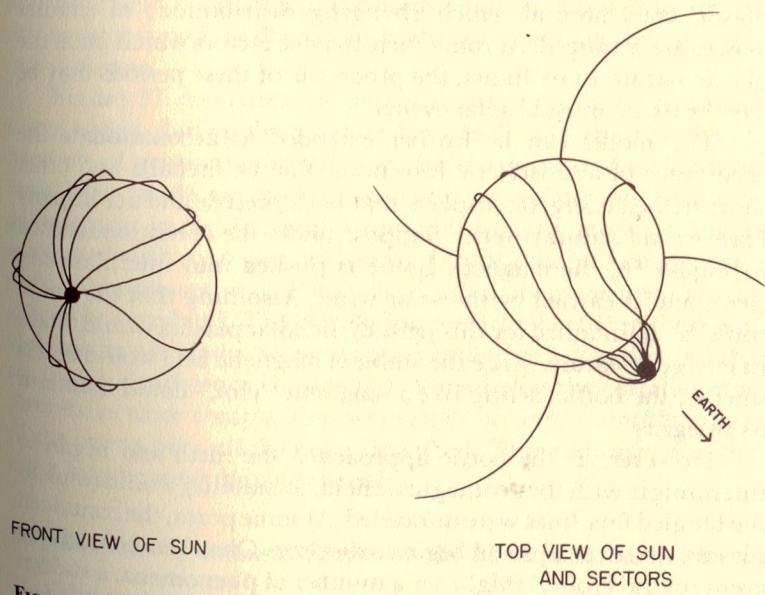


FIGURE 56. Hypothetical "magnetic bottle" produced by tangled flux lines in the solar magnetic field.

tained, the bottle would exist. Anything that disturbed this fragile condition would break the bottle, unravel the flux lines and send the trapped plasma dispersing to a lower density equilibrium in space. To the earth observer, the object would no longer be visible; it would have "disappeared."

The cause of the solar disturbance or the increment of space in which the magnetic bottle is formed does not directly concern us here. One might suspect that areas of great turbulence, such as a planetary barycenter outside the solar radius, would be a candidate space. In recent years, the possibility of an integrated planetary contribution to solar disturbances has been entertained with considerable seriousness. Dynamic changes in the balance of the planets would be an important factor here and may contribute to the relatively long intervals between these unusual events. We are *not* proposing here the view of a peripheral mysticism or simplified astrology. The point is merely being reiterated that the sun is a plastic mass around which changing distributions of smaller masses are arranged. At times there may be factors which push the plastic nature to its limits; the prodrome of these periods may be seen by us as unusual solar events.

The model can be further extended to accommodate the occurrence of atmospheric luminous objects, fireballs and other short-termed energetic displays that both precede and accompany Fortean and natural events. Suppose under the conditions shown in Figure 56, the magnetic bottle is pushed into interplanetary space and is carried by the solar wind. Assuming that the bottle could be maintained for this period, the solar plasma would retain its energetic nature. Since the ambient magnetic field would be less intense, the bottle, acting like a magnetic "clot," could maintain its integrity.

However, as the bottle approached the earth and began to intermingle with the geomagnetic field, instability would result as the tangled flux lines were unraveled. At some point, the contained plasma would escape and begin to disperse. Observers beneath the event on the ground might see a number of phenomena: a sudden brightness, a large ball of light that disperses quickly within a few seconds, or a related display. If the energy dispersions were fast

enough and close within the atmosphere, large detonations and explosions could be recorded.

### Transient Lunar Phenomena

The moon is also immersed in the environment produced by the sun. Consequently, this neighbor of the earth should also be susceptible to short-term perturbations associated with the sun's instabilities. In a previous chapter, such reports of transient lunar phenomena were discussed. T.L.P. have been known to exist for centuries; their episodic existence is short and their recurrence time is long.

If the earth-moon twins share a similar solar environment, then perturbations on the earth's surface could be correlated with disturbances on the moon. The mechanisms of production, no doubt, may be different. For example, the moon has a very weak magnetic field compared to the earth's and the manner by which the moon responds to deviations in the solar field may be considerably different.

Figure 57 compares the seasonal variation of all transient lunar events during the years 1872 to 1930 with the U-index, a measure of geomagnetic variation, for that period. Assumptions have been made by many researchers in geophysics that this geomagnetic index is a rough estimate of geomagnetic disturbance associated with solar perturbations. If the source of both geomagnetic disturbances and T.L.P. is similar, then their variations should be correlated. The correlation coefficient between these two variables is +0.48; this value is in the anticipated direction but the statistical significance is marginal. Nonetheless the correlation is impressive since comparisons were made between *monthly* values of the events over *all* the years described. This indicates that the effect may be weak but consistent.

### Explanations of Unusual Events on the Earth: Seismoelectricity

The authors contend that the existence of man upon a thin shell beneath which mammoth forces constantly operate, cannot

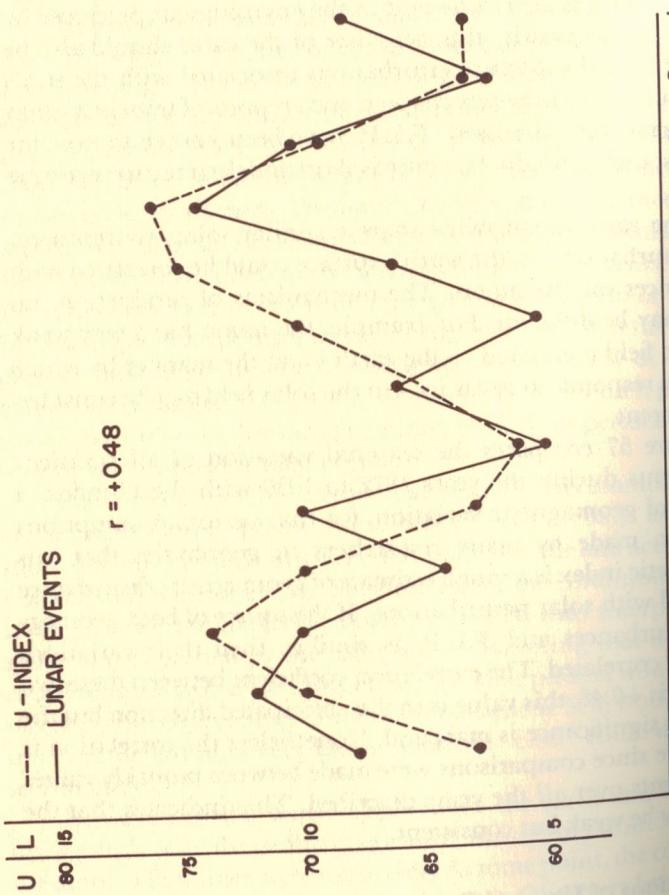


FIGURE 57. Percent of total monthly occurrences of transient lunarevents and average monthly fluctuations of the geomagnetic field (U-index) for the years 1872 to 1930.

be over-emphasized nor is it exaggerated in perspective. Beneath the  $2 \times 10^8$  square miles of surface life activities, geophysical forces continue to interact and induce changes upon that surface. Shifts in the crust are felt as earthquakes. Distortions in distributions of mass or metals result in large scale magnetic and gravity anomalies. These are the obvious, the blatant, and the easily measurable productions.

Probabilistically, there should be smaller areas, perhaps not more than a few feet in radius, in which these sub-surface forces are manifested. In areas where the constructions and compositions are more optimal relative to adjoining spaces, the forces could be significantly different or magnified. Such areas could be responsible for long standing "ghost light" regions, "magnetic vortices," "mana areas," "taboo areas," "no growth areas" and a variety of peculiar geographical manifestations reported in various cultures around the earth. Some of these areas would be long term manifestations while others would be produced by the transient shifting and settling forces deep within the earth's interior.

#### Tectonic and Pre-Seismic Sources

If the data patterns are closely scrutinized, it becomes clear that the majority of unusual and transient events are closely tied in time and space with the occurrence of seismic movements. Many unusual events occur before the manifestation of a severe earth jolt or a volcanic explosion. Could it be that unusual events are produced by the forces exponentially accumulating in seismic-prone areas? Are unusual events transient by nature because the accumulating stresses upon the subsurface structures pass through several *qualitatively* different expression modes until the structures finally break, and the earthquake is felt? Are the periodic manifestations of unusual and transient events in earthquake prone areas — like the faults of California, the New Madrid region and the New York-Vermont-New Jersey crescent — results of the seismic pressures waxing and waning below the surface? And, in context of the purpose for which this book was written, can unusual and transient events be used as warning signs for impending catastrophe?

We think that these hypotheses must be seriously and objectively tested, for the data consistently point towards seismic-related sources. It may be by no means spurious that unusual events cluster around these areas, despite the confounding contribution of population.

Recent developments in seismology have opened many avenues for understanding pre-seismic events. Perhaps the most outstanding idea has been pursued and elaborated by Finkelstein and Powell (e.g., 1970). These scientists have suggested that, during the strain of seismic pressure, forces pushing on rock crystals in a large area produce electric fields through a modification of the piezoelectric effect. These pre-fracture electric fields can reach values of several thousand volts per meter, intensities capable of ionizing the local area into visible "luminosities." Indeed, one of the more constant contiguities of unusual events has been between earthquakes and luminous airy displays. Empirical and theoretical supports for these phenomena have been reviewed by Derr (1973).

The extent of these fields may be by no means small. Consider the large subsurface regions, perhaps hundreds of square miles in area, with near-fracturing forces pushed upon them. The resultant electric and magnetic fields produced could involve large volumes of space, reaching high into the ionosphere. About one hour before the Hilo (Hawaii) quake of April 26, 1973, radio transmission ceased due to the apparent "disappearance" of the ionosphere; what extraordinary electric forces must have been generated before that fracture!

Pre-fracture strain may not only generate piezoelectric phenomena, but sonic energy as well. Finkelstein and Powell also mentioned this option for the quake situation. However, before the quake, as forces shift and move and rock-bursts increase in frequency, audible as well as non-audible (infrasonic and ultrasonic) sonic fields are theoretically possible. Antecedent rumblings and subterranean "groans" weeks to months before major surface dynamics around epicenters are frequently reported in Fort's data. As mentioned elsewhere, the mid-magnitude quake that jarred parts of the upper midwest and northeastern states in February,

1973 was preceded some weeks by hundreds of subsurface "rumbling" and "popping noise" reports from the local population. Some of the noises seem to originate "inside houses," indicating that the house area was merely a "hypocenter" for the localized activity.

In many respects, the prospect of sonic energy produced by seismic sources and strain conditions is a more palatable alternative than the electrical field hypothesis. By themselves, such energy bursts might explain many forms of short-termed Fortean episodes like the "phantom sniper" effect, any of the glass-related kinetics, as well as the more obvious "unknown hum" data.

### Unusual Pre-Fracture Effects

In this portion of the chapter, we are concerned more with the intense, localized manifestations of slowly accumulating forces in a seismic area. Such forces may accumulate for weeks, or perhaps even months, and be expressed in a qualitatively different fashion, since the quantal sums of energy required for a fracture would not have been reached. A pictorial representation of this hypothetical area is presented in Figure 58. As can be seen, because the electrical field produced by the accumulating strain is not sufficiently intense to permeate large areas of surface space, it is concentrated into the most susceptible localized area. The net result is an "electrical column." In the figure, the radius of the column is assumed to be between 10 to 100 feet. However, larger radii are conceivable, including values in the order of a mile.

Now during the pre-fracture sequence or, alternatively, as long as the particular stress is maintained, a number of interesting possibilities could take place. First, due to the high electric field in the localized area, low level ionization of the air within and adjacent to the column could occur. Consequent collection of Bergstrom nuclei would allow precipitation of water vapor, even on a clear day. Second, if the field was of sufficient intensity, rocks or other dielectrics in the area might "bounce around" (especially if the field was time varying) and only appear to be "popping" out of the ground or "falling" from the sky.

