

been reported, six to seven times a week and two to three times a day.

Despite all the blanks drawn during the investigation some 20 scientists researched the phenomenon during 1994 and their reports were either not completed or not available at the time this MoD study was made.

ELECTRO THERMO AND TRIBO-LUMINESCENCE FROM ROCK FORMATIONS/EARTH FAULTS

10. Statistical studies have shown [1] that geology and UAP events seem to be linked. Research [2] in 1977 confirmed that (French) events reported over 25 years correlated with locations of rock formations and a similar study in Leicestershire (1972-1977) gave almost the same statistical results. In 1981 the US Bureau of Mines carried out experiments in which granite core was crushed under darkened test conditions in which recordings were made and a line was established between anomalous aerial lights and geological sites.

11. Although these luminous effects were earlier attributed to piezo-electric action several other scientific explanations have been proposed, including natural radioactivity, cosmic rays and light from thermo or tribo-luminescence. The latter would involve reactive electrons moving between conduction and valence bands in three-dimensional lattices and which contain defects. Some connection with tribo-luminescence is also reported - a simple example of which would be the electrical charging of materials by friction - which can be manifested as static discharge. Tribo-luminescence is the emission of visible radiation due to frictional forces - in effect 'cold light emission'.

12. Example fault lines where 'Earthlights' have been seen are shown at Figure .5. It is clear from other sources [3] that sightings are often directional rather (as

might be expected) omni-directional, that the observer must normally be within a few hundred metres of the phenomena and that the lights appear within a few hundred metres of the local earth fault-line. Overseas, particularly in the USA, there is evidence of increased UAP sightings in areas of tectonic volatility - for example in the Cascade Mountain Range in Washington State. The description of these correlates with light seen in Leicestershire, first prior to the 1957 UK earthquake.

EARTHLIGHTS

13. The phenomenon of 'earthlights' is based on the fact that physical and electrical forces accumulate in areas of seismic activity, possibly over weeks or months, and the resultant stresses in rock formations finally result in rock fractures. At the moment of fracture (and proved by laboratory experiments) these produce electrically charged particles before bursting, which is manifested as light when the fracture occurs. Whereas an earthquake releases energy in a major form, pre- and post-earthquake stresses are the likeliest time for earthlights to be reported. It is claimed that this anomalous light phenomenon occurs:

- (a) Along the earth's faultlines.
- (b) At ± 2 km from the faultline (although usually within 30m and exceptionally 20km from an epicentre).
- (c) At land or sea (underwater faultlines, for example, Loch Ness, Loch Tay) overwater the lights have sometimes been described as green and globe shapes have been said to change to triangles.

- | | | |
|--|---|---|
| (d) When exceptional meteorological conditions are present. | - | Discoids |
| (e) When increased man-made pollution (air particles capable of holding a charge) are present. | - | Spheres (Globes, Boloids and Orbs) (see also (c) above) |
| (f) When there is a gaseous presence or chemiluminescent (i.e. rock to rock friction) also occurs. | - | Tadpoles (square front with tail). |

These can all flash, 'flutter', 'flicker' or 'flip' in motion. Occasionally they are described as 'basketball' size, but diameters of 8 to 100m have been reported.

The key characteristics are:

- | | | |
|---|-----|---|
| (a) Balls, streaks, sparkles or phosphorescent arcs, v-shaped formations or 'boomerangs'. | (h) | More than one light can move together, leading to the supposition: <ul style="list-style-type: none">- That they are on each extremity of a solid object.- That they have some sort of field present which regulates their spacing. |
| (b) Lights that change shape, fly, occur near the surface or at height and are often described as 'danced', 'chased' or 'merged'. | (i) | Lights can merge or split, giving, according to some reports, the impression that they are 'intelligent' (see also para 15 below). |
| (c) Mostly reports are likely at night, even though the phenomena occur in daylight. | (j) | Between lights in a cluster there is the appearance of blackness in outline. Three lights, for example, give the appearance of a solid triangle and four a rectangle. The outline of the shape can be clearly seen as 'blacker' than the background (i.e. absolute absence of light). |
| (d) An (apparently) ionised shape is formed. | (k) | Lights may move towards a witness when approached. |
| (e) Sounds are sometimes heard. | | |
| (f) An emission of EM waves (or other unknown energy fields) are present. | | |
| (g) Shapes appear and disappear and normally take the form of: <ul style="list-style-type: none">- Triangles 'with rounded corners' | | |

