

Dowsing for Caves

by John Wilcock

Introduction

Few speleological techniques are as controversial as dowsing. Without an accepted scientific explanation, many people remain sceptical about the method, and its recent use for serious detection of water, caves or mines is a controversial practice that has received much discussion. In this article John Wilcock tries to get to the bottom of dowsing, its successes, and the attempts to explain it.

John has widely researched the field of geophysical location of caves, mines and hydrological systems since 1985, and has become convinced of the value of dowsing within this field. He has dowsed in all the major caving areas of England and Wales, as well as at sites in France and Spain.

Bio-what?

“Biolocation”, more commonly known as “dowsing”, is an ancient technique for locating below-ground features. This article covers only those dowsing results that could be due to a physical effect on site. Phenomena deliberately ruled out are: the activities of people who claim that it is not even necessary to visit the site, but that maps can be dowsed by a pendulum at home; dowsing for ley lines; and medical dowsing (radiesthesia). As a scientist I am not willing to entertain the possibility of a psychic or extra-sensory explanation.

What does the dowser do and how does it feel?

Traditionally a forked branch was the instrument of choice for many dowsers. The twig is held with an arm of the ‘Y,’ in each hand, the stem pointed forwards. As the dowser walks across the area being investigated a positive reaction is indicated by movement of the stick. The reaction can be so sudden and violent that hands are painfully scratched. A popular alternative, which I prefer, is a pair of ‘L’ shaped rods, usually made of metal. One rod is taken in each hand, and held with the longer section of the rod pointing forward. The dowser proceeds to traverse the area being investigated with a positive reaction indicated by the rods swinging; normally the rods are found to cross. These rods can be inexpensively crafted from an old wire coathanger. The material of the rods does not matter, since they are just acting as a mechanical amplifier of small muscle movements.

Various strategies can be adopted for investigating an area systematically. Once a feature is first located, its extent can be found easily by one of two methods. If the feature is small but linear (as you might expect for a cave passage), then once the two opposite sides have been found, the feature can be followed over long distances by following one edge, turning at right angles across the feature, from a null reaction, through a zone of reaction, and into the other null reaction, turning at right angles again and following the other edge for a time, and then repeating. For larger features it may be more appropriate to simply follow one edge at a time, starting from a null reaction, swaying into the zone of reaction, swaying back into the null reaction and repeating. However, if the latter is done there is a danger that a junction is missed on the edge that has not been followed.

If a record is being made, this must be plotted on a plan or map, and how is done will depend to a large extent upon the size and nature of the survey being conducted.

Dowsers claim that they experience a variety of phenomena, such as tingling “like an electric shock”, a chilly sensation, shivering, trembling, or an unpleasant sensation in the stomach. In attempts to determine the source of this apparent shock to the central nervous system, instruments have been attached to subjects to measure muscular contractions, changes in heart potential and changes in electrical skin potential. Involuntary muscular contractions have been observed, and convulsive spasms, sometimes violent.

The movement of the dowsing rods is clearly initiated by muscular action. Novice dowsers who are former sceptics are often unaware of this involuntary muscular action, which can be violent, and claim that they are trying to stop the rods moving.

The history of dowsing

That dowsing is a cross-cultural technique is evident from the fact that separate words exist in most languages for the technique, the rod and the operator. Dowsing not only spans many cultures but also stretches far back in time.

The first recorded use of dowsing is thought to be a cave painting at Tassili n’Ajjer in the Sahara, dated to approximately 6000 BCE. Most of the figures are of archers with bows and arrows, but one tall figure seems to be holding long rods up in the air, probably dowsing rods, and the eager crowd may be watching a dowser’s search for water. Use of the technique is recorded by the Egyptians (c. 3000 BCE), and after their escape from the Egyptians the Hebrews are thought to have used it (c. 2000 BCE). The activities of their leader Moses are recorded in the Bible:

“Thou shalt smite the rock, and there shall come water out of it, that the people may drink” (Exodus 17:5–6)

“Take the rod...and speak ye unto the rock...and it shall give forth water” (Numbers 20:9–11)

and some readers have taken these references to indicate that Moses was dowsing using his staff.