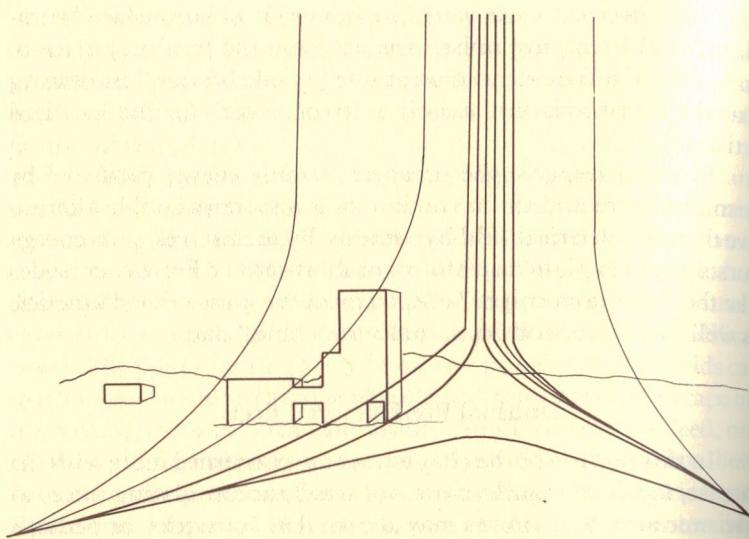


FIGURE 58. Pictorial representation of a hypothetical "electric field column" that might be produced by accumulating tectonic stress in subsurface areas.

Third, suppose an electrical apparatus approached the area. Under optimal conditions failure in lighting systems or even the electric field-dependent engine could take place. Of course, if the electric field strength reached a value sufficient to ionize the local air (in a manner analogous to ball lightning), then the viewer adjacent to the field might indeed see a luminous glob of substance and conclude a UFO has approached.

#### Dynamic Characteristics

It is important to realize that the electrical column hypothesized in the last section is not refrained from movement. In fact, its spatial dependency would be primarily determined by the subsurface forces producing it. If the subsurface stress is moving along the fault line or rift, the concomitant surface manifestation would also move in a similar manner. The actual shape or physical dimension (height above the ground) would depend wholly upon these forces

and their interactions with the characteristic electrical properties of local structures, including large buildings.

The occurrence of unusual events produced by the hypothesized model would not always precede actual earthquake production. In this statement lies the limitation of testing the model in a controlled fashion. For, if the same tectonic pressures responsible for the electric column did not exceed the limits of the local rock structures, then the quake would never take place. There are many areas of the earth where pressures build, only to be relieved; volcanoes become warm, only to become silent once again. Such waxing and waning is characteristic of a system adjusting to new or different matrices of forces. When the forces wax, a cluster of transient events occur — rocks move, "phantom sniper phenomena" appear, rain falls on a clear day, UFOs are seen, car engines suddenly stop, or a "force" pushes cars from the road. Since certain areas are most susceptible to the effects of these forces, when the forces reappear later, and the cycle waxes again, another burst of phenomena takes place in the same area and the concept of "a window" is recognized.

Herewithin also lies the seductive illusion of the phenomena. Transient phenomena occur, burst after burst within an area, and the human observer begins to satiate. Repeated and protracted presentation of stimuli, even the most odd, results in habituation after a while. But earthquake cycles do not oscillate on a constant probability curve; the baseline of the entire curve moves. There are cycles within cycles, like the twenty-eight-day solar cycle superimposed upon an eleven-year epoch. Whereas in a century, a few peaks are reached and a few instances of transients are seen, the maxima of an earthquake curve for an area may be hundreds of years apart. Between those maxima large cities may be built, complex civilizations instituted, and a world concerned with itself precariously exists on the surface. Then the earthquake curve slowly begins again to reach its maximum.

There are such areas in the world, where the earthquake maxima have long epochs, centuries between their peaks. Areas like the New Madrid region through Missouri, Illinois and probably through Ohio, or the New England cluster are examples.

California, that complex of earthquake cycles, may be included conditionally within the category.

### Effects on Life Forms

The existence of electrical columns produced by accumulating tectonic stress would affect living electrical systems as well. Recent experiments indicate that animals may be sensitive detectors of electric, magnetic and infrasonic fields. Science is still not clear *how* animals detect ambient fields, but some species seem to use them for migration and perhaps even communication (Bullock, 1973). A frequent report from the observers of violent earthquakes is that animals display emotional behaviours *before* the occurrence of the first shock. Is the correlation a spurious one based upon the distorted and enhanced memory associations of the traumatic event within the human observer, or do animals detect the incident forces? Experimental verification still must be demonstrated.

In this context, the sudden appearance of animals of the same species within a small area would not require necessarily the postulation of "matter-transportation" hypotheses nor of similar untenable concepts. Instead, we could propose that animals normally dispersed in the immediate area of the electric field column would be attracted towards it, and consequently become *conspicuous*. Birds flying through the column would be adversely affected and lose their directional sense as well as flight coordination. Ten years ago, such an idea was unthinkable. Now, after the data and experiments produced by Talkington (1966), Walcott and Green (1974) and Southern (1975) the effects of magnetic and electric fields upon bird flight are a real possibility, but not the only possibility.

Further applications of the electric column concept can be made. In the context of the hypothesis, the electric field distortions do not have to be limited to land areas; similar conditions could be induced over water in oceans, seas or lakes. There is now strong evidence that certain fish communicate and are influenced by electric fields. If an electric column was produced over the surface

area, then such species would be influenced selectively. The same stimulus might also be the focal point for atmospheric turbulence that could pick up and carry the species. High electric field gradient precursors to sudden turbulence have been observed.

### Effects on Human Life Forms

Perhaps the most complex bioelectrical system of all is man. Within a small three-dimensional locus called the body, unfathomable ensembles of electromagnetic circuits exist. These circuits are correlated with experiences of consciousness, memory, perception and all the various properties labeled "human." Typically, human bioelectrical field patterns are displayed in a systematic manner and consciousness and thought flow in a *perceived* orderly manner. But even this system is not infallible. Experiments by Leduc (see Herin, 1968) and more recently by others, indicate that small currents induced across the scalp can produce "dreamy-like" states, episodes of paralysis, or intervals of unconsciousness. Certain combinations of electric current polarities and intensities seem to influence the "d.c. battery" or steady potentials of the brain. Ironically, one of the most electrically unstable parts of the human brain is the hippocampus, an important component of the emotion and memory circuit. If this system is stimulated, even in the "waking" state, the person is inundated by stored images (real and unreal) that he or she cannot control.

The stimulating currents are not very large in magnitude, and could quite possibly be induced by transient electrical fields allegedly produced by substructure geological stresses. The implications of this supposition are immense in scope. Think of the many instances of Fortean events and UFO observations where the observer was paralyzed, or "blacked out" when he *closely* approached the luminous blob or vice versa. Remember the different forces that have not only stopped automobiles, but "knocked down" large numbers of men. These would be instances of pure and blatant assaults upon the brain's electrical system.

But the effects would not stop at gross distortions in bioelectrical systems; more subtle modifications in "thought" and

perception could exist. With this unnatural stimulation of the memory areas in the brain, the person could vividly and emotionally experience his stored images; he could richly perceive the nightmares and crude monsters normally suppressed from consciousness except during dreams. A human being, under this condition, could experience a "waking nightmare" of fear-inducing stimuli. They would seem quite real, quite material, for there would be no reason for the person to think otherwise.

Consequently, what the person sees could be shaped by his expectations, what he has heard or imagined or seen in movies. Each person might perceive the same stimulus in different ways. Where one person sees a globular UFO with men inside, another person might see a metallic ship. When one person sees a giant, beastly humanoid with fangs, another might see it with a hideous, wolf-like face. There could be combinations of animals in the monsters seen. Examples of these instances have been reported.

Sudden unconsciousness induced by the electroconvulsive-like shock of the intense electric/magnetic field column would be associated with pre-event amnesia. The person may awake after some interval with no recollection of events several minutes before and/or after the blackout. The latter amnesic condition could involve hours to days after which time the person might "suddenly become conscious" again some distance away from the locus of the event. That complicated skills, such as driving a car or talking, can be displayed during deviations in "normal consciousness" has been reported frequently in the literature concerning epilepsy. In light of the traumatic and unstructured nature of the experience, "missing" portions of the memory would have a marked tendency to be filled by confabulation; sources of confabulation might be derived from what the person has seen or heard (including incidental learning) about UFO-related instances or it may be a rich mixture of "fantasy." Interestingly, the nature of the details may involve representations of any parts of the body physically influenced by the processes associated with the event. For example, proprioceptive changes in gonadal tissue may be reflected in the confabulation details in a manner analogous to incorporation of somatic and visceral changes into dream sequences (such as

dreaming about running in the arctic tundra, elaborately detailed, while sleeping in a very cold room). In the former example, the person might believe that "space-men conducted tests on the genitals." All these features would have one major commonality: the individual would be convinced of the reality and validity of the confabulatory experiences (Persinger, 1976). Even the methods of "lie detection," and "hypnosis" may not discriminate the source of the material.

The great nineteenth century physiologist, Johannes Mueller, once stated that we are only aware of the states of our nerves. This is a semiphilosophical statement, a normal product of that era. But it contains an important thread of information. Man's consciousness and experience are totally dependent upon complex series of electrical-chemical events in the brain. Normally, they are systematically and orderly related to the events in our environment. At times, transient changes in that environment can induce large modifications in those bioelectrical occurrences and change the course of thought.

This is an important hypothesis, and with it a number of favorite theories can be removed. One does not have to assume there are areas where people disappear, where crews evaporate and airplanes fade away. Instead we must consider the human factor. What did those men, who now make up the files of sudden disappearances, "see" on their fateful day? Were the pilots of the famous 1945 episode in the Bermuda Triangle merely victims of local electric disturbances, and not the victims of a fiendish plot by aliens or strange forces? Does the frequent and periodic occurrence of UFOs in this area at times of mysterious disappearances merely indicate that geologically or meteorologically induced field disturbances have reached a peak? In fact, the famous area, superficially described as the "Triangle" is notorious for rapidly accumulating and violent electrical storms. For these to occur, large and intensified electric fields must take place, but not necessarily with concomitant cues of cloudiness or blocks in visibility.

We are only beginning to learn about the thought distortions that can occur when the appropriate electric and magnetic field parameters are applied. Recently, some concerned aviation physi-

cians have suspected the role of high electrical gradients associated with quickly accumulating thunderstorms as strong correlational sources of air crashes. Despite moderate shielding by the aircraft itself, horizontal movement through an electric column might be sufficient to momentarily reverse the polarity of the pilot's brain potentials. During this period, perhaps only a few seconds, a black out would occur; essentially, the loss of consciousness would be analogous to a petit mal epileptic episode. Unless some objective time reference was being observed at the time of the blackout, there may not necessarily be any realization by the pilot of the episode.

If the electrical effects were more focal within the brain, the victim might still remain conscious, but experience a series of epileptic-like auras. He might have experiences of vertigo or an inability to orient in space and time. Interference with the stored experiences called memory would deprive the individual of a reference point to which comparisons of the present must be made. Concomitant visual distortions and auditory peculiarities would also be characteristic.

An interaction between transient geophysical/meteorological associated electric fields and bioelectric fields evokes some interesting prospects for the area of unusual events. For, with this theoretical capacity, a number of epileptogenic phenomena can occur in the brain. In addition to the visual stimuli, which in themselves could invoke fear behaviour, a number of epileptic-like experiences might take place. The person exposed to these contingencies might have experiences of putrid smells (a common epileptic aura), hear voices (another aura type), have strange feelings of "a presence" or "unknown force," as well as seeing "nightmare creatures." Similar experiences could occur with the field column at potentials below those responsible for the luminosities, especially if the field was slowly time-varying. As mentioned, the existence of these columns would be brief; by the time the reporter returned to the unusual area with witnesses, the phenomenon would have disappeared.