(l) Lights seem to be attracted (frequency of occurrence is apparently higher) near to:

- Mountain peaks, quarries, rock ridges, caves and mines. (20 years of sightings in the 1920's era in Chipping Norton area of Oxfordshire and in Ironstone quarries of Banbury e.g. 1923).
- Power lines, transmitter towers.
- Water.
- Areas of mineral deposits.

(m) In daylight they appear as 'metallised' discs, hazy glows or haloes or 'cloudy cigar shapes', but colours have been reported, mainly as amber-yellow and white; with rapid colour changes. When red is reported the core is often described as red. A well reported example appeared on the Fakenham-Norwich road in 1908, lasted 20 minutes, had a red core and was 50-60ft high.

(n) Low-level seismic activity is apparently necessary.

(o) The phenomenon appears to be 'weightless'.

(p) Some can be seen on radar - others not. (see Working Paper 5 & Volume 3)

SUMMARY

14. Some comments can be made about the long list of earthlight attributes above.

(a) Electroluminescence is understood to be the release of luminous energy from rock when electrons move from higher to lower energy levels due to friction.

(b) Fault lines and 'ley lines' often coincide, as do the ancient buildings (stone circles, religious sites (often Christian churches, built over former Satanic worship sites, etc.).

EARTHLIGHT REACTION

15. It is noted (at para 8-Hessdalen) that the earthlights reacted when remotely irradiated with a laser. (No further information is available, as the Hessdalen report is still in the process of being published. It is of interest, however, that a Ship's Captain (in the Baltic Sea) claimed (in 1951) that earthlights were triggered 'on' by his ship's radar. The lights "took the form of phosphorescent arcs which gyrated clockwise and anti-clockwise". Working paper No. 24 on 'SPRITES' considers this phenomenon further.

HISTORICAL

16. It is of interest that the phenomena of earthlights has been observed for, perhaps, thousands of years. In medieval and Victorian times these were variously described as 'Spook Lights', 'Luminous Vapours', 'Fairy Lights' (Ireland), 'Fireball Spirits', 'Kitty Candlestick', 'Ignius Fatuus', 'Jack-o-Lantern', 'Boggarts', 'Dragons', 'Will-o-the-Wisp', 'Corpse Candles' and 'Orbs' (Windsor Castle early 1990s). It seems likely that what is seen becomes matched to the understanding of the day. What was once a simple type of

misunderstood apparition, becomes a spacecraft or similar 20th Century-related technology entity. They were frequently connected with swampy or marshy conditions on the one hand and described as having a yellow core, violet edge and sometimes red. More recently some have been attributed as being methane-based (CH₄) with a trigger of P₂ H₂ (hydrogen phosphide).

17. As a sample of the pedigree of what is reported today, much further back (AD 584) brilliant rays of light which seemed to collide were reported and (in AD 585) 'rays' or 'domes' were observed in France. On 3 August, AD 989, three brilliant round objects were seen to join together. A fire breathing dragon came out of the sea. In Japan a 'spinning ball of fire like a red wheel hovered' - with many witnesses. While from the terrace of Windsor Castle on 18 August 1783 four eminent scientists (including Fellows of the Royal Society) observed and reported (Philosophical Trans. Royal Soc. 1784) an object which hovered, moved, changed luminosity and changed shape, brightened and finally, exploded. [This, in fact was probably ball lightning rather than an earthlight]. Other historical earthlight areas (which will be relevant when a database analysis is done for the present day) are:

- Llambert, Barmouth and Harlech (see Ley Line/Fault Line map) and Llangolan. (40 mile wide strip).
- Haverfordwest, St. Brides Bay, Milford Haven, 'Stack Rocks'.
- Colwyn Bay to Shotton (24km wide extension inland).
- Denbigh (e.g. 1979 and 1984).