During Roman times the author Cicero (50 BCE) recorded use of the VIRGVLA DIVINATORIVM, the dowsing rod. Martin Luther denounced dowsing in 1528 CE as being the work of the Devil, and accused dowsers of breaking the First Commandment.

A well-known publication by Georgius Agricola, *De re metallica* (1556 CE) has illustrations and comments on the



The first recorded use of dowsing is thought to be a cave painting at Tassili n'Ajjer in the Sahara, dated to approximately 6000 BCE. The alleged dowser is the tall man on the lower left edge of the picture, holding rods diagonally up to the right.

common use of the technique by miners for the finding of metallic ores.

As early as the 17th Century, Kaspar Schott, a Jesuit priest and mathematician, was the first to suggest that the movement of the dowsing rod was due to unconscious muscular action.

However, despite these well-documented activities for eight millennia, dowsing has remained a folk method, and scientific study of the technique only began in 1890 CE.

At first, although there were positive indications of correlations between scientific observations and dowsing results, the designs of the experiments were insufficiently rigorous to convince the sceptical scientific community. Some so-called studies of dowsing that appeared in the scientific press were more concerned with protecting the reputation of the authors, and carefully ignored all references giving favourable reports of dowsing. Trevor Ford (1961) was similarly careful to state that dowsing was unproven by any test yet devised, but concluded that a few dowsers may react to electromagnetic influences. A further wait until 1971 was necessary before the first properly conducted double-blind study was carried out by a sceptic using control experiments and with statistically valid results.

What is the dowsing detecting?

It has been suggested that dowsers are detecting a physical field on site. If this is true then what could it be? The following types of fields have been suggested as possible candidates:

- Gravitational
- Magnetic
- Electric
- Electromagnetic
- Radioactive
- Seismic (the stress field around fractures, fissures and faults)
- Geothermal
- Geochemical

Of these, the magnetic, electric and electromagnetic fields are probably the most likely candidates. For this to be accepted, a physical explanation must be provided for the generation of the signals by the features, and for the detection mechanism within the human body.

How might dowsing work?

A number of studies have tried to establish whether dowsing works and if so, how and why. One of the biggest problems has been the difficulty of designing reliable experiments (those that have controls, are double blind and have statistical significance). "Double-blind" means that the experimenters must themselves not know the correct answer, so that there is no possibility of passing on information unconsciously to the operators. Preferably the experimenters should be sceptics, so that positive results will carry more weight.

Dowser physiology

What happens to the dowser physically when the rods move? Experiments have found that electrocardiogram readings change by 20mV when the dowsing rods are observed to move; changes in skin potential have also been measured. Other tests, this time using artificial fields, have shown a delay of between 5s and 10s between production of a field change and the electrocardiogram response. This suggests processing via the brain and central nervous system, rather than direct nerve stimulation. The rods are observed to move after the artificial field change.

Competing theories

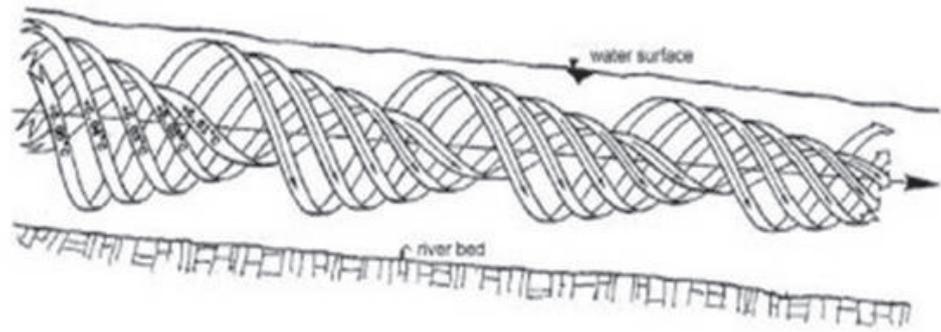
There is conflicting evidence for which fields or waves are detected by the dowser:

Electromagnetic waves: The physicists Maby and Franklin found that dowsers reacted to electromagnetic waves. The frequency may well be important, however, since I have conducted a series of experiments under overhead electricity

Model of a longitudinal vortex developing and organizing itself in flowing water according to temperature differences.

