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Location: [Mothership](#) -> [UFO](#) -> [Updates](#) -> [1997](#) -> [Feb](#) -> Peter Brookesmith on Tectonic Strain Theory

UFO UpDates Mailing List

Peter Brookesmith on Tectonic Strain Theory

From: **Peregrine Mendoza** <101653.2205@CompuServe.COM>
Date: 09 Feb 97 21:19:37 EST
Fwd Date: Mon, 10 Feb 1997 00:39:46 -0500
Subject: Peter Brookesmith on Tectonic Strain Theory

The Duke of Mendoza presents his compliments to all, and refers to the threads 'Electrically Induced Hallucinations' and "TST" (too many messages to quote them all - sorry).

Those complaining about the work of Michael Persinger, and Steven John who has been speculating about it, may like to take a gander at the following excerpt from the forthcoming book by Paul Devereux and the Spooky Dook, which answers some of Steven John's queries and fills in some significant omissions from the story Chris Rutowski has been telling. Paul Devereux should be joining the List soon (AOL willing, tee hee), and can fill in much more.

(Sue Blackmore, by the way, had a 6-month ME-type illness last winter and has been recovering slowly since. This may explain her lack of communicativeness. Or the Royal Mule could...

COPYRIGHT remains with the authors, BTW, but I at least have a pretty liberal attitude to fair use. For the really juicy, new exclusive stuff and amazing pictures, you'll have to buy the book. But here we go with some pertinent history...

BEGIN EXTRACT - - - - -

Growing Towards the Light

Charles Fort was among the first to make the observation that strange "meteors" appeared somewhat coincidentally with earthquakes and tremors. The "first ufologist" had already made a connection between lights in the sky and tectonic activity.

It had to wait until the end of the 1960s for ufologists to take the next obvious step and link UFOs with geological fault lines, those areas of tectonic weakness in the Earth's crust. ...John Keel associated the appearance of unusual lights with areas of faulting and magnetic anomaly, as well as with the occurrence of earthquakes, but it was perhaps the French researcher, Ferdinand Lagarde, who most tightly focused in on the UFO-fault connection. In a 1968 article, he presented an initial survey of the French part of the 1954 UFO wave, in which he found that 37 per cent of reported UFO sightings occurred on or in the immediate vicinity of faults, and that 80 per cent of the sighting localities were associated with faults. To counter the argument that "anywhere" can be correlated with faulting, Lagarde compared communes with faults in the same areas: only 3.6 per cent of these fell on faults (or 10.8 per cent if margins of 2.5km were allowed for the faults). Later research showed a 40 percent correlation between reported UFO incidence and fault lines.

"UFO sightings occur by preference on geological faults," Lagarde concluded. "It seems as though faults, as such, are not merely the external aspect of an irregularity in the Earth's crust, but are also the scenes of delicate phenomena - piezo-electrical, or electrical, or magnetic, and at times perhaps of gravimetric variation or discontinuity."

Although the lights-fault connection was a low-profile topic within ufology for several years, it gradually began to emerge from the shadows. In 1975, Paul Devereux and Andrew York published a two-part article called "Portrait of a Fault Area" in a Fortean journal. In this they surveyed their home county of Leicestershire in the English midlands, geographically and geologically mapping in great detail the occurrences of a wide range of recorded strange phenomena and events over a number of centuries. Both meteorological anomalies ("strange lightning", "balls of fire") and reported UFOs (lights in the sky, disks, spheres and cigar-shaped aerial objects) in the data were found to have had their greatest incidence over the tectonically-active parts of the county. Although this was a relatively crude study, it did suggest that the influences causing the appearance of exceptional meteorological events appeared to be at least partially shared by the phenomena termed "UFOs".

In 1977, Michael Persinger, a neuroscientist and geologist at Laurentian University in Sudbury, Ontario, together with Gyslaine Lafreniere, published Space-Time Transients and Unusual Events in which they described a similar study of the entire area of the United States. While this did not allow for the same kind of detail and individual accuracy obtained by the Devereux-York study, it used more sophisticated analytical methods. Their results indicated that reported UFO phenomena did tend to cluster in areas, supporting Keel's notion of "windows". They also found a correlation between the higher levels of reported UFO activity and the locations of earthquake epicentres. Persinger and Lafreniere concluded that "the data consistently point towards seismic-related sources". They argued that "the existence of man upon a thin shell beneath which mammoth forces constantly operate, cannot be over-emphasized".