18. During the Second World War what were (now understood) clearly earthlights were reported by Commander-in-Chief Devonport. In 1915 Naval Intelligence investigated phenomena (feared to be of German origin) both in the Warminster and Dartmoor areas and further displays are recorded in 1981 at the Standing Stones of Drizzlecombe. Similar phenomena are reported in the USA. These are often reported for several days, weeks, or months in a particular area - after which they are not seen again, perhaps for years.

19. It appears that there may be more than one type earthlight since medieval miners were well aware that their interest in the phenomena was the proximity of earthlights to copper and iron ore.

GEOLOGICAL

20. As an aid to the statistical analysis of locations of UAP reports, Figure 8 shows the geological structure of the UK. This may be required if it becomes necessary to:

- Isolate what are believed to be earthlights to specific geographic and geological locations and types of rock formation.
- Further correlate (and thus eliminate those UAPs) with rock types known to produce earthlights when under seismic stress, (as it is suggested that low magnitude seismic disturbance may be sufficient to provide the conditions for light phenomena).

21. **Fault Systems** There are several Earth Fault-Systems which cross the United Kingdom. The location of these is shown for the whole country (known as the DENT Fault System) at Figure 9.

BIBLIOGRAPHY

- [1] "Flying Saucers & the Straight Line
Mystery Criterion" Michel Aime
1958.
- [2] "Ley Lines in Question" Williamson &
Bellamy ISBN 0437-19205-9.
- [3] "The View over Atlantis" J. Mitchell
SAGO Press 1969.

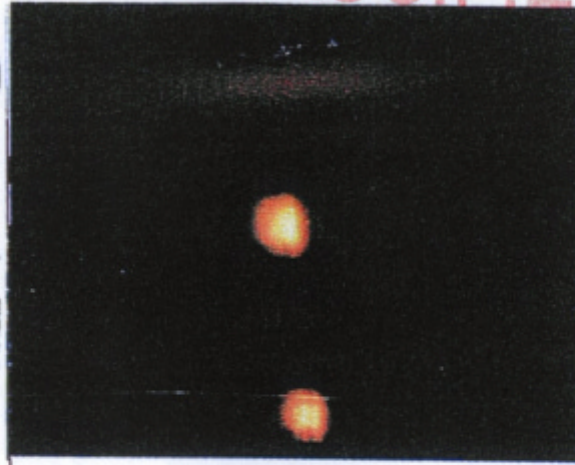


FIGURE 1: UK EARTHLIGHTS (OR POSSIBLY BALL LIGHTNING)

NOTE: Location Carleton Moor, Skipton, Yorks, police photograph (copyright Sgt. Anthony Dodd)



FIGURE 2: PROBABLE UK EARTHLIGHT (OR PLASMA/AEROSOL OR CHARGED PARTICLE VORTICE)

NOTE: location Rossendale, Lancs. (copyright David Milner)

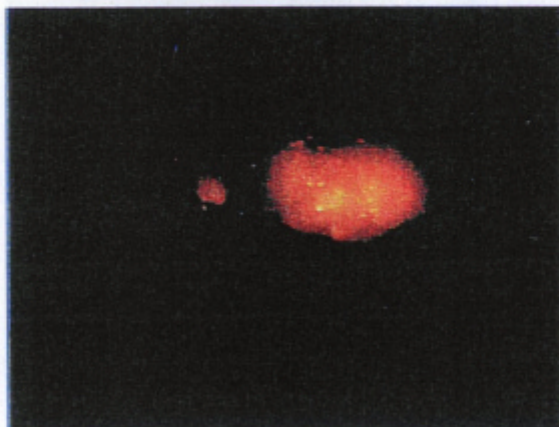


FIGURE 3: TRIBOLUMINESCENCE

NOTE: Laboratory-produce as a result of rock crystal fracture (copyright P. Devereux)