The vortex is essentially an electrical generator with separate conductors that cut the earth's magnetic field (inducing electric currents by the laws of electromagnetism), and which then creates its own magnetic field. It may be this field that is detected by dowzers.

The flowing water effect is easily detected by dowzers. The detection of large dry caverns is probably a different effect caused by the differing magnetic susceptibilities of the air void and the surrounding rock, bending the lines of the earth's magnetic field and thus being detected by the dowzer. The effect seems to be enhanced in fine sunny weather (the "fine weather effect").



pylons, and have found no reaction for a 50Hz electromagnetic field. I have also visited transmitters and found no reaction for radio and radar transmissions at higher frequencies. This may indicate that a dowzer reacts to very low frequency electromagnetism or to DC changes.

Electric fields: In 1933 De Vita placed electroscopes over underground streams, and found that they discharged more rapidly than control electroscopes placed over normal ground of the same soil type and rock type. Jemma confirmed de Vita's results in the following year, and also found that dowsing results are affected by the ionisation of the air. This so-called fine-weather field is affected by the altitude and position of the sun, and is to do with atmospheric electricity. In 1949 Tromp proposed a possible mechanism where the human body passing at speed through a field will increase in capacity as it approaches the conductor (stream of water), and skin potential will decrease. If this is the mechanism, it will be affected by the initial skin resistance, the relative conductivities of the soil and the underground stream, the speed of movement and the conductivity of the atmosphere. Tromp pointed out that carrier pigeons became disoriented near radio and radar transmitters, and in the high potential gradients caused by whirling snow.

Magnetic fields: Williamson suggested magnetic anomalies as the basis of dowsing. This may be given greater credence by the work of Hess et al. who have shown that magnetic stimulation of the human brain from coils placed over the human scalp causes twitches of the hand muscles, which can be greatly enhanced by concurrent voluntary contraction.

Further evidence comes from Rocard, a French physicist who reported that dowzers react to changes in the earth's magnetic field caused by underground water, and claimed that electric currents of 50mA/m² in water and magnetic field gradients of 1mG/m were detectable by dowzers. These levels of sensitivity are well below the capability of modern magnetometers, which is probably the reason that these instruments fail to confirm a field level detectable by dowzers.

Some dowzers claim that the faster they walk, the stronger is the dowsing reaction, which might suggest that some form of electromagnetic induction is in operation.

However, the most convincing evidence comes from the work of Chadwick and Jensen. Theirs appears to be the first documented experiment carried out under double blind conditions that was relevant to the dowsing problem. Chadwick, the experimenter, was a sceptic, and did not know the correct answers. 150 subjects were tested, mostly novice dowzers. A path was chosen leading through a park, with no known features. Subjects were asked to place small wooden blocks where they felt they were getting a reaction or "field". The positions of the blocks were noted after each run, and removed before the next run. When all the subjects had been tested, a conventional magnetometer survey was carried out along the path. The correlations between the subjects and the magnetometry were found to be statistically significant at the 0.05 level, (i.e. there is only 5% chance that this level of correlation could occur randomly). There was therefore some evidence of correlation between magnetic gradient changes and dowsing reactions. The conclusions were that there are sufficient statistically significant results to warrant further investigations.