Persinger and Lafreniere saw the interaction between stellar and planetary influences and the Earth's own processes as possibly providing the energy "motor" that could generate light phenomena. While this interaction would affect the whole planet, Persinger and Lafreniere reasoned that it would result in outbreaks of lights and other unusual phenomena only in those locations where geological stresses were in a state of tension - primed to be triggered, so to speak. (Tectonic stress waxes and wanes in many places on the Earth's crust every day, producing many small, often imperceptible tremors which only occasionally escalate into major earthquakes.) These researchers visualised fields of forces operating evenly and quietly over very large geographical regions which could become focused at any given time in a few small areas of particular geological resistance or instability such as fault lines, ore bodies or mineral deposits, stubborn rock outcrops, hills, mountains, volcanoes and so on. They likened this to the energies in the atmosphere being equally capable of producing a gentle breeze over a wide area or a localised ferocity like a tornado.

It had long been noted that unusual lights are often seen around physical projections within an active region. These include features such as mountain peaks and ridges, isolated buildings and church towers or spires, prominent rock outcrops, and transmission towers. Such features are charge collectors, so this obviously supported the assumption of there being an electromagnetic dimension to the lights.

Seeking a specific mechanism for the production of anomalous lights, Persinger and Lafreniere opted for a modification of the piezo-electrical effect, which is the term given to the production of electricity in crystals subjected to pressure. They felt that stress accumulating in a seismic area, perhaps over weeks or months, could produce an "electric column" from a few feet to thousands of yards across. The high electric field in such a column could in certain circumstances ionise the air creating glowing shapes. The column would move as the band of stress followed a fault or other line of weakness in the ground. Consequently, any glowing ionised shapes in the column would seem to be moving freely through the air.

This was the first outing of what has come to be known as the Tectonic Strain Theory, or TST.

In the decades following this work, Persinger, individually and with

associates, has maintained a steady stream of research papers exploring the TST explanation in numerous locales within North America as well as in other countries, and he has also studied the possible clinical effects on the human mind and body of close proximity to anomalous light phenomena (see following chapter). The TST has also gradually been updated and refined. Now, for example, piezo-electricity has been joined by other possible mechanisms such as emissions of radon and other gases, and chemoluminescence. Another refinement has been associating the incidence of light phenomena not so much with numbers of quake epicentres, but with the intensity of such tectonic activity.

The idea of a "strain field" crossing areas of increasing tectonic stress being the primary cause of light phenomena has stood up well to subsequent analyses, but it is now thought to be possible that there may also be more physical candidates such as underground water moving through fault systems. It is also now recognized that even given the presence of a strain field, extra "triggers" may also be implicated in the occurrence of intense outbreaks of light phenomena. Such triggers could include lunar tides, the passage of air masses and geomagnetic storms - all of which have caused earthquakes. The passage of the moon around our planet, for instance, causes a focal strain field to travel across the Earth's surface at around 1000 km per hour. Passing through a tectonically primed region, this could well set off a spate of luminosities.

In 1985, Persinger presented some evidence to support the observation that variations in the Earth's magnetic field would seem to be associated with the appearance of light phenomena, but only in regions where tectonic stress and strain were increasing. In 1990, Persinger put forward further evidence to show that increased global seismicity could be successfully linked with worldwide UFO waves.

In the course of the 1980s another important researcher into light phenomena made his appearance - John Derr, a leading U.S. geologist who by then had already been pressing for scientific acceptance of earthquake lights for a decade. In 1986, he joined with Persinger to study a wave of lights that had been reported throughout the 1970s in the Yakima Indian Reservation, Washington State, and especially between 1973-1974. Firewardens positioned in their lookout posts within the reservation saw red-orange and yellow-orange lightballs floating over various locations, such as Goat Rocks. These were quite large, though "ping-pong balls" of light were also seen bounding along Toppenish Ridge and Satus Peak within the reservation. Columns and flares of lights were seen in addition, as were white lights with smaller, multi-coloured lights apparently connected to them. Some lights were complex forms, and some displayed luminous protrusions or "horns". Over the years during which these remarkable sights were observed, there were also unusual meteorological effects such as glowing clouds that fluctuated in brightness. The firewardens organised themselves, and photographs were taken of the lights and triangulated observations using radios were made.