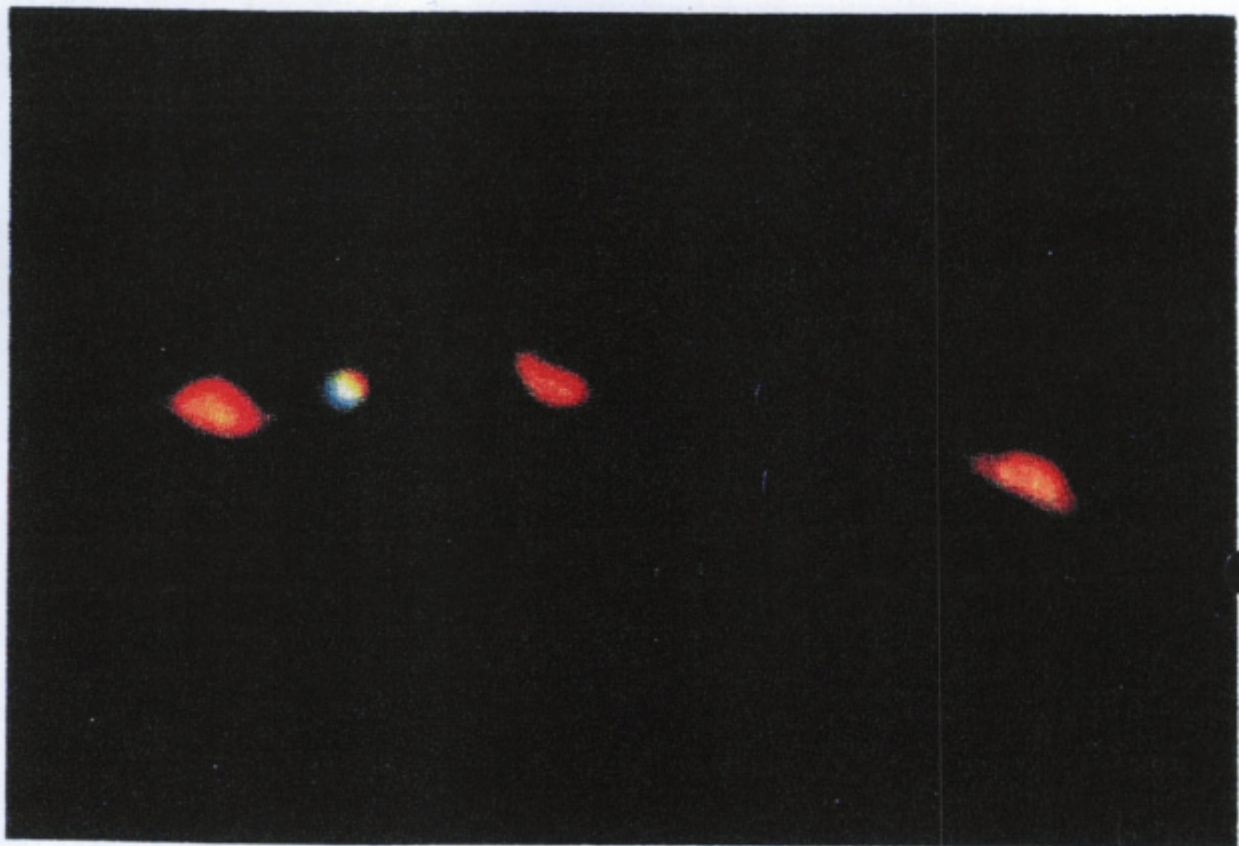


FIGURE 4: EARTHLIGHTS



FIGURE 5: UK EARTHLIGHTS LOCATIONS (P. DEVEREUX)

NOTE: Frequent earthlight reporting areas shown as stars. Larger stars indicates greater frequency of sightings.