With such capacities, it is little wonder that death might result from close proximity to the source of the phenomena. One

conspicuous observation of death- or injury-associated reports has been the close spatial proximity of the subject to the ostensible luminous or landed object. The reports of tingling sensations, pins-and-needles sensation, paralysis, or burns invariably occur when the luminous object passes very close to the observer. At significant distances from the object, the person would be outside the area of the major field and consequently would be less influenced. That a luminous object is seen at all, suggests that the force intensities have become sufficiently large to ionize the local air. With the involvement of such large magnitude forces, the labile biological organism could be severely damaged.

Any intense *ionizing radiation* associated with the massive luminogenic-related potentials could induce serious biological changes. Very close and maintained approaches to the luminosity could result in a number of radiation-related symptoms such as "skin burns," "skin blotches," peripheral erythema/edema, "swollen eyes," nausea, vomiting, sleep disturbances, fatigue and endocrine tissue changes, hours to days after the encounter. Changes in gonadal tissue would be prominent, assuming whole body exposure, such as menstrual disruptions and possible genital discharge. However, the person could still maintain more or less normal behaviours. Depending upon the dosage and the type of radiation, malaise or fatigue—associated with psychological depression—could occur about two weeks later. Transient blood clotting problems and alterations in white blood cells would be expected with concomitant complications in the immune mechanisms; in some rare instances death could occur or malignant growths could develop.

Characteristically, at field strengths sufficient to produce the luminosity, the phenomenon would be transient and short-term. If it were mobile, that is the subsurface stress forces were in a dynamic state of displacement, then the luminous object would move away. Alternatively, when the high electric fields had discharged through the intense ionization, the phenomena would be seen to just "disappear." Depending upon a number of local factors, the event might quickly "fade away" or "blink out like

a light" when the field level fell below luminogenic potentials.

No doubt the presentation of these unusual stimuli would be interpreted within an anthropomorphic framework, even though the kinetic operations would be based on ordinary physical principles. Approach of the luminosity towards a person standing upon a conductive hill would be interpreted as an "attack." Stationary displays over the luminogenic source could be interpreted as "surveillance." Movement of the observer's car along the line of the phenomenon's movement might be reported as a "chase." It must be remembered that less than a century ago lightning displays were considered acts of gods, St. Elmo's fire was diagnosed as the presence of demons, and "ball lightning" was interpreted within the contexts of "disembodied spirits." Within the comfortable framework of an *ad hoc* perspective, these explanations seem absurd, now.

There is no doubt that such luminosities could be photographed, as can the more intense displays of earthquake lightning (Yasui, 1974). They would be analogous to ball lightning, a phenomenon quite capable of being captured upon film. During such stages, the electric column might be detectable also by radar networks since modification of microwave reflection could occur. And, when the electrical potential fell below the ionization level, the "phenomenon" will merely "dissolve" off the radar screen.

Again, the hypotheses stated in this chapter involve electric and magnetic forces that are by no means meager. These are large area fields, capable of mobility as the subsurface pressures move and adjust in their complex and semi-predictable manner. When such fields moved across areas of human habitat, one would expect fluctuations in the *comparatively* small line voltages of the house; one would expect that fuses could blow, light bulbs crack and giant transformers overload to the extent of widespread electrical blackouts. It is no surprise that compasses, electronic instruments of various constructions and household machinery could suddenly start or fuse their internal parts when bathed in the intense fields hypothesized. Whether they do exist to this extent remains to be replicably verified.

The test of a model is the power of its predictive capacities.

From what has been described previously and hypothesized thus far, a number of predictions can be made.

### Prediction 1: Spatial Geometries

In the immediate vicinity of an electric field concentration, the discharge (luminous) phenomena should concentrate in areas which allow maximum field and ionization potential. Consequently, transient luminous phenomena should be frequently located on the tops of hills, at the peaks of mountains or bluffs, or near the tops of large buildings. In less frequent situations, phenomena could cluster in swampy or dense vegetative areas under decomposition where gases capable of low level combustion could accumulate. This is not a marsh gas hypothesis; we are merely stating that phenomena will occur in environments that support luminous phenomena produced by electrostatic or low-frequency electrodynamic discharge. Consequently, a significant number of luminous reports should occur along power lines, especially high-voltage power lines and stations.

### Prediction 2: Landing Effects

With extremely intense electric discharges, the ionization might be insufficient to dissipate the potential and a current may be produced momentarily into the earth. An observer of this event might see a luminous column of light slowly descending to the earth and "landing there." If the current was produced, then the most conductive minerals (which would vary with locality) in the adjacent soil would be liquified, like an overload melting the fuse in a household circuit panel. The most common conductive or thermoelectric materials like aluminum, silicate, iron, or manganese may be found in the locality; such an area might be described by the observer as a saucer nest.

### Prediction 3: Movement Patterns

If the source of the electric field is due to mobile subsurface stresses, then the luminous phenomena should follow the local

fault lines, rift zones and other normal rock strata that locally dissipate the stress. Since the locus of the subsurface sources exists in a three-dimensional space, any movement of this source would be reflected, like a "transformation of axes," on the surface by the luminosity. Thus, the "object" may appear to move from side to side or up and down depending upon the source's subsurface position. Sudden displacement of the sources along stress lines, that could be located at right angles, would be associated with "high velocity, right angle" movements of the luminosity.

#### Prediction 4: Accumulating Tectonic Stress

Transient and unusual phenomena should occur in areas where tectonic stress is accumulating. Episodes may not necessarily involve areas of well known seismicity, since these areas may only reflect structural weakness along the stress axis. For example, there is now evidence that the New Madrid region is a fracture area for stresses generated along a zone beginning in Michigan and Ohio and moving down through Indiana and Illinois into the Mississippi Valley.

Consistent with the hypothesis, the areas most susceptible to the unusual events would be typified by slowly accumulating forces or in areas where mid-magnitude earthquakes are more frequent. Large quakes would have a tendency to dissipate the seismic energy and result in a more permanent adjustment (following aftershocks) and stability. A map of seismic activity in the United States is shown in Figure 59. According to the hypothesis, the more susceptible areas should be slightly northeast of the New Madrid (Missouri) zone and include Illinois, Indiana, and Ohio. A smaller cluster should occur around Charleston, South Carolina, and a lozenge-shaped pattern through western North Carolina and eastern Tennessee. A coastal pattern for unusual events should also exist, running through the interface of West Virginia and western Virginia, skipping through Delaware and Maryland and intensifying again around Philadelphia, Pennsylvania. From there the pattern should move through the densely populated areas of the eastern New England states. Minor unusual event clusters should also exist in the north-central New York area, such as Ithaca and Utica.

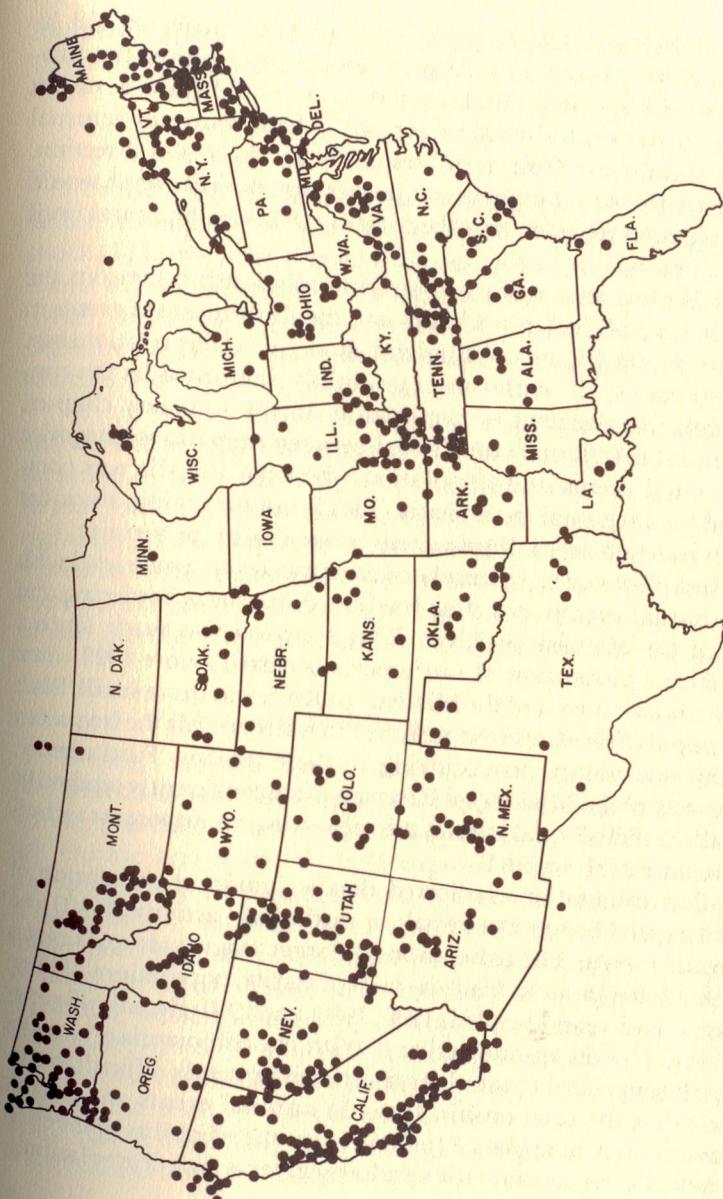


FIGURE 59. Distribution of mid-range (V to IX) earthquake intensities (Mercalli scale) in the United States (modified from E.S.S.A., 1973).

On the West Coast, pockets of unusual events should be conspicuous around Los Angeles and again around the San-Francisco-Chico area; Washington state would have a minor cluster in the central-western region. A final source of unusual events should exist through western states in a N-S direction. However, we would suggest that numerous unusual events would not have been recorded here (because of the low population) until quite recently.

It is clear that there is a striking relationship between the seismic map of the United States and the distribution of events in Figure 18 and Figure 50. England shows a similar relationship. Unfortunately, the enthusiasm is slightly dampened by the confounding involvement of population. In the summary chapter, significant correlations were noted between the various categories of unusual events and population when the analysis was completed on a regional (state) basis. This is not surprising, since, for events to be observed, human beings must be in the vicinity.

In a pilot study, we correlated earthquakes on a state level with the unusual events on a state level for thirty states bordering and east of the Mississippi River. This selection was made since a significant proportion of our reports occurred before 1900 when the population west of the Mississippi River was quite small. Such low population states were assumed to misrepresent the frequency of any unusual events occurring in these regions. Furthermore, states east of the Mississippi River are more consistently typified by "shallow focus" quakes than are areas west, an important technical feature of the model.

Our calculations indicated that a significant correlation of +0.58 existed between state minor earthquake activity (V-VI) and unusual events. The correlation for larger magnitude quakes was +0.48. Unfortunately, from the view of clarity, populations of these states for all years sampled (1900, 1930, and 1960) also significantly correlated with seismic activity. With the confounding factor of population added to the observation, it is presently difficult to conclude that the relationship between unusual events and seismic activity is not an artifact. One way to test the reliability of the effect is to divide the area into the window segments (one degree latitude-

longitude sectors). Alternatively, time series could be done to determine any parallel fluctuations in seismic and unusual events.

#### Prediction 5: Time Factors

Unusual events should occur in bursts some months or weeks before the occurrence of a slowly accumulating mid-magnitude shock. However, the converse is not necessarily true: unusual events will not always precede these types of earthquakes. In our model, the tectonic pressures responsible for the event are oscillating ones; not every peak of the time-varying pressures will result in sufficient force to precipitate a fracture.