The Yakima analysis by Derr and Persinger showed that 78 percent of the reported phenomena were lights seen in the night sky. They were seen most often in the vicinity of the ridges that cut across the reservation - each riddled with faulting - and with Satus Peak, the general area of a surface rupture and one of the stronger earthquakes in the region during the 13 years covered by the study. Successive reporting of lights occurred in the seven months preceding the biggest earthquake of the studied period, in June-July 1975. Regional seismic activity also increased during the times in 1972 and 1976 when most sightings were reported. The investigators took the opportunity to seek evidence for a stress field moving across the area. From June 1976 to March 1977 they noted 21 earthquake-light phenomena cycles, eight of which occurred in the time intervals between quakes located north and south of the sightings, and two more occurred on the days when there were north-south shifts in epicentres. This strongly indicated a moving 'band' of stress within the local geology.

In addition to increasing the evidence for an association between outbreaks of lights and earthquake activity (Derr was able to make informal predictions to colleagues of an earthquake around Tennant Creek, Australia, in 1988, for instance, because of the earlier appearance of light phenomena in the district), Derr also made an important discovery regarding the role of liquids moving over or inserted into the Earth's crust near window areas. The liquids could be in the form of flooded rivers carrying much greater volumes of water than usual, the result of civil engineering enterprises such as the creation of new dams and reservoirs, or the high-pressure

injection of water or waste liquids into the bedrock. The extra weight of water on the surface can add pressure to the underlying geology, as well as penetrate faults and fissures. Forced injection can cause cracks in rocks to increase and spread, thus shifting internal pressures, in addition to lubricating the surfaces of rocks meeting at a fault, so allowing them to slide more easily over each other.

The first case where this connection came to light was an outbreak of UFO sightings in the Uintah Basin in north-east Utah, around the towns of Vernal, Roosevelt and Duchesne, between 1966 and 1968. The main type of phenomenon observed was a large globe of light one witness described as having the golden-amber colour of the harvest moon. It was rarely fully spherical, however, usually appearing as a sort of hemisphere with a flattened bottom. "Rocket" and "cigar" forms were also reported, along with infrequent sightings of metallic-looking disks. Many of the phenomena were observed by multiple witnesses, and some people reported hearing whistling and humming sounds on close encounter. Derr eventually discovered that the injection of waste liquids into the crust had been going on coincident with this wave. This had not been noticed for some time because the the injection work had taken place across the nearby state line in Colorado.

In a 1990 paper, Derr and Persinger recorded that the forced injection of waste liquids into the bedrock at Derby, Colorado, triggered some 1500 small earthquakes, and a large increase of reported light phenomena within 100 km of the injection site. Derr and Persinger noted that some process within the Earth's crust, whether a strain field or whatever, diffused away from the site at a rate of 50-100 km per month to distances as far as 300 km. Subsequently, Derr has made numerous other observations of a similar kind. For instance, an analysis of an "epidemic" of light reports in southern Manitoba in 1975 showed a correlation with a strong earthquake in Minnesota near the source of the Red River (which flows into Manitoba). Derr and Persinger were able to show matching patterns between the numbers of reported light phenomena and the varying volume of the Red River.

Nature Lends a Hand

But it wasn't just this kind of analytical research of earlier cases of light phenomena that moved the light hunters' case along. Circumstances allowed two contemporary field studies of localised outbreaks of lights to be conducted. The first took place around Piedmont in south-west Missouri. The appearance of strange lights of various colours in the early months of 1973 coincided with TV and electrical interference in the area. Lights were seen not only in the sky, but also sitting in fields, hovering near transmitter towers, and even passing beneath the surface of a reservoir. Dr Harley D. Rutledge, a physics professor at Southeast Missouri State University, led field expeditions to the "flap" area, and they took numerous photographs of light phenomena and made useful first-hand observations.

The second situation developed in the remote valley of Hessdalen, in a mineral-rich area famed for its mining of copper and other metals, about 70 miles south-east of Trondheim in Norway. For a few years after November, 1981, Hessdalen hosted one of the most remarkable outbreaks of light phenomena ever reported. People living in the isolated farms that straggle through the valley saw lights spring into visibility near rooftops, or hover just above the ground. Mainly, however, lights were seen just below the summits and ridges of the surrounding mountains. The shapes of the light phenomena included spheres, "bullet" forms with pointed end downwards, and inverted "Christmas tree" shapes. Colours were predominantly white and yellow-white, though other colours were also reported, particularly small, flashing red lights on the top or bottom of larger white forms. Strong, localised white or blue flashes in the sky were also observed.