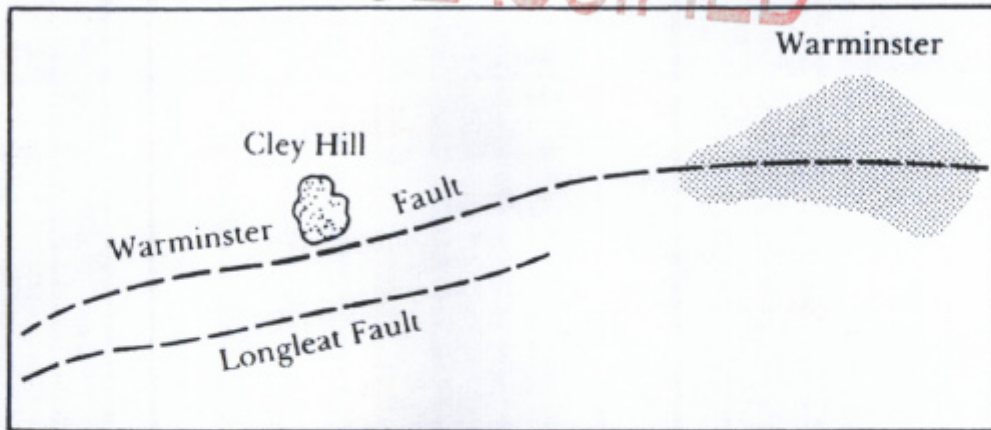


FIGURE 6(a): CLEY HILL FAULT-LINE (NEAR WARMINSTER) (P. DEVEREUX)

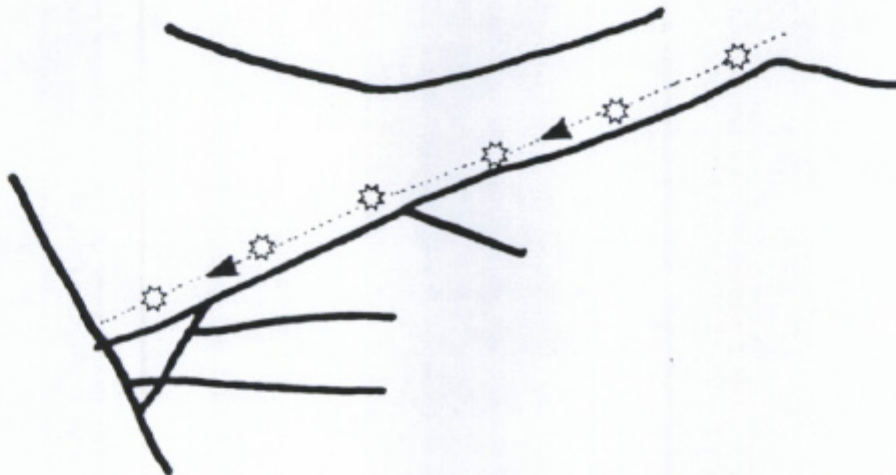


FIGURE 6(b): EARTHLIGHT 'BALL'/BALL LIGHTING COURSE (P. DEVEREUX)

NOTE: 1984 Wrose to Thackley (near Shipley). faultlines solid, phenomena track dotted.