A test of this prediction is shown in Figure 60, where the numbers of unusual events between 1950 and 1972 for Illinois are shown juxtaposed upon the temporal distribution of earthquakes in that state. For comparison purposes events involving "animal sightings," for example, the large cat and humanoid creatures, are separated from other types of unusual events. It can be seen that there is a marginal tendency for unusual event clusters to occur two to four months before mid-magnitude earthquakes in this state.

#### Prediction 6: Multifaceted Cluster Effects

During unusual event clusters, a number of parallel phenomena should also display increased frequencies. Statistical upsurges in disease states presumably associated with high intensity electric and magnetic field exposures should be reported, including blood clotting problems, heart attacks (due to repolarization failures), abnormalities in cardiac T-waves, and phantom limb reports from amputees. If the cluster event occurs during the evening, the effect should be intensified and include reports of insomnia, sudden awakening, nocturnal akinesis and similar disturbances from sleep by people close to the phenomena.

Increased emotional behaviours and thyroid-related disturbances would result if the unusual clusters lasted longer than a single day or two. Subjective feelings of depression, foreboding and desires to leave the area should be reported more frequently by

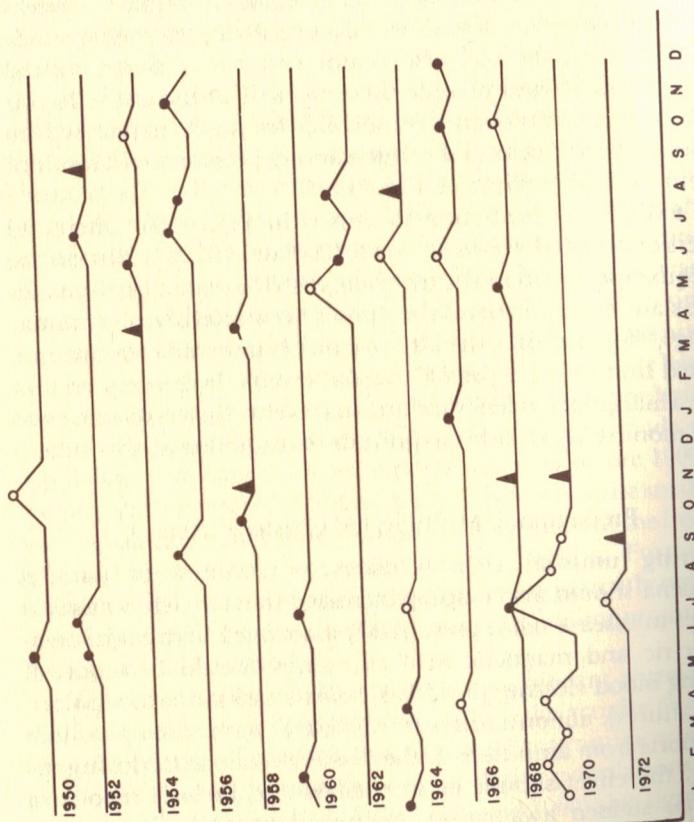


FIGURE 60. Reports of unusual events (○ animal forms; ● other forms) in Illinois between 1950 and 1972 compared with occurrences of VI-VII intensity earthquakes. (▲)

the population as well as tendencies towards lethargy, marginal headaches and difficulties in recall or thinking. Unstable individuals would become more unstable and engage in irrational behaviours; they may be mistakenly identified as the causal feature of the episode. Post-cluster periods should be followed by increased frequencies of low level immunological disturbances, such as upper respiratory infections, allergies, and other stress-related manifestations. No doubt psychogenic facilitation of the medical manifestations would occur; merely observation of the phenomena could be an intense psychological stress for many persons.

Areas that are poltergeist or "haunt" prone should show increased activities. In a recent text (Persinger, 1974a), evidence was given suggesting the role of environmental factors in *some* aspects of unusual kinetic displays. The close relationship in patterns between Fortean-type events and orthodox parapsychological events is by no means spurious. Parallel features of cluster events would include unusual animal behaviours (chickens terminating egg laying, gonadal difficulties, birds and insects leaving the area), and various manifestations of electrical failures.

### Impulse Effects

The model developed in the previous portions of this chapter assumes that the major energy source is derived from tectonic stress. Smaller displays could also be energized by lightning and meteorologically mediated electrical fields. However, other forces could contribute to each of these sources. The most likely candidate is the direct and indirect effects from intense solar disturbances.

Solar impulses, like any impulse instituted upon a homeostatic system, would have large magnitude effects upon the phenomena discussed in the previous sections. The earth as a control system, maintains a homeostatic-like condition by a number of internal adjustment mechanisms. However, the sudden and intense change in "demand" produced by a large solar flare would have the propensity to crush delicate stable-states or subsystems in the process of adjustment, and result in the instability required for the occurrence of unusual events. For subsurface

systems already in an unstable condition, the impulse might be sufficient to precipitate a large scale change in activity; it might be the proverbial "last straw."

The implications of solar impulse effects upon transient and unusual phenomena are interesting in terms of mechanism and prediction. If the solar impulse theory is correct, the unusual events should also show oscillations with solar impulse cycles, such as the sunspot cycle. Consequently, predictions should be possible concerning peak occurrences of the events. Moreover, if those known conditions which contribute to solar disturbances are isolated in advance, then preparations for data collection could be made. For example, according to John Gribbin and Stephen Plagemann, who wrote *The Jupiter Effect* (1975), in 1982 a special alignment of the planets will occur; such alignments, theoretically at least, would have strong effects upon solar stability.

#### Set and Lunar Trigger Effects

In the laboratory occasionally one strikes a test tube at an odd angle and nothing happens; but a hairline fracture exists in the glass and the next time just a small amount of stress is placed upon it, the structure fails and one loses the contents of the test tube.

A similar concept can exist in the area of transglobal phenomena. The actual effects of a severe solar shock or a chain of volcanism could follow some time later, when the earth is again given that criterion amount of stress to precipitate the reaction. A problem of "lag reaction" would exist. In such cases, the effect would be masked by other events occurring in the region, as mentioned in the last chapter. For such events one would have to discriminate between the predisposing factor, like the intense solar shock, and the precipitating factor, an event concomitant with the manifestation of the transient episode. The precipitating agent may not necessarily be spectacular, nor unique in energy capacity. The uniqueness of the event only exists in its temporal contiguity with the predisposing factor. In fact, it is quite conceivable that the precipitating event could be one of the peaks of the many endogenous frequencies occurring within the earth's structures. One of the most common of these frequencies is the lunar cycle.

The lunar period of twenty-eight days is perhaps the most well-known of geophysical cycles. Confounded by a solar periodicity, very close in characteristics, the lunar cycle is still presumed to have an important effect upon the earth's dynamics. By its unique proximity alone, the moon has an impressive capacity to influence the "internal wiring" of the earth; the earth-moon barycenter, for example, is well within the earth's interior. Variations in lunar distance would characteristically modify the position of that barycenter, and the activities associated with it.

On the earth's surface lunar manipulations are also apparent. The most striking and conspicuous effect is upon the ocean tides, which in themselves can shift small (in proportion to their absolute masses) but significant weights over the earth's crustal features. It is now known that the crustal segments of the earth's surface also move like giant pressure plates in response to the passage of the moon. A significant correlation between lunar phase and distance and earthquakes has been suggested, but it is clear that the relationship is not a simple one. The moon seems to act more like a precipitating agent, "a straw that breaks the camel's back," and not a major source, per se.

Lunar effects do not terminate upon the solid surface either. They emerge even in the upper atmosphere, where lunar tides are induced in the oceans of air. However, within the dynamic vortices of air masses, the forces are so complex and variable that the contribution of lunar drag is difficult to quantify.

A new lunar effect has now been suggested to occur within the outer portions of the earth's magnetic field. Behind the earth exists a small, thin band called the neutral sheet, which expands several hundred earth radii away from the earth on the dark side. Within this sheet, trapped particles slowly accumulate, filled by the solar stream. Once a month, during the full phase, the moon passes through the sheet of trapped particles. The resulting turbulence allows the trapped particles to escape and make their way, after a lag time, to the earth's upper atmosphere. Apparently, the lag time is about two to three days, since processes known to be associated with particle accumulation increase in frequency at that time. The data are impressive; the closer the moon approaches the geomagnetic equator and the neutral sheet, the greater the effect.

Now suppose a giant flare has gushed an immense amount of charge particles into outer regions of the magnetosphere. A proportional amount of these particles has been trapped within the neutral sheet. They wait there and the moon proceeds along its inevitable course. Then the moon enters the area and releases the particles which flow down into the lower atmosphere. Is it then that the human population reports the increased UFOs and luminous displays? Is it the moon that is the latent trigger for the two to twenty-eight day post-flare upsurge in unusual reports? The reports are promising but much more data still must be collected.

### **Explanation of Unusual Events on the Earth: Geomagnetic Storms and Geomagnetic Variation Anomalies**

Disturbances in the solar field and its violent interactions with the earth's magnetic field can induce a number of upper atmospheric phenomena, some of which may be Fortean in classification. However, the effects of such solar surges or of the earth's passage through an unstable portion of space are also represented on the earth's surface as a geomagnetic storm.

During the geomagnetic storm conditions, intensity fluctuations are only about 0.2 percent to 2 percent of the earth's steady-state average. However these changes are correlated with a number of ground communication disturbances, unstable meteorological developments, and diffuse behavioural disturbances in animals (Persinger, 1974b). The later have been reported so frequently that some of the national environmental research laboratories have begun serious documentation of these events.

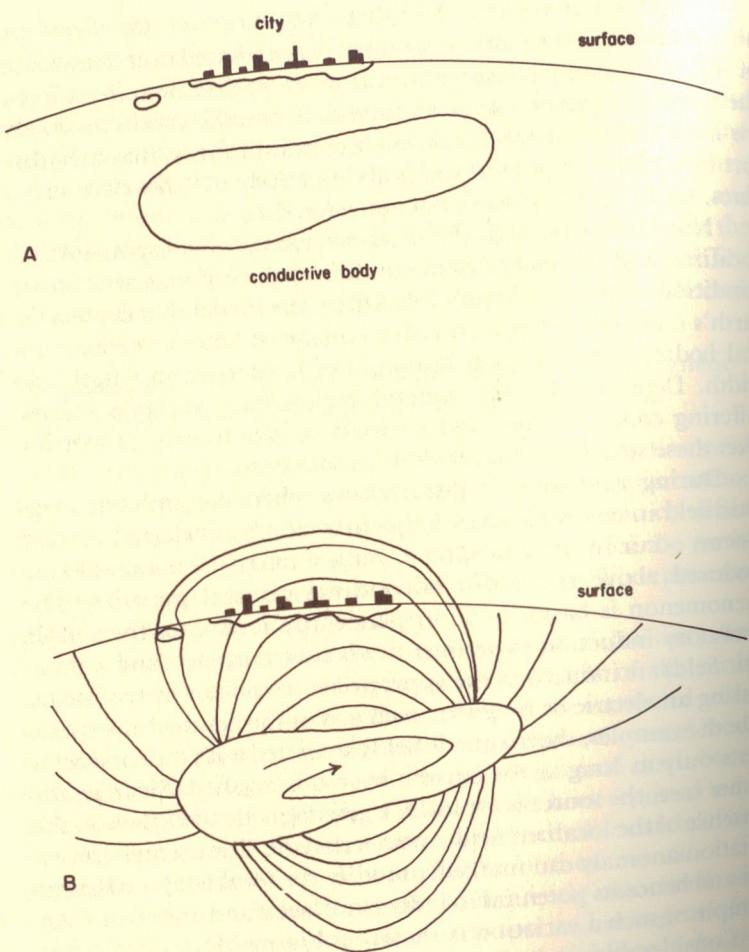
The types of behaviours most frequently associated with geomagnetic storms vary from species to species, but in general the pattern is disruptive in nature. Bees display different dancing patterns, rodents display shifts in activity cycles, and human beings demonstrate increased psychiatric admission rates. Life forms on this planet evolved in and are immersed in a complex configuration of magnetic flux lines; it would not be surprising if experimental evidence clearly demonstrated fundamental behavioural changes at the *species level* during sudden deviations or time-varying changes in these flux lines.