In March, 1982, Norway's leading UFO group, UFO-Norge, became interested, as did the Norwegian defence department, who sent two air force officers to study the situation. (They discovered that people in Hessdalen had been seeing strange lights on and off since 1944.) By the summer of 1983, hundreds of reports of strange lights had been made by the inhabitants of Hessdalen. There were also complaints of curious underground sounds like rumbling trains. The situation had become so intense that Norwegian and Swedish UFO groups combined their resources to form Project Hessdalen. Field operations got under way on 21 January, and ended on 26 February, 1984. During this period

a continuous presence of monitors was maintained in the valley, along with a range of instrumentation, including radar, a magnetometer, a spectrum-analyser, geiger counters, and a variety of photographic equipment, including cameras with diffusion filters that could image the spectrum coming from a light source, allowing analysis to determine what elements were present. The project personnel had to work in difficult conditions, with temperatures as low as minus 30 degrees Celsius. The headquarters of the effort was a trailer caravan, high on a ridge, equipped with electrical power.

Project Hessdalen succeeded in taking many photographs of strange lights, and they also obtained a number of radar readings that were not "radar angels". In one baffling case, project personnel were watching a bright light cross the sky while the radar received an echo back from it only once every second sweep of the radar beam, yet it gave a steady appearance to the naked eye. A seismograph used for just a part of the field operation had its largest readings coinciding with peaks in sightings, but the cause of the earth tremors were not local to Hessdalen. The magnetometer showed changes in the Earth's field in apparent relationship with about 40 percent of perceived lights. The geiger counters gave no unusual readings, though that could have been due to their distance from any lights.

Project Hessdalen conducted further fieldwork in the winters of 1985 and 1986, but it became apparent that the peak of the wave had passed between 1982 and 1984. J. Allen Hynek visited the site in 1985, and was impressed with what he learned about the phenomena there.

The Hessdalen phenomenon had massively raised the profile of the whole issue of mystery lightforms.

Earth Lights Arrive

In 1982, coincident with the onslaught of lights at Hessdalen, Earth Lights, the first book devoted solely to the phenomenon, was published by Paul Devereux. He made an attempt at summarising and clearly identifying what until then had been a somewhat formless, unfocused area of enquiry. He provided the phenomena with the name "earth lights" specifically to identify them as being something other than extraterrestrial. The book reinforced the tectonic connection with the lights by presenting work the author had carried out with geochemist Paul McCartney exploring detailed associations between light phenomena, epicentres and faulting in Great Britain. Even the great UK centre for UFO sightings, Warminster, was shown to lie directly on an isolated fault line, and nearby Cley Hill, frequently the source of orange fireballs, was immediately adjacent to two faults.

The following year, Devereux, McCartney and chemist Don Robin brought earth lights to the attention of a broader public through the pages of New Scientist, where they also discussed possible mechanisms within rock that could produce lights, such as piezo-electricity, triboluminescence (light produced by frictional forces), and thermoluminescence (the production of light by heating).

An important addition to the earth lights literature appeared in 1985 in the form of Spooklights - A British Survey, by David Clarke and Granville Oldroyd. Among numerous British earth lights haunts superbly documented by these authors was Burton Dassett, a now lonely church on top of an isolated group of hills set in the plain south of Warwick. It was the focus of an intense outbreak of light phenomena in 1922 and 1923. Reporters from the major local newspapers, as well as local people, saw many displays of mysterious lights, nicknamed "the ghost". The reporter from the Birmingham Post, with other onlookers, saw a "steady and vivid" light travelling a few feet above the ground. "Its radiance was such that the sky was faintly illuminated for several miles," he wrote.

Clarke and Oldroyd discovered that the church sits directly on the Burton Dassett fault, and that the mysterious light briefly reappeared on the night of 25 January, 1924. That very night, there was a powerful earth tremor in Hereford, a county to the west. This obviously suggests a general tectonic connection of some kind with the Burton Dassett light. The local Leamington Chronicle made just such an assumption. "Simultaneous with the appearance of the 'ghost' of south Warwickshire comes the report of an earth tremor in the West of England," it noted.

In 1989, Devereux's Earth Lights Revelation appeared, a sequel to his first book, in which a much more comprehensive and updated scope of the subject was presented. The book also gave full information on a

study by Devereux and McCartney of an "earth lights zone" between Barmouth and Harlech in north-west Wales which had been active in the early years of the century.