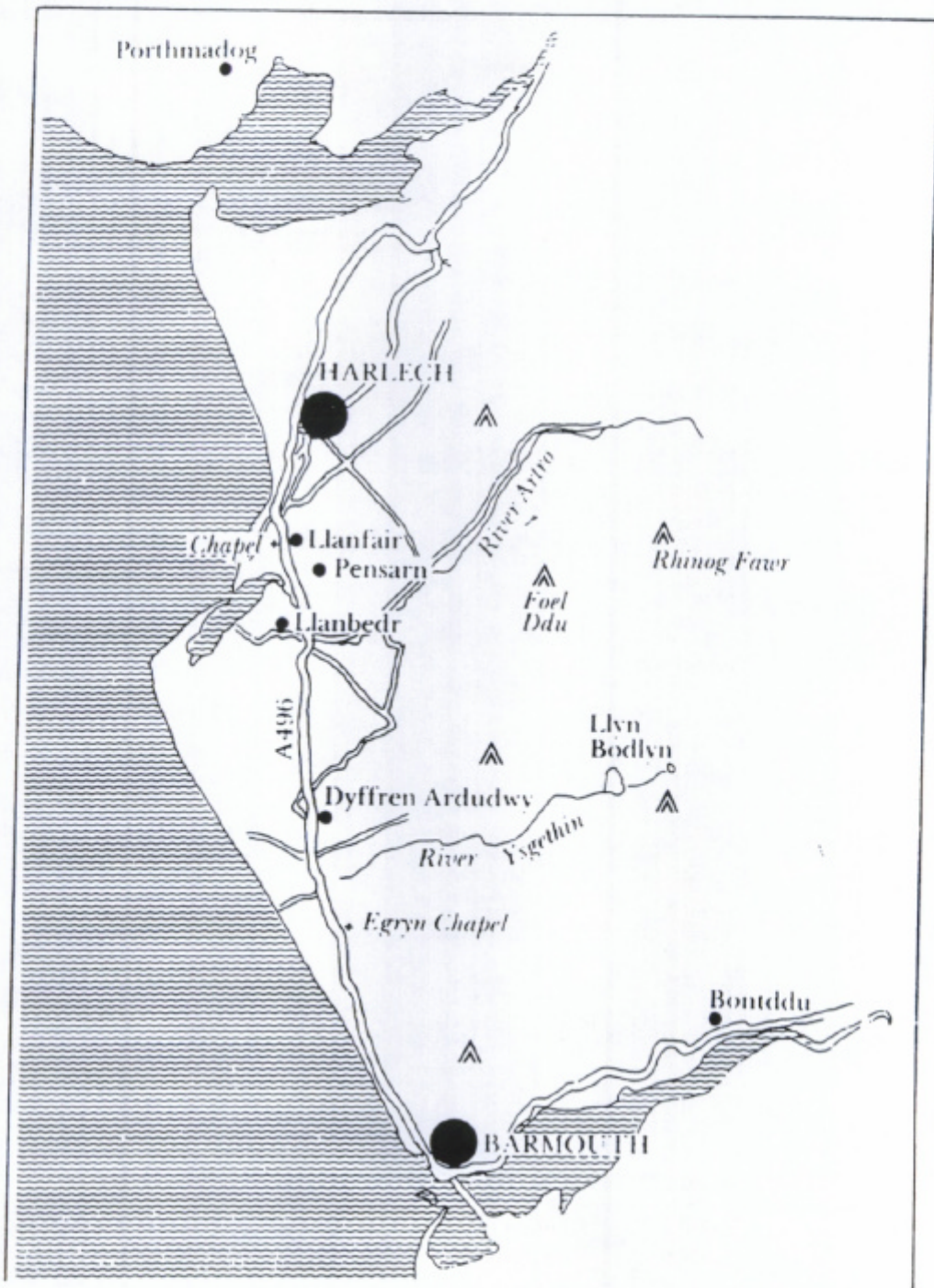


FIGURE 6(c): FAULTLINE BARMOUTH-HARLECH, WALES

NOTE: Particular earthlight activity 1904-5 and since.



FIGURE 7: 'PROJECT PENNINE' EARTHLIGHT LOCATIONS

NOTE: A simplified sketch map of the area of the Pennines found by Project Pennine to harbour zones of repeated earthlight activity.