When a geomagnetic field disturbance occurs, the effects are often assumed to be more or less evenly distributed over the surface of the earth. Some consideration is given to distance effects from the magnetic equator or poles, and occasional controls are made for large surface features, such as mountain ranges, that may distort the field. The potential modifying effects of subsurface structures, until recently, were not considered.

Now it is clear that the earth's crust can be responsible for localized and intensified field conditions during magnetic storm conditions. This conclusion is based on the model that depicts the earth's crust-mantel as a complex collage of heterogeneous mineral bodies, some of them hundreds of kilometers in length and width. Deposits of these mineral bodies have variable shapes, differing conductivities, and a variety of geophysical properties. Over these structures man and his productions exist.

During geomagnetic disturbances when the ambient magnetic field intensity changes frequently or when external current systems occur in the ionosphere, surface magnetic anomalies are produced above the bodies of optimal mineral material. The phenomenon is basically a large-scale application of the simple laboratory induction experiments whereby currents (and a magnetic field) are induced in the appropriate conductor by repeatedly passing an electric or magnetic field across the conductor's space. In both examples, the magnetic field associated with the conductor exists only as long as the current source is applied. Since in the former case, the source is typically a geomagnetic disturbance, the existence of the localized field is also transient. The occurrence of a variation anomaly can markedly modify the local field configuration and hence its potential to influence objects and organisms. An example of such a variation is shown in Figure 61.

Considerable research on geomagnetic variation anomalies has been completed by Porath and Dziewonski (1971). These authors point out that any conductive region (even hundreds of kilometers in area), surrounded by a lower conducting perimeter, could be the source for a transient anomaly. Deep basins filled with conductive sediments or ocean waters between two resistive continents or land bodies could be source areas of the anomalies associated with geomagnetic disturbances. Typically, the anom-



**FIGURE 61.** Hypothetical depiction of a city beneath which exists a large mass of conducting minerals during non-geomagnetic storm (A) and geomagnetic storm conditions (B). The latter situation results in the creation of a geomagnetic variation magnetic field anomaly that disappears when the storm is finished. The small figure near the surface at the edge of the city represents a very localized, highly conducting region within a highly resistive material.

lous field would be observed along the edges of the basin or along both sides of the channel, or along the interface of the differing conductive bodies.

Some of the more well known magnetic variation anomalies involve an east-west form in northern Germany, the Uinta basin in northern Utah, the Tucumcari basin in New Mexico, and the Black Hills basin in the Dakotas. Porath and Dziewonski (1971) suggest that other geological areas of the United States display the prerequisites for transient anomalies. These localities include the Delaware and Midland basin in the southwest United States, the Arkoma basin beneath Arkansas, Missouri, Kansas, and Oklahoma, the Illinois and Michigan basins through Arkansas, Missouri, Tennessee, Illinois, Kentucky, Indiana and Michigan, and the Allegheny basin which lies beneath the west side of the Appalachian Mountains and spreads into Pennsylvania, southern New York state and surrounding state areas. In addition, coastal areas that share conductivities with adjacent water bodies may facilitate the invagination of induced current deep into the interior of the mainland. Such areas may be found along the distal shores of South Carolina, the northern portions of Florida, the base of the Mississippi River, and along portions of the California coast.

The actual measurement of magnetic variation anomalies is recent, and despite complex and dense networks of magnetometers, only a few of the larger and grosser events have been recorded. Usually the intensity of the anomaly is only about twice that of the normal ("steady-state") magnetic field condition. Although such amplification may appear quite small, it must be remembered that the anomaly is spread over large areas; consequently the total energy within this transient system may be quite immense. If some form of short-term focusing of the induced currents took place, then relatively large amounts of energy would be available in a small area.

The mechanism of "focusing" the induced current, and hence the transient magnetic field anomaly, would involve the spatial distribution of *relative* conductivities of the materials within the area of the anomaly. Although in general the area associated with the anomaly would be more conductive than the bordering

regions, there would be subareas within the whole structure with even greater conductive properties. These areas would be analogous to "energy sinks" since current flow would be less restrictive within these regions. As a result, extraordinary currents would be momentarily maintained. The precise size of the effective areas would certainly vary with and depend upon local topographic and geophysical properties, but surface areas in the order of 10,000 square meters would be expected if our suppositions are correct.

One final feature of transient anomalies associated with geomagnetic storms is concerned with the time factor of the disturbance. Data collected by Porath and Dziewonski (1971) indicate that different potential anomaly areas demonstrate maximum effects with storms displaying particular periods of variation. Periods in the vicinity of 50 minutes (one "cycle" every 50 minutes; 0.0003 Hz) seem to produce the peak anomaly in the cases studied. Although many geomagnetic storms traverse a wide band of peak frequency variations in the course of their short existence, such time-varying dependence may be a source of local variance.

### Application to Fortean Phenomena

From an ecological and global biological perspective, sudden changes in the geomagnetic field would be expected to induce or be associated with changes in species behaviour. As mentioned, life forms have emerged within the context of the earth's magnetic configurations and variation in these should induce low level changes which would be invisible at the level of the individual but obvious at the level of the group or species.

Probabilistically, one would suspect that a sudden storm condition could influence the susceptible group of organisms distributed over large areas. Group organisms already predisposed to "unusual" or related behaviours due to excessive population demands or physiological contingencies would respond to the sudden magnetic storm condition or the meteorological concomitants as a precipitating stimulus. An example might be the sudden appearance (synchronized "metamorphosis") of invertebrates as suggested in Figure 62. Since the same stimulus is applied to a

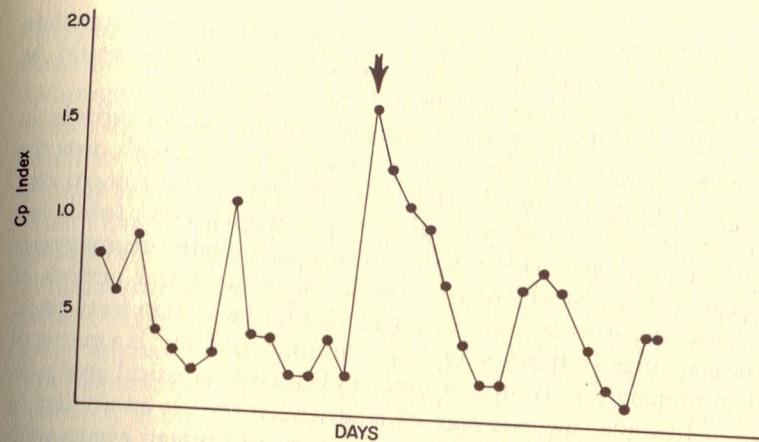


FIGURE 62. The sudden appearance of excessive numbers of caterpillars and army worms in portions of the United States during June 2, 1953, (arrow) with respect to global geomagnetic field activity (as measured by the Cp Index) for days before and after the event. Reports indicated that hordes of caterpillars halted the operation of the New York Central Railroad for 35 minutes, while "millions" of army worms devoured the clover crop in Jackson County, Indiana (after L. Gearhart, private communication).

large area, a similar change in behaviour within a large number of organisms would be more obvious to the human observers. If the storm (and its temporally correlated stimuli) had not occurred, the behaviours may have been less synchronized in time, less obvious to the observer, and produced by different stimuli in different localities during different time periods.

A similar argument could be applied to sudden increases of unusual or infrequent human-related Fortean events. In an extremely large population with a statistical number of unstable or susceptible human organisms, the extra environmental stimulus of sudden geomagnetic disequilibria might be sufficient to precipitate the bizarre behaviours or accident-related events at more or less the same time; the effect would be compounded by recruiting those population elements that are not only prone but have shown

increasing propensities to be prone to the unusual behaviours. As a result, the number of unusual cases above baseline would be increased, and more noticeable to the observer.

The usefulness of studying geomagnetic storm records in context of Fortean phenomena does not terminate with only the cases of unusual animal behaviour. We have already noted that "flaps" or episodes of unusual events frequently occur following solar disturbances which in themselves elicit intense geomagnetic perturbations. Since both magnetic storm dates and periods of Fortean occurrences have been recorded for more than forty years, the empirical verification of their relationship, if any, is a matter of data preparation, computer time, and careful statistical analysis.

However, the existence of magnetic variation anomalies in real-world geophysics presents the study of Fortean events with another potentially important variable. The existence of these variations indicates that Fortean episodes may be dependent not only upon time of the triggering event but upon space as well. If indeed the major correlative factor behind unusual events is analogous to magnetic variation phenomena, then the precise prediction of a given Fortean episode would depend upon certain space-time properties or combination of these properties, as discussed in Chapter 1. Thus the time of occurrence would depend upon the optimal spatial characteristics and the space would depend upon the temporal characteristics of the geomagnetic variation.

Furthermore, there should be localities within which Fortean events occur statistically more frequently over many years of measurement. Areas which contain optimal conductive properties should remain relatively invariant in space, although their properties could certainly be modified by local geophysical changes such as structural stresses or secular-related variations. From these assumptions, one would predict concentration areas for some Fortean events to overlap with areas prone to transient magnetic anomalies. Such a prediction is testable and appears to have support from the general pattern of event distributions.

The central issue of transient geomagnetic field variation-like occurrences in Fortean-related phenomena rests upon some

mechanism capable of momentarily localizing intense physical conditions (for example, ground currents) within a prone area. Although Fortean phenomena can include spatial areas of considerable magnitude, most are relatively localized to a few meters or hundreds of meters, at any given time. For a short time the susceptible area would have to exist within a kind of magnetic field "lens." One might expect many types of electromagnetic variations (power failures, unusual receptions, modifications in electrical apparatus or conductors/dielectrics, local changes in atmospheric electric field gradient with consequent modifications in charge attractions, water condensation and "clouds"), similar to those discussed in the previous section on tectonic and pre-seismic sources. It is difficult to predict the upper limit of the physical quantities involved with the transient anomaly. Interestingly, Gearhart (1975b) has reported that his collection of SHC and poltergeist cases seem to occur with large scale geomagnetic deviations. The mechanisms for such phenomena are presently obscure.

## chapter 16

# Low Probability Explanations: Extrapolations from Conceptual Limits of Space and Time

"... A normal adult never stops to think about the problems of space and time." This statement was used by Albert Einstein as a possible reason for his development of the theory of relativity. It is a statement with great implication, for it implies how easily one can be seduced into the normal ritual of everyday methodologies and forget the axioms upon which they are built. There are times when the most fundamental concepts of data organization should be tested to their outer boundaries. In this chapter, a few hypotheses will be presented as examples of these possibilities. You will know these formulations approach the limits of verbal information, for their reading will induce a mildly uncomfortable feeling — a kind of cognitive dissonance that appears when semantic relationships are strained and one's credibility is challenged. At levels of fine conceptual discrimination, autonomic responses are typical; there is a tendency to reject everything as nonsense or accept everything as truth. This is a danger of human thinking behaviour and such an all-or-none response obscures any information that may be contained within these possibilities.

### Energy-Mass Reversals

The energy-mass reversal hypothesis has been evoked to explain the existence of *some* unusual and transient events. In its

simplest form, this hypothesis states that, upon occasion, small and localized reversals of the mass-energy arrow take place. During this period, matter theoretically could be formed. Rock falls, substance falls, and related kinetics would be examples of such short-term reversals. Production of animal forms, like the humanoid and animal reports, would be much more difficult to rationalize.