Changing magnetic fields: A physicist called Harvalik found that the dowzer reacts to changing magnetic fields produced by electric ground currents with frequency in the range 1–500Hz, but not to static magnetic fields. Using magnetometers he deduced that the dowzer reacts to as little as 10⁻⁹G change. There was some indication that dowsing ability was enhanced by drinking water (or beer?), perhaps indicating that conductivity in the region of the kidneys is important. It is impossible to exclude the earth's magnetic field from the brain or any other part of the body, and there is therefore no reason why the development of a field-detecting ability should be ruled out. Harvalik conducted elaborate experiments with μ metal shielding of the human body. He used a torch-like instrument to concentrate and direct an artificial magnetic field in an attempt to locate the positions of possible sensors. When the operator was carried horizontally on a stretcher, the reaction occurred when the solar plexus was over the feature. When the μ metal shield was between the navel and the breastbone the signal was not detected, indicating a detector site slightly below the solar plexus. This might be the adrenal gland in the kidney region, which contains magnetite. Shielding of the head indicated a second possible detector site at the base of the brain, perhaps the pineal gland. It has also been found that human bones from the region of the sphenoid/ethmoid sinus complex contain magnetite,

and it is suggested that these deposits are concerned with magnetic field detection. The sinus complex approximating to the region was deduced from previous orientation experiments to be the site of a magneto receptor. Other points mentioned by Harvalik are that two detectors will be necessary to detect a field gradient, and the detection mechanism could be based on nuclear magnetic resonance (calculations indicate that the earth's magnetic field would give rise to precession at about 2000Hz, and a field gradient of 1mG/m would give a beat frequency of about 1Hz which could be detectable).

Effect of the body's electrical resistance

Washing hands in hot water appears to cause dowsing sensitivity to increase, even for those who claim not to be able to dowse. The following measurements of electrical resistance between left and right palms may indicate a correlation between electrical resistance of the human body and dowsing ability. The two columns in the table below are for apparent dowsing-sensitive persons and apparent non-sensitive persons (results taken from Tromp's 1949 work):

| Degree of wetness of palms | Sensitive Persons, kOhm | Non-sensitive Persons, kOhm |
|----------------------------|-------------------------|-----------------------------|
| Wet hands | 10 | 50 |
| Quickly-dried hands | 22 | 250 |
| Towelled hands | 38 | 400 |
| Hot air-dried hands | 50 | 500 – 3000 |

Table 1. **Electrical resistance left to right palms**

Thus sensitive persons have lower resistances at all times than non-sensitive persons, by a factor of about ten. In 1952 a team of electrical engineers tested the famous dowser Henry Gross, and found that his skin potential changed by up to 200mV over subterranean water, compared with a change of 10mV for non-dowsers. However, it is just possible that non-sensitive persons with wet hands may approach operating conditions of sensitive persons, and under these conditions may be able to dowse.

The pigeon possibility

Presti and Pettigrew reported the occurrence of magnetic material in the neck muscles of homing pigeons, and they suggested that this is coupled to muscle receptors to form an effective magnetic detector.

Avilchko was also interested in how migratory birds might navigate. Magnetite is found in birds near the brain, in the flight feathers and in the beak. His experimental birds, when released, flew out of the cage in the migratory direction. He has also found that birds use white, green or blue light to magnetise the retina of the eye, while red light disorientates them. This magnetic orientation therefore uses magnetite, the retina of the eye and light, and a similar mechanism could clearly also apply to humans.

A number of other animals appear to have navigational abilities, including salmon, eels, dolphins, whales and bees. An understanding of their apparent additional sensory systems may cast light upon our own.

Sceptic's corner

Some experiments have indicated that blindfolding stops a dowsing reaction: sceptics have said this indicates that sight was being used to supply alternative information, such as depressions in the ground, geological features, etc. An alternative explanation could be that the array of cells at the back of the eye is a detector for more than just light, or the optic nerve may be part of the feedback loop to the central nervous system. Physiological changes measured by electrocardiogram or skin potentiometer are observed to occur before the rods move. This shows that it is more likely that the physiological changes cause the movements of the rods, rather than the movements of the rods cause the changes in the dowser's body.

It has been suggested that a magnetic-field-detecting sixth sense, if it had existed, would have been lost through misuse during evolution. However, genetic changes take much longer than a few thousand years to take effect.

Comparisons

One way of assessing the usefulness and reliability of dowsing is to compare the results of dowsing with other techniques used to map underground features.

Barrett and Besterman carried out field studies for finding water, using a number of independent experiments with two or more dowsers, and compared the results with those suggested by consultant engineers and geologists. They found "the dowsers got twice as much water as the engineers, while the geologists got hardly any".