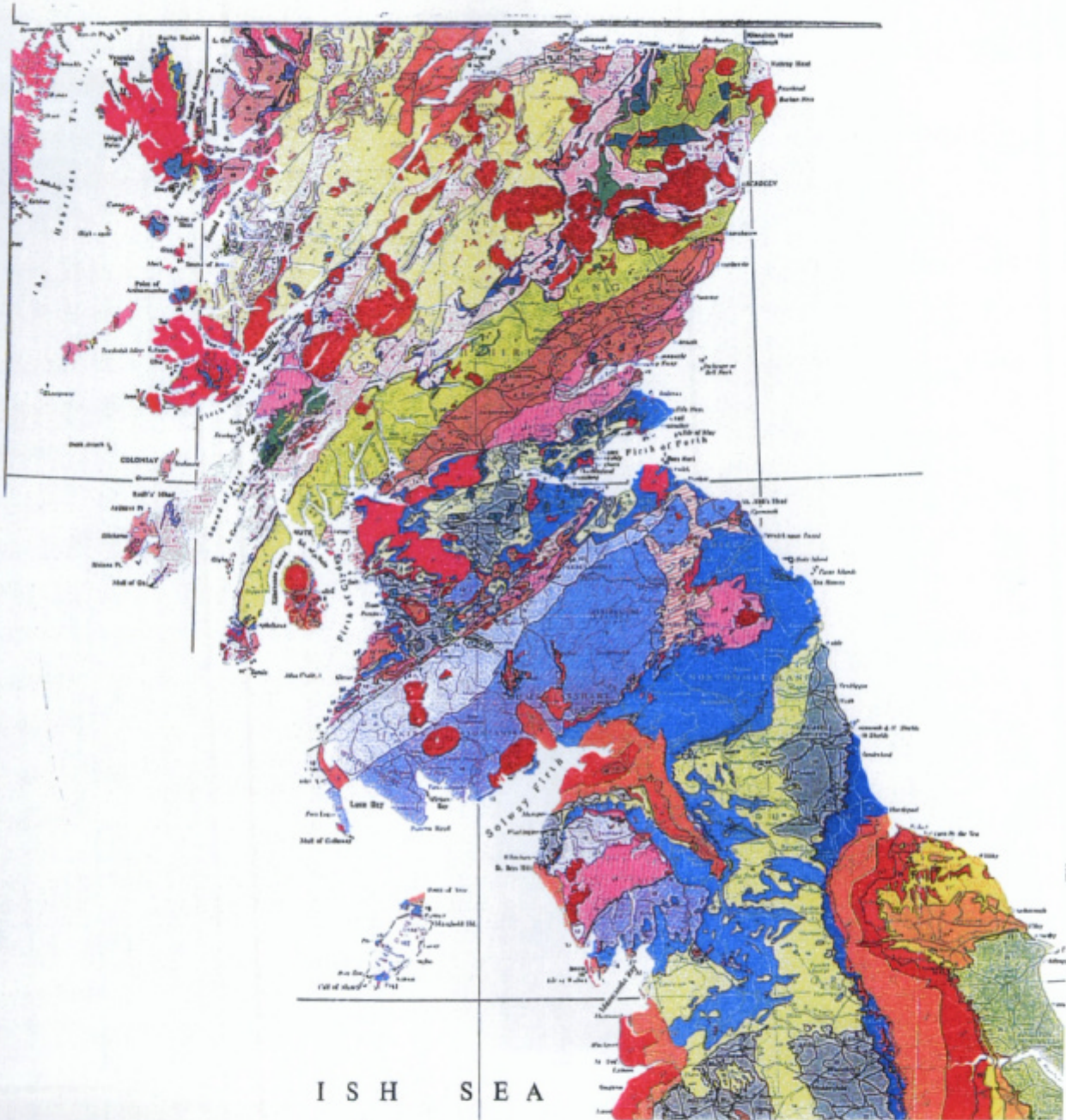
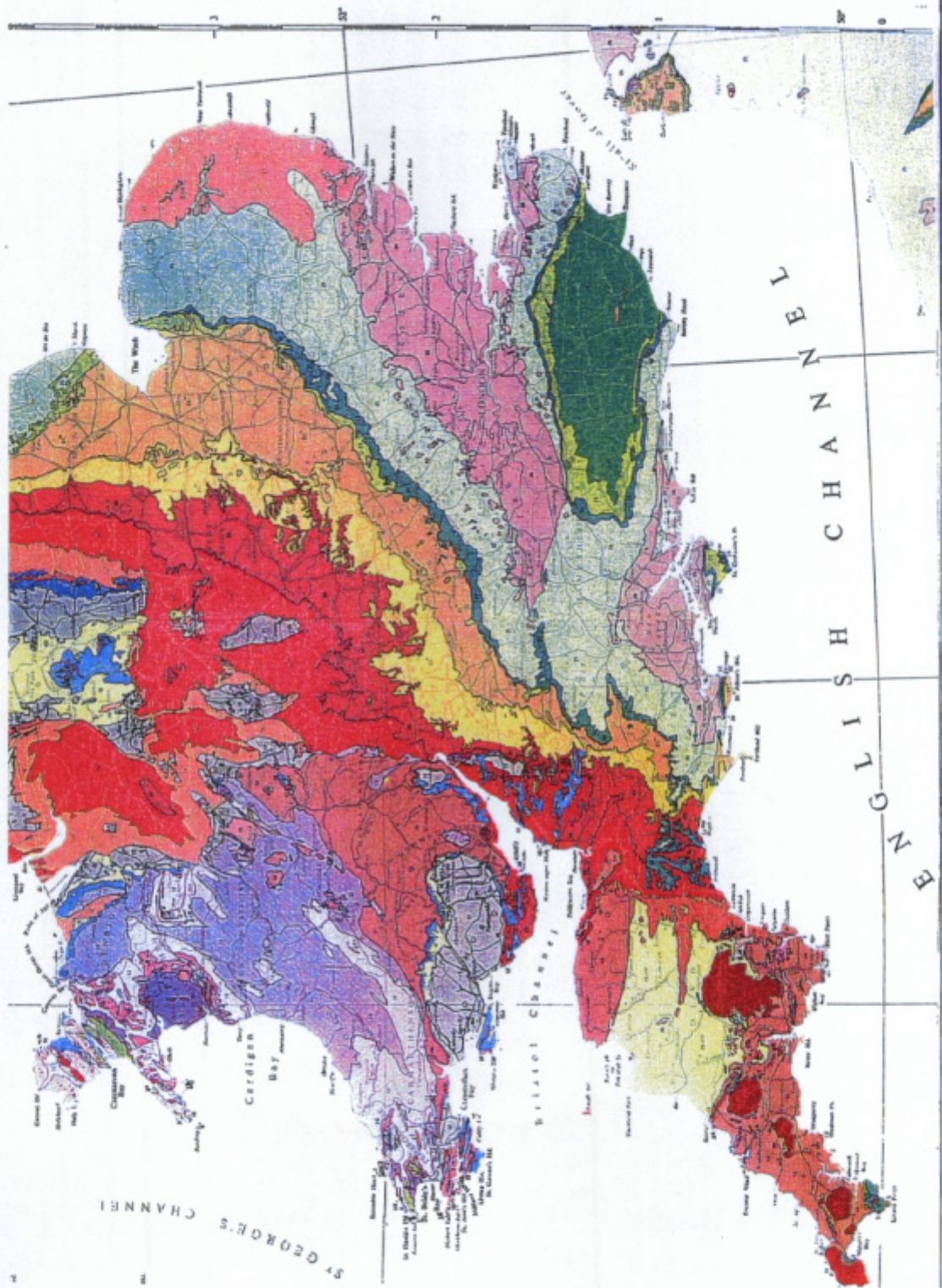


FIGURE 8: Geological Structure of UK

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