Indeed, this is a peculiar hypothesis but it is based primarily upon a curious natural observation. In our partition of the universe at least, the relationship between energy and matter is a very lopsided one. Although the popular expression  $E = mc^2$  implies an equivalence between matter and energy, from a practical point of view the relationship should be  $E \leftarrow mc^2$ . Simply stated, it is relatively easy to produce energy by the "destruction" of matter. Daily examples of petroleum, wood, coal and atomic conversions are replete in nature. However, the reverse of the process, that is, the formation of matter from energy, is experimentally almost impossible and on the earth's surface not apparently detectable. With the exception of the short-lived positronium atom of the laboratory, the production of matter from energy resides almost entirely within the stars.

The boundaries and limitations of the hypothesis are contained within the equation. In order to produce just a small amount of mass, extraordinary amounts of energy are required. For example, the production of 10,000 grams (twenty-two pounds) of mass would require the localized availability of  $10^{25}$  ergs of energy. Formation of only 100 grams of mass would require  $10^{23}$  ergs of energy. This is assuming that the reversal could occur in the first place.

### Sources of Energy

Such energy levels are routinely created over large areas of solar space. Solar flare eruptions can be associated with energy displays far exceeding the above figures. However, on the earth's surface, there are only two possible *localized* sources for energy

levels of this magnitude; they would be associated with the displays of *earthquakes* and severe *thunderstorms*. Large earthquakes, according to the Gutenberg-Richter formula (Bullen, 1965) would release about  $10^{25}$  ergs of energy and correspond to a rate of work around 10 million kilowatts. Severe thunderstorm cells could produce similar energy/power levels, once the *duration* of the activity is considered (Israel, 1973). These values are upper limits and would not be routinely displayed.

The trigger for the energy-mass conversion, once the criterion energy levels were available, should involve a factor both earthquakes and thunderstorms have in common. One possible trigger is electric field polarity reversals. It has been known for decades that strong and fast polarity reversals are concomitants of severe thunderstorms; now there is some evidence of similar reversals preceding and accompanying earthquakes. Sharp, strong and successive reversals of polarity have interesting effects upon matter. In addition to the usual induction of current, a number of instabilities can arise at the level of the electron shells where energetic exchanges take place.

However, there are a number of practical problems. For example, assuming the criterion level of energy was available in the vicinity at the time of the phenomenon, concomitants of such an "energy sink" reaction should also be apparent. During the formation of even 1 gram of matter, at least  $10^{20}$  ergs of energy would be taken quickly from the environment. Certainly such an immense reaction would have large environmental consequences, including sonic concussions or quick temperature reductions. In turn, these changes would induce very obvious pressure gradients along adjacent localities and result in sudden and intense wind production as the flow of air moved to compensate for the change.

### Data Patterns

The hypothesis demands the manifestation of unusual events at certain times and places. Unusual events produced by the postulated energy-mass reversals should occur in areas prone to earthquakes and severe lightning storms, where the criterion

energy/formation levels are probabilistically available. Furthermore, the temporal characteristics of the unusual events should in some form parallel the occurrence of their sources.

When the data patterns are re-evaluated in this context, a number of interesting congruencies appear. First, one of the most frequently reported correlates of rock falls was the occurrence of a violent lightning storm. Many of Fort's reports as well as the more recent accounts suggest that the "fall of the rock" occurred during a large strike. Still other accounts do not actually report the rock falling, but allude to its presence after the severe storm terminated.

It has been stated that one of the inherent problems of the energy reversal hypothesis involved the requirement for rapid removal of large amounts of energy; this should be involved with concomitant sonic concussions or temperature drops. However, if one closely views the data, an interesting observation becomes readily apparent in this context. Fort reports a significant number of cases involving "explosions" in the sky before the fall of rocks. Similar pairings between "sky explosions" and rock falls have been reported more recently. Another important correlate of rock falls has been the hailstorm, a process also known to be associated with sharp and sudden drops in upper tropospheric temperature. One would predict also a significant number of cases where sudden and extreme air flows (violent wind) corresponded with the energy loss-matter formation process; but these have not been reported except during earthquake episodes.

The temporal patterns of rock falls add another thread to a pattern that could be woven. Monthly occurrence data reported in Chapter 2 showed that rock falls abruptly peaked during June and July. These two months are known to overlap with periods of extremely vigorous thunderstorm displays in the relevant localities. Since the source increases in frequency, the productive phenomenon should show the parallel reaction.

Of all the various categories associated with unusual events, the "fall" category was the most significantly correlated with earthquake histories of the locality. This observation is also compatible with the hypothesis. One would suspect that other types of non-fall categories do not require the use of a matter

reversal concept to such a degree, with the possible exception of poltergeist-like episodes. Instead, other categories have more parsimonious options of explanation.

From the context of this hypothesis one might also argue that UFOs, especially the luminous and non-descriptive types, could be manifestations of energy reversals in progress. It is interesting that the plasma-like conditions of some UFOs (that is, the ionizing radiation production, the electromagnetic peculiarities, and the dynamics) are similar to what has been predicted for mass-energy transitions. They would be miniatures of the "ambiplasma" assumed to form in large space, when matter and antimatter collide. These phenomena, much more frequent (from the criteria of reports) than fall phenomena, would involve situations where complete conversions never took place or where the "transformation" was short-lived.

The reversal of energy to matter, even if it occurred, would not necessarily tax the limits of our concepts. After all, the formation of rock crystals or even the production of transient plasma-like formations are sufficiently amorphous and redundant to be understandable. Although the relationship between energy *patterns* and matter *formations* is far from being clear even at the atomic level, the idea of inorganic formation is within the principle of operation. Science is on the threshold of at least theoretical equivalence laws between quantal energy states and manifested configurations of matter.

However the formation of animal forms, as has been postulated by some theorists, is a different matter altogether. To suggest that occasional energy reversals could induce specific biological matter patterns is a kind of deviant abiogenesis beyond the grasp of our present concepts or credibility. Fish may indeed fall from the sky, hordes of snakes can suddenly cluster together and unusual and unknown animals could roam through the countryside. But to assume that they are the results of an energy reversal would demand, in the least extent, the selective manifestation of specific forms. If such a mechanism did not exist, then a vast array of unusual animal combinations would periodically and suddenly emerge upon the earth's surface. The existence of such a

mechanism would require an unbelievably intricate relationship between global geophysical phenomena and material patterns of biological evolution.

One could argue onto a very weak branch of the hypothesis and remark that the unusual animal combinations are periodically produced, but do not fit the requirements of natural law and are consequently eliminated. Thus one aspect of their formation is reflected in their episodic and short-termed existence. "Giant reptiles," "combinations of pigs and dogs" and similar borderline creatures would be the formations from transient "molds" or electronic matrices that have never been or are no longer compatible with the environment.

The possibility does have a weak relation to known phenomena; there is a conceptual precedent. Experiments have shown that amino acids and proteinoids indeed can be formed by passing small amounts of electrical energy through primitive atmospheric gases. Whether large scale natural displays of gargantuan electromagnetic surges could ever produce a viable bioform is a probability now beyond our limits of acceptance.

### Changes in the Space-Time Fabric

The impact of a four-dimensional universe composed of a space-time field or manifold is still reverberating through the scientific community. Physics has adapted to this framework from a mathematical perspective and concessions have been made for its existence at light speeds. In small space laboratory situations the idea remains at most a construct, and at very large planet-sized magnitudes, the contention has not been fully evaluated. At these levels, minute imperfections of the space-time equilibrium could be reflected to sizes capable of man's ready detection. If we can theorize the occasional reversals of mass-energy arrows, then the postulation of occasional space-time vortices is the next conceptual step.

Time also seems to display a conspicuous unidirectional mode of operation. Time is one of those few postulated entities that violate the laws of physical parity. Whereas charge is expressed in a

positive or negative form and matter can be viewed as Alfvén's (1966) "koinomatter" or antimatter, time cannot be partitioned or reduced to an essential dichotomous manifestation. Whereas forces may have their equal and opposite reactions, time remains as an invariant vector quantity. No doubt there are situations, such as relativistic speeds, where the quantity of the temporal vector can be changed, but the direction remains unchanged.

However, might there not be the one-in-a-million occurrence where time could be locally and transiently reversed and the space-time manifold changed? At the level of the atom and subatom, the ostensible manifestation of time reversals is not an alien idea nor even an empirical improbability. Some nuclear particles, which exist in that thin definitional zone between matter and energy, have been assumed to be mirror images of reversals in time. A few physicists have even postulated that a more fundamental particle, the electron, can pass back and forth across time boundaries; the direction of the movement determines the sign of the particle. In one direction the particle is viewed as an electron while in the other time direction it is viewed as a positron.

The existence of time "distortions" on the macromolecular level is a more gross speculation. Even with the generous assumption that more organized levels of discourse contain properties of the operations they subsume, the problem is still quite complex. However, from this point of view, the unusual creatures from time and space no longer take on such a bizarre and peculiar nature.

### Tangles in the Space-Time Manifold

The concept can be expressed in the following imagery, without reference necessarily to natural correlates. Following an intense impulse to the space-time fabric, small dimensional overlaps occur like tangled spools of thread or the backlash of a spinning reel. In a more fluid substance, the situation might be analogous to whirls of motion momentarily induced. As long as the conditions which allowed the transient imperfection to exist were maintained, the overlap in space-time would continue. But, by definition, the half-lives of these creative conditions would also

be short when our measurement of time-present is used. Like momentary vortices in a moving stream they would exponentially decay away.

The implications evoked by an assumption of perturbations in the space-time field strike the core of human understanding. If indeed overlaps of times-past or times-future are possible in a realistic and physical way, then one is forced to grapple with the supposition that objects continue to exist in a given space and time. All the objects that have existed still exist and those that will exist now exist. The problem solver becomes confronted with the resolution of the smallest unit of space-time that can separate the object in space-time "n" from the same object in space-time "n + 1," and so on, on the one hand and the limits of the concept's semantic vehicle on the other.

From this perspective, "present" becomes irrelevant since it only reflects the perception of members of this present space-time increment, moving as a function of space-time. Such a postulation, to date, is insoluble and undefined. Time's apparent unidirectional arrow once again escapes from an objective analysis.

### Matter as Space-Time Holograms

However, overlaps in space-time could be tolerated if one assumes the possibility of a space-time increment; the specification of this space-time quantal unit need not be isolated for the discussion. Instead, let us assume that the total mass of an object is a function of the number of space-time units. The greater the number of units, the more "material" the object. Consequently, the "materialness" of the object would depend upon the total number of space-time increments that are summated into the human perception of time and space. The mass of an object would remain constant at human levels of detection since the total number of units incorporated by the human perception apparatus would be more or less consistent. Such consistency would reflect the extremely large number of space-time increments composing the human sensation of present.

An object's existence in space-time would be analogous to that

of a three dimensional hologram. Presumably, it is not possible to "destroy" the image of a hologram in the usual sense. If the image is cut in half, then two whole images of the initial hologram are formed. The gestalt or form of the image is not eliminated but repeatedly maintained. However, with each formation of an image, the total energy within each image is reduced. As more holograms are formed, the initial image pattern is maintained but each pattern becomes weaker and weaker in intensity.

Magnetism works in a similar manner. The north and south poles of a bar magnet can be readily measured at the ends of the material. If the magnet is sliced in half, the integrity of the north-south flux pattern is not destroyed; one half of the bar does not only have the south pole and the other half only the north pole. Each new half of the old bar magnet now has its own north-south pole matrix. However, the intensity of each magnet is less than the former whole. Technically the bar magnet could be divided into very small little bars and each would maintain the same pattern of north-south pole flux lines, but with less and less intensity.

Working in the opposite direction, we could assume that matter perception is determined by the composition of minimally diffuse "holograms," or, space-time increments. The phenomenon of matter at our level of perception would be due to the addition of the many space-time units composing the object's "space-time hologram." The number of space-time units occupying the increment we experience as "the present" would be immense since our measurement of any given piece of matter is more or less constant and our perception of matter dynamics in perceptual space is more or less consistent.