Because good, contemporary reports had been made of these Welsh lights, Devereux and McCartney found that by conducting thorough map and field research, the locations of quite a number could be mapped with great precision. These detailed positions were then matched with recent geological research in the region, and it was found that the lights followed the course of a major local feature, the deep-rooted Mochras Fault, like beads on a thread. Some of the lights had emerged from the ground directly on the Mochras Fault, and nearly all occurred within a hundred yards or so of that or associated faulting. Indeed, the incidence level increased with proximity to the faulting. (To check if this was a random pattern or not, the investigators conducted a similar study of the St Bride's Bay area of south-west Wales, the focus of a UFO wave in 1977. The results were virtually identical to those obtained around Barmouth.)

The Barmouth-Harlech lights outbreak occurred in the midst of a period of unusual seismicity: between 1892 and 1906 there were several earthquakes in various parts of Wales. In October, 1904, for example, immediately prior to the onset of the Barmouth wave, there was a quake at nearby Bedgellert.

Barmouth and Harlech are also adjacent to the Lleyn Peninsula, one of Britain's most active seismic areas, and epicentre in July, 1984, of an earthquake registering 5.5 on the Richter scale. This event brought the lights back briefly to the Barmouth area - the evening before the quake, a resident saw a brilliant white light "the size of a small car" float in from the sea and land just beyond the brow of a grassy dune on the beach. When he rushed over to examine the "landing spot" there was nothing to be seen.

The 1980s saw the assembly of a wide range of research into the history of earth lights in early and non-Western cultures. It became abundantly clear that people had come up with explanations for the lights that suited their own cultures and times (see Chapter 1). What is particularly interesting is that throughout old Europe it was thought that veins of copper or other minerals are present where balls of light emerge from the ground. Although such beliefs were dismissed as mere superstition by the mining texts of the eighteenth century, the "Age of Reason", it is a fact that prospecting by means of studying light phenomena was conducted at Bere Alston, an important copper and arsenic mine in Devon, England, until the beginning of the twentieth century. This means that the skills involved in observing earth lights probably died out in the Western world only within the last couple of generations.

In the Laboratory

As well as field research, historical documentation, statistical analyses, and theory-building, there have also been some laboratory experiments. In 1986, Brian Brady and Glen Rowell of the U.S. Bureau of Mines fractured cores of granite, which has a high quartz content allowing piezo-electric effects, and basalt, containing no piezo-electric crystals. Their fracturing was performed in various gases (air, argon, helium), in a vacuum, and even underwater. Brady and Rowell used a spectroscope linked to image intensifiers to capture the spectra of any fleeting lights that might be produced as the cores broke up. The results were most instructive. Both the granite and the basalt cores produced tiny lights. This challenged the theory that piezo-electricity could be the mechanism producing lights in the landscape. But the biggest surprise was that the spectra of the lights showed no trace of any elements from the rocks, only from the surrounding gas or liquid. Analysis of the spectra of rocks fractured in a vacuum showed only the gases in air (it is impossible to create a perfect vacuum on Earth). The experimenters concluded that "an exoelectron excitation of the ambient atmosphere is the mechanism responsible for the light emissions observed under rock fracture". But though there were speculations about the radio fields produced by fracturing rock forming energy 'bottles' to hold the light emissions in spherical and other forms, there was (and still is) no satisfactory way of explaining how earth lights could travel freely in space and maintain specific, defined shapes.

There was another unexpected discovery resulting from the experiments. The energy produced by the cores fractured under water made the liquid glow and both atomic and molecular hydrogen was produced. It was realised by the experimenters that such "molecular dissociation" might initiate chemical reactions "of geological and

biological interest". John Derr interpreted this as meaning that this process had "implications for biogenesis", or the origins of life.

Did earth lights trigger the creation of organic life in the primeval muds of our planet? Are they, in a sense, ancestor lights?

[...]

No one knows what earth lights actually consist of. Some form of plasma (ionized gas) is assumed, but not a great deal is known about plasmas in any case, and some particularly baffling properties are seemingly possessed by the lights. According to recurring accounts, earth lights seem to be going "on" and "off" very rapidly, they can send their light in one direction only, and they can appear to have mass one moment yet seem weightless at another. The lights seem to hover on the very extremity of physical existence - here one moment, gone the next. Devereux has suggested that they may be macro-quantal events, displaying on our level of perception characteristics that owe something to the fluctuating probability field of the primal, subnuclear quantum sea out of which all energy and matter arise. Hal Puthoff has a suspicion that earth lights may be powered by zero-point energy. David Fryberger is developing a theory which has the lights resulting from a hitherto unknown particle he calls the "vorton", more exotic even than gluons, quarks and the other subatomic entities postulated by nuclear physics.

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