In Russia dowsing has been compared with geophysical methods. Of wells suggested by dowsers, only 8% were dry, while of those suggested by geophysical methods 13% were dry.

Geophysical surveys and dowsing were compared during an experiment in 1987 that aimed to locate buried foundations. The three detection methods used were: a Martin-Clark resistivity meter, an EM-38 conductivity meter and dowsing by two operators. The two dowsers worked independently and had not seen the geophysical results before dowsing the site. All three methods yielded almost identical results. The main difference was the time and effort required for the survey. The resistivity meter required around 21.5 person hours, the conductivity meter needed 13.5 person hours and yet the dowsing took only half an hour per dowser. Dowsing also located a pit that the other two methods did not identify. The site was excavated and the results of all three methods were confirmed, but

obviously dowsing was much more cost-effective. In a further experiment with a proton gradiometer, dowsing proved considerably more accurate than the gradiometer in locating buried structures (this is not surprising, as the proton gradiometer does not excel at finding wall and road foundations).

What is detected?

The search for water supplies is probably the best known application of dowsing, but it has many other uses. Location of the following features by dowsers is well documented:

- Flowing water
- Springs, and lines of springs
- Wells
- Circulating groundwater
- Service pipes and trenches (not just water pipes, but electricity cables and gas pipes, so the trench may be what is being detected)
- Buried foundations
- Roots of big trees
- Geological faults, some of which will have ore deposits
- Caves and mine levels with flowing water
- Large dry caves and other cavities

Who uses dowsers?

The long list of users of dowsing may be surprising to some readers:

- Engineering Companies (e.g. the Bio-Physical Method (BPM) was used in 1971 in the former USSR to detect water filtering through a dam)
- Water Companies (a pair of dowsing rods is carried inside the doors of Water Board vans)
- Mining Companies (e.g. documented use for finding ore and petroleum in the USSR)
- Laundries (for water supply)
- Breweries (for water supply)
- Building Contractors (to locate unknown service pipes on building sites)
- Farmers (for water supply)
- Government Departments
- Police (location of buried items and, it is rumoured, bodies)
- Armed Forces (dowsing used by the British Army since Colonial times; dowsing appeared in USSR army manuals in 1930 for the finding of water in remote areas; dowsing used by the First and Third US Marine Divisions in Vietnam, 1967, as a simple, low-cost method for locating Vietcong tunnels, which were used for communication, storage depots, supply network, command posts, training centres, hospitals and sally ports for over twenty years).

The caving connection

Dowsing has been used around the world as a cave and tunnel location technique, with some notable successes.

Yorkshire Dales: Wade was one of the earliest cavers to use dowsing for speleological purposes. During the early 60s he attempted cave location on Greenhow Hill, and also found Strans Gill Pot in Wharfedale. Other work consisted of dowsing experiments at Black Keld (in an attempt to detect the Mossdale Caverns to Black Keld route from the Black Keld end), at Gill House Pot, on Fountains Fell and in Chapel-le-Dale.

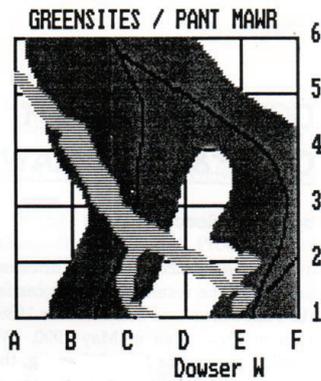
Vietnam: Dowsing was regularly used by U.S. troops in 1967 to detect Vietcong tunnels in Vietnam. A detailed plan and section of the tunnels used for the experiments is available.

Russia: Ogil'vy carried out a search for a lost underground drainage system at the Ostankinsky Palace in Moscow, and dowsing predictions for its location were proved accurate by digging.

Pluzhnikov undertook a search for medieval escape tunnels between the citadel and two monasteries in Serpukhov. The tunnels were located by dowsing in less than eight hours, and proved to be 2m wide, several Km in length, and to pass under the River Nara in two places.

After conventional ground penetrating radar had failed to locate secret passageways, dowsing was tried in field study at the Monastery of the Caves, Kiev. Of 130 sites indicated by dowsers, 73 (56%) corresponded with existing passages, previously known to the curators but not to the dowsers. At a further 29 dowsed sites (22%), previously unknown to the curators, test drillings revealed cavities. This gave a total success rate of 78%.

South Wales: The Greensites Project has aimed to compare the results of various methods for detecting caves from the surface, including geophysical, botanical and dowsing techniques. Electromagnetic traversing (resistivity, magnetometry) gave the best results at unknown cave locations, but there is good correlation for several dowsers. An experiment over Pant Mawr involved several independent dowsers, and was carried out using a pegged-out grid over passages that had been accurately radiolocated. Nobody who dowsed the grid was present on the day the surveying was done. The dowsers participated on different days and did not exchange information between themselves, nor were they given any indication of the other results obtained. There was some correlation between dowsers, and with the known cave position, and one dowser produced a plan that appeared to be a representation of the actual cave



South Wales: Project Greensites 1990 - 1991

(South Wales Caving Club, Clive Jones, Stuart France). There was some correlation between dowzers, and with the known cave position, and one dowser produced a plan that appeared to be a representation of the actual cave (previously unknown to the dowzers). This dowsing trace was at the correct angle; however, it was both displaced to one side and appeared to be an enlargement of a small part of the cave. The conclusion on this was "the jury is still out".

(previously unknown to the dowzers), but both displaced to one side and an enlargement of a small part of the cave, at the correct angle. The conclusion on this was "the jury is still out".

USA: Dore used dowsing to locate Scott Hollow Cave in southern West Virginia. The dowsing was used to determine where to begin digging with a mechanical excavator, and entry was gained to about 20km of passages.

Yorkshire Dales: An experiment was conducted with caving dowzers who did not meet at any time during the study. They were given as starting points a deep shake hole near Mossdale Caverns, and also the rising of Black Keld in Wharfedale, proved by dye tracing to be the resurgence of the Mossdale waters. This naturally was an attempt to suggest the course of the Mossdale-Black Keld route. The dowzers worked on different days and presented their results for comparison by an independent judge, a dowsing sceptic. Astonishingly, not only was there a high degree of correlation between the dowsing results, but Mossdale Caverns were predicted to continue down-dip far to the south, to a point near the "lost cavern of Grassington Moor" before turning north west towards Black Keld. Unexpectedly, another passage was detected entering Black Keld from the north, running under the Wharfe to the north west of Starbotton, roughly parallel to and to the east of the Wharfe, and under the streets of Kettlewell.

Personal successes

For my own part, I have walked hundreds of miles, dowsing all the while, through all the caving regions of Britain, as well as in France and Spain. My technique, when I am sufficiently satisfied that the results are consistent and repeatable, is to publish the hypotheses and be damned, and then to wait for cavers to enter the predicted systems. The results have been gratifying, the following being examples of my suggestions, many of which have been proven correct. Access to these passages has been achieved by a variety of methods, including cave diving, further exploration of known cave, and digging from the surface, sometimes using mechanical diggers.

- East Kingsdale Master Cave route (followed before it was proved by diving)
- new diving route north north east from West Kingsdale towards Yordas Cave
- diving route at Alum Pot east north east towards the route between Washfold Pot and Footnaw's Hole
- Dub Cote/Brackenbottom water supply/Douk Gill/Brants Gill route, which must be the main drain for the Fountains Fell water
- direction of the Gingling Hole extensions
- a predicted route for the Malham Tarn Sink water via Malham Cove then south west and south to Aire Head Springs (not yet entered, but a dye test from Malham Cove proved positive, as reported in *Descent* 109)
- detection of some passages in Slaughter Stream Cave, before their subsequent exploration, the prediction of a Coldwell Swallet/Redhouse Swallet connection, and a Redhouse Swallet/Slaughter Stream Cave connection under Chapel Hill and Bicknor Street (the last two await exploration)
- route of Swildons Hole beyond the