Even large deviations in the number of space-time units composing an object's "materialness" might not be detected by our distal senses like vision, as long as the number of units did not fall below the threshold required to maintain the sensation of perceptual and temporal continuity. For example, if 1 million space-time units per second composed normal matter, and the sensation of continued time-event perception could be maintained with a minimum of 1,000 units per second, then fluctuations of even 100,000 units would not be detected necessarily by our distal senses.

No doubt our distal sensors would still maintain the ability to detect changes in how the affected matter would interact with other matter. Deviations in the physical properties of impenetrability and inertia (like extraordinary displays of angular movements at high speeds), would be quite detectable. If by some chance the affected matter closely approached the observer's proximal sensors for touch and pressure, the changes in "materialness" due to the large deviations in composition of space-time units would be even more perceptible.

With this point of view, the production of space-time overlaps due to unspecified disturbances in the manifold, could produce material manifestations. The degree of the "materialness" would depend upon the severity and degree of the space-time overlap. Episodes of intense disturbance in the space-time field, analogous to vortices in our metaphorical stream, might produce sufficient numbers of space-time increments to allow the objects to be seen as material. Perhaps some of these objects would be material enough to leave traces to human viewers, or even interact tactually with the human observer. In short, the object, viewed as living or non-living, would be "real" and capable of "physical" behaviour. But, as the space-time manifold was displaced and as we, the present observers, moved away, the number of space-time increments from the overlap would become less and less and the "phenomena" would disappear. Reports of object "transparency" or "nebulosity" might be given.

### Data Patterns

Recurrent space theories, that emphasize the repeated appearance of unusual objects in the same locality decade after decade would be one small corollary of the above hypothesis. The unusual animals of the Illinois region *are* the creatures from the Mesozoic past. The flying creatures seen along the pre-historic routes of migration would then actually *be* those creatures; the humanoids would actually *be* the creatures whose remnants we also see as the unusual bones in the same area; these unusual animals would be the transient consequences of overlaps between

the space-time of "yesterday" and the space-time we call "now." While they existed, their characteristics would be quite material. However, their position in present space-time would be short-termed and transient. Like the dash on this page, they would appear to come from "nowhere" and they would seem to depart into "nowhere," as the space-time overlap is passed.

The dynamics of the disparity in space-time would be even more difficult to describe by metaphor. If a relationship between space-time is assumed, like the one developed in Chapter 1 of this book, then an object-event's position in space-time would be related by some interacting value (for example, a "product") of these two components. Consequently, an intense impulse delivered to a particular space would not distort the space coordinate but induce changes in the temporal component of the manifold. Thus the space-time conditions at the time of the impulse could be sent reverberating in shock-like waves through the entire space-time manifold, but be manifested primarily as overlaps on the same space over time.

However, the manifestation of time distortion would not end here with the prehistoric animal episodes. Instead, it might involve any of the transient events that are out of context in a particular space-time. It might involve the screws found in solid rock, the golden threads discovered in prehistoric strata or the sophisticated remnants of an impossible technology from the dawn age of man.

The consequence of space-time distortion might involve any of those transient events that begin abruptly and end abruptly. Such events may be one of a whole class of unusual phenomena or they may be unique and happen only once. Episodes of objects appearing and disappearing in space or upon radar screens may be symptoms of such occurrences. Reports of people disappearing in haunt situations may be characteristics of these productions.

Their heterogeneity of substance would be a required property here and not a point of derogation, for, depending upon the number of space-time increments involved, the "materialness" of the event would vary. Where the units are few and the space-time perturbation minimal, the person or object may be seen as transparent or ethereal. At other times, when more "energy" was added

to this space-time hologram, the object would take on greater material properties and approach a normal mass that can move objects, produce physical changes and leave verifiable evidence. The range of substance heterogeneity would be an expected factor.

In the data array we have labeled "unusual and transient" events, there are numerous examples of apparent substance heterogeneity. Reports have been filed of humanoids that range from solid to transparent; verbal statements have been recorded of "haunts" which vary from life-like to airy and gaseous; experiences have been related of luminous displays that range from wisps of thin light to globs of concentrated intensity. Perhaps these are the consequences of the occasional tears in the space-time fabric.

With the context of a hologram model (see Pribram, 1971), a more technical analogy can be imagined. Complicated information concerning past events and objects upon the earth would be stored within some property of the total terrestrial three-dimensional space, the analogue of an optical filter. Sudden deviations in the global geomagnetic field would probabilistically increase the chances of an optimal "transillumination" that would allow the retrieval of information from the past into a realistic three-dimensional image in the present. The image of such past creatures or events would exist as long as the transillumination-retrieval factor was maintained. When it was removed, the images would seem to vanish. Although an interesting speculation in light of recent developments, the probationary status and hazardous nature of this type of thinking must be emphasized until translation into real world equivalents and empirically testable hypotheses has been completed.

### The Concept of a Geopsyche

Our concept of a geopsyche essentially involves the interaction between large numbers of biological systems and the geomagnetic environment within which they are immersed. It contends that at certain critical numbers of biological units (of a species) a matrix is formed with the capacity to be energized by the intense geophysical forces of nature. When energized, this

matrix acquires the potential to display behaviours and patterns of its own.

Although upon first impression this concept appears alien and obscure, it is not, for it contains another restatement of the phenomena of discourse levels. In previous chapters, we have mentioned that different levels of discourse and natural observation are associated with phenomenal patterns typical of that discourse level. Thus, there exist molecular patterns apparent only when the molecule is measured; there are cytological frameworks perceptible only when the cell is viewed; there are individual organismic behaviours visible only when the organism is observed; and, there are group phenomena comprehensible solely at the level of the group. We are hypothesizing another phenomenal pattern existing as an integral force and unifying unit at the level of a geopsyche.

### The Principle

The concept of a geopsyche can first be acquired by considering a more familiar analogy. Let us momentarily substitute the biological units of a population with single units of a conductor, for example thin wires of different metals. Thousands of these wires are contained within a relatively small volume of space, such as a cable. Now, suppose a moving magnetic field is applied to the *entire* population of the little wires. The result would be the induction of an electric current in each of those wires and the production of an electric field over the entire volume. Within limits, increasing the number of wires in the cable would amplify the intensity of the field. Using *only* copper wires also would increase the uniformity and effectiveness of the field. Although the electric field would in principle be produced by the individual wires, it would take on the properties of a *matrix* with properties of its own.

In the principle of the geopsyche, the elements are not thin wires, but the electronic units of human organisms — the brains of individual people, millions of people. They are not packaged into cables, but are clustered into areas of high population density. The geopsyche emerges when a *changing* magnetic field is applied to

the population of individual electronic units. However, unlike the analogy in the paragraph above, the energizing field of the geopsye is not an experimental field, but a large scale natural field that must have the capacity to immerse all the units of the population with similar vector conditions at any given time. This prerequisite in itself limits the candidates to the geomagnetic field, to possible tectonoelectric fields or to electric storms sufficient to induce similar changes over the population area. Without the concurrence of the energizing *natural* geophysical or meteorological condition, the geopsye cannot exist. It is therefore a transient and dependent phenomenon.

The intensity of the geopsye would depend, then, on the interaction between the environmental energizers and the characteristics of the bioelectrical units. On the one hand, massive numbers of brain units would probabilistically increase the effectiveness of the geopsye; but, despite millions of such units, their heterogeneity of electronic composition would reduce the required uniformity for the phenomenon to take place. On the other hand, the greater the *homogeneity* of the electronic units, the more uniform the induced effect and the more potent the existence of the geopsye as an independent unit. A combination of unit homogeneity and massive unit numbers immersed within the energizing forces would produce, according to this hypothesis, a formidable matrix with properties and behaviours of its own.

#### Unit Homogeneity

The prerequisite of homogeneity has interesting implications for the prediction of the phenomenon. It would imply, superficially at least, that millions of people thinking the same thoughts could produce a transient geopsye, assuming a transient geophysical energizer was in progress at the time. Thoughts have been presumed to be the correlative manifestations, on a private ("internal") level, of precise electrical patterns in the brain. A concurrent display of similar electrical patterns by millions of brains in close spatial proximity would satisfy the requirement of unit homogeneity.

A one-to-one relationship between a thought and bioelectrical pattern is not easily achieved. The more complex the thought, the

more varied and intricate the correlated bioelectrical pattern. With more specific and detailed thoughts, the probability of temporal overlap between a large number of population biounits would be quite small. If homogeneity were to be produced, one would require some external stimulus to trigger the same thought-associated electrical pattern in all the units at the same time. Again, the interaction from the geophysical energizer must be present at the time of the evocation of these patterns.

However in twentieth century populations, even the presentation of the "coordinating stimulus" to the population units would not insure the production of the geopsye. The reinforcement history (the background) of each individual has been remarkably varied in western culture. Consequently, the conditions under which given images or thoughts were acquired as well as the bioelectrical patterns associated with them, would be markedly different for different individuals. Such extreme diversity of the population would reduce the effectiveness and probability of a geopsye.

There have been times in history when conditions were more conducive; there are places, now, where the situations are more favourable for the production of the postulated biogeophysical phenomena. During the medieval period of man's history when the population had achieved unprecedented levels, a marked homogeneity of experience pervaded western civilization. The majority of human units received an intense commonality of cultural stimuli. Massive numbers of men and women were shaped with a consistent stereotype of religious ideas by the church. By their very ignorance, the human units of that day were exposed to the required lack of variation. It is interesting that these were the days when sightings of succubi, incubi, witches and other creatures from the "nether-world" were epidemic. These were the times when unusual kinetics, forces and luminous signs were so intense in occurrence, that institutionalized methods were required to combat the "manifestations." In the light of the twentieth century, the phenomena of medieval man have been rationalized as ignorance and superstition.

Today the clusters of unusual and intense events still occur in the societies typified by similarity of individual reinforcement

history. Parts of South America and Asia still maintain the rigorous and invariant socialization that produces unit homogeneity. Again, this process is also confounded by poor report, superstition and other factors that interfere with data evaluation. A proper testing ground for the hypothesis seems impossible.

However, members of the North American community may have their chance to test the hypothesis, for they are entering into an age of homogeneity where millions of people watch the same television shows and listen to the same radio programs at the *same* times. More and more members of the average population are falling behind the diversity of a complex technology and replacing it with the simplicity of the media. The similarity in culture and information availability to the average person, despite occasional rifts from subcultures, is approaching an unprecedented level.

Theoretically then, (1) any stimulus situation resulting in production of brain homogeneity would increase the probability of the manifestation, (2) any environmental magnetic/electric field with frequencies overlapping the frequencies of many brains would be a candidate for the "energizer." Processes such as "meditation" or modes of inducing tranquilization would be important factors that could induce synchronous electrical and magnetic field patterns in the brain as well as concentrate the power output into a narrow frequency band. Synchronous brain activity concentrated within a very narrow frequency-power band is an important factor merely because it increases the ease of a probabilistic overlap and coupling with the applied environmental fields. To date, the most typical environmental candidates for energizers have been geomagnetic storms or electrical disturbances. However these sources are not always synchronous or periodic. The production of powerful man-made synchronous magnetic waves around the narrow brain frequency band, for example, 10-Hz, could be more potent candidates.

#### Fear and Emotional Sources of the Geopsyche

As mentioned, an essential condition for the occurrence of a geopsyche is the homogeneity of reinforcement history and the

bioelectrical correlates associated with similar private experiences ("thoughts"). But there are also more fundamental, more simple sources of similarity among the potential units of the geopsyche. These sources are involved with the displays of emotional behaviour, the occurrences of fear or aggression by a million people at once. Such emotions are associated with elementary bioelectrical patterns, determined more by biological and genetic variables than learned ones.

There is accumulating evidence demonstrating an impressive similarity among different human brain patterns during periods of autonomic (emotional) arousal. Although a person may privately experience ("think") different contents, the overall pattern is very similar. Whereas one person might perceive fear in the shape of a hairy monster, the other might perceive it as a nuclear war. The content may vary, but the correlative pattern is similar. According to the hypothesis, an amplification of effect would happen when large numbers of people also share the same contents of emotional experience, the same images of fear or belief. These are the forms that could be projected to the level of a geopsyche with least difficulty.

The putative role of emotional behaviour, especially fear or anxiety (the anticipation of an aversive object's occurrence) in the phenomena evokes some potent implications. Normally, the memories or images associated with fear and anxiety are suppressed, that is, they are not displayed as a part of conscious behaviours. What happens when a large number of people repress the same fear-associated images? More importantly, suppose that due to a genetic quirk of the human species, some images are repressed more than others? Might these be the "monsters" which thrill the population in horror movies? In such projective test-like situations are the hairy monsters, the amorphous blobs or the death-associated occurrences really reflections of these selectively repressed responses? Here would lie another source of response homogeneity.

Emotional responses are potent and powerful psychobiological patterns. They involve the recruitment of many, if not all of the various organizational systems within the body and the produc-

tion of maximum outputs by these systems. These are the kinds of responses, genetically and biologically patterned, that can add sufficient fuel to a susceptible population.

Fear is only one emotional expression. Displays of aggressive, behaviours and sexual-associated responses are others. These two emotional profiles also have been subject to the restrictive laws of civilization and remain for the most part suppressed from daily behaviours. Well trained by the severe schedules of legal reinforcements and punishments, most human units do not overtly express their sexual-aggressive behaviours. With the exception of certain accepted modes of expression, marriage and sports, these behaviours remain suppressed. But, they are still quite effective and may influence the content of dream behaviours and other "non-voluntary" behavioural modes.

### Data Patterns

The hypothesis demands certain patterns in the data and the data seem to contain these patterns, but the precautions of Chapter 1 must still be enforced. A first requirement is inherent in the phenomena themselves, that is, the unusual episodes must last as long and no longer than the duration of the energizer. Using normal data from the two prospective natural candidates, the episode duration should last between a few seconds to about one week.

A second requirement is the precondition of unit homogenization. Something must induce similarity among the members of the population that produces the geopsyché. This precondition could be a political crisis, the anticipation of a war, or the pitch of religious fervor. Such patterns are also seen. Fort notes the concurrence of revival mania, a recurrent manifestation of death fear, in England at the time of the great "haunt" outbreaks. Episodes of statues crying and similar kinetics are notoriously associated with pre-war fears and similar crises involving millions of people. More recently, UFO flaps have peaked with periods of communist scares and political turmoil or unrest. Throughout man's history unusual transients have been used as forewarnings of expected disaster. The data files are replete with patterns of this nature.

### Features of the Geopsyché

In the analogy with the bundle of wires, it was mentioned that the formation of the electric field had the capacity to alter the elements creating it. A similar feature might occur during the transient existence of the geopsyché. If large numbers of people were thinking about (or displaying emotional responses toward) UFOs or "hairy monsters" in the area, then these images would, according to the hypothesis, be induced within other people. If large numbers of soldiers were anticipating the attack of an army, then images of "armies" would be produced. The more susceptible elements, analogous to the better conductors in the wire model, would be the first to show the effect.

One type of susceptible unit capable of primary influence by the geopsyché would be the synchronous brain, predominated by slow, high amplitude frequency patterns on an EEG. Such frequency profiles typify deep sleep, but since "consciousness" is absent, effects upon processes intimately associated with thinking and memory could not be apparent. There are some waking periods of childhood, relaxation and meditation with brain profiles more favourable to the demands of the hypothesis.

The scientists who study human behaviour are becoming concerned about the many response systems within the human body that control behaviour, without necessary involvement of what we experience as "consciousness" or "awareness." Clearly, the human body is a locus of behaviours, a three-dimensional space within which behaviours are displayed with high frequency. Often awareness behaviour can be modified by other response systems within this locus, but since ultimately we measure external events within the context of this type of behaviour, it is difficult to determine when "awareness" has been altered. This problem is comparable to a situation in which all the meter sticks of the world suddenly changed shape. As long as these particular meter sticks were used as the reference measure, the observer would never know a change has taken place.

Laboratory evidence has indicated that private experiences of "reality," "meaningfulness" and related personal behaviours can be modified by electrical stimulation of appropriate portions of the brain. Any trivial external event can appear to have cosmic or great

personal significance if the appropriate brain stimulation is paired with the event. Under special stimulus conditions like hypnosis, eidetic recall or even dream sequences, the person can perceive vivid images and sensations that may be indistinguishable from normal sensory experience. It is interesting that these latter conditions are associated with very synchronous, extremely low frequency electrical activity in relevant portions of the brain.

The implications of a geopsyche do not terminate here. Force patterns that contain the integrity of a phenomenal organization display the capacity to alter the processes they control in order to maintain the requirements of the whole pattern. For example, intramolecular forces show the ability to modify atomic positions to maintain the Gestalt of the molecule, and, consequently the shape that gives the molecule its unique and individual property. A crystal force orders the positions of the subordinate lattices. If some strain is placed upon the crystal as a whole, electrons and relevant particles are recruited from anywhere within the domain of the crystal force in order to maintain its integrity. Similar phenomena occur at the biological levels of organization.

This is an interesting and foreboding corollary of the hypothesis. In essence, it states that the individual component of any system is irrelevant in context of the survival and maintenance of that system. The individual unit — whether on the atomic, molecular, biological or social level of organization — would be totally expendable towards the continuation of the immediate whole. At the level of a geopsyche, the individual unit would also be irrelevant and subject to the dictates of the system.

A control system at the level of the large group or species is not a new idea. Ecological studies have demonstrated that many groups of animals display behaviours that seem mediated by biological control systems to insure optimal survival of the local group; the individuals are irrelevant. At genetic levels of organization, there appears to be homeostatic-like mechanisms maintaining control over the species behaviour. Mass migrations, disease susceptibilities and sudden death appear to be regular manifestations of the occurrence of these mechanisms.

Man, just another of the myriad species upon this planet, would be expected to also have such control mechanisms. In the

past, ideas of a collective unconscious (C. G. Jung) or a death instinct (S. Freud) have been formulated to explain species-level behaviour in human beings. Perhaps there *are* fundamental mechanisms which involve the total number of human beings immersed within a single pattern of connection. The total distance between the human elements would not be a critical feature. Space would be irrelevant as a source of distribution since the primary factor would be the means by which they are functionally connected. This functional connection would be formed from time to time during transient disturbances of the earth's environment. During this connection, the external representations of the problems, expectancies, and biological properties of the total individual units would transiently occur.

## A Final Comment

Explicitly and implicitly throughout this text the limitations of *Homo sapiens*, both as a measurer and an organizer of natural phenomena, have become evident. One is amazed at the extremity of explanations evoked, before the immediate spectrum of possibilities is exhausted. When a luminous blob of light is reported, some human beings dismiss the event as hearsay while other human beings immediately assume a spaceship has landed. When a group of people report humanoids around a glowing light, some imagine a hoax while others contend that the earth has been visited from another planet. When objects move by themselves, some conclude trickery and adolescent mischievousness while others invoke the influence of a devil and sinister forces.

Such types of behaviour are not restricted to spontaneous observations. When one person guesses beyond chance expectancy the symbols of hidden cards, some groups conclude immediately the existence of "ESP" and a non-physical basis for the observation. Still other persons, having demonstrated once that similar effects could be obtained by cheating and collaboration, conclude all such events are based upon these procedures. When objects change their shape about a man, some believe at once in the existence of mystic forces and in anything the man says about the

nature of those forces. Another person, who can produce similar effects by another means, immediately assumes the previous examples are forms of the same trickery.

In the midst of these common human behaviours, the immense range of palatable possibilities between the extremities of explanation is often ignored. From the data collected, we do not think that all events reported as unusual phenomena share a homogeneous origin. We expect an entire range of mechanisms to be involved with the reports of transient events. It would not be at all surprising (indeed, it is quite predictable) that many of these events will relinquish their place among the unknown and disparate and be placed among the known and accepted. We also think the understanding of many types of unusual events will be accomplished by expanding the principles already available to new geometries and larger scales of application, without recourse to excessive explanation. Such options have been given in Chapter 15.

However, one must still realize the existence of the *accepted* scientific level of explanation, the status quo, which would condemn the contents of this book. At the level of the accepted explanation exist the repertoire and jargon phrases for dismissals; these can be evoked in a reflex-like manner whenever the stimuli of unusual episodes are reported. Included in this sanctioned bag of stereotyped tricks are phrases like "poor observation," "unscientific," "charlatanism," "laymanism" and a variety of labels. They are verbal responses emitted by human organisms prone to intense anxiety behaviours whenever the unknown and the novel are presented. They are the anxiety-reducers and the "tranquilizers" of the scientific community. Three hundred years ago, when the religious framework controlled western knowledge, the anxiety reducers "heretic" or "pagan" were emitted instead.

From such a perspective some transient events fit within the ritual of scientific explanation; those which do not, do not exist. An observation of a rock falling during a thunderstorm is in the least extent poor measurement and at the most a queer coincidence. Turbulence could have lifted the rock in question into the air. Upon its fall back through space an appropriate ionization trail

was produced to allow the discharge of the lightning stroke. "Phantom sniper" instances would be episodes of manufacturing mistakes, transient astronomical events would be chance occurrences, solar peculiarities would be specks of dust, and people who write books about unusual events would be the simple-minded and sacrilegious of the human community.

There is merit at this level of explanation. Such approaches are the stabilizers of scientific thought, the preventatives of deviant and potentially disastrous excursions into *untestable* and fantastic hypotheses. The level of the mundane can be considered the roots of the scientific status quo.

It is also not without justification. There have been instances where astronomers thought seeds passing across their lens were solar objects; there have been times when a new satellite was a piece of laboratory dust; there have been instances where falling rocks were the consequences of youngsters with clever sling shots; there have been times when animals, previously assumed to be extinct, have been captured and placed in their appropriate taxonomies; there have been times when psychotic scientists have written about events observable only to themselves. In all these instances, immense amounts of time were saved by waiting and allowing the apersonal tools of replication and inter-experimenter reproduction to place these events into their correct position.

We have not attempted nor have we intended to indict or impugn the methodology or techniques now existing within the framework of modern science. These are sound and reliable procedures. The danger lies in the men and women who use them. We are suspect of those scientists who practice *ritual without reason*, who parrot the phrases they were taught without thinking about or questioning the most fundamental premises, and who arbitrarily carve the material of science into viciously defended territories. Such individuals who are the "nine to fivers" of the scientific community use science as a job or as a means of structuring their own personal world or reducing their own personal anxiety. They are the automatons who display, in an obsessive-compulsive manner, the meaningless rituals of scientific endeavour: to pursue some trivial, inconsequential problem, publish it,

and then let it die upon some dusty shelf. They are the arrogant and vindictive types who belittle the exceptional and adhere with a belief indistinctive from the most intense religion. They retaliate with indignation at the slightest deviation from unquestioned principles. Unfortunately, these inert components of the scientific community are numerous. Ironically, they pride themselves upon their profession and are unaware of the human and social contingencies which shape them.

The history of science has shown a persistent pattern. In this pattern the various principles of nature and human understanding of nature have been projected and expanded from their immediate formations to higher and lower levels of discourse. Throughout this pattern man is seen as a trivial consequence and a small probabilistic option within a universe with large variation. Along this pattern the limitations of man the measurer have become more and more acute. We think there is sufficient evidence that what have been labeled unusual events — the UFOs, kinetics and geophysical-astronomical oddities — are only one expression, mere symptoms, of a natural organization more apparent at a global level. As before in the history of scientific thought, the sound, older principles will not be negated but only subsumed within these larger and more complex organizations. The only limitation will be science's own imposition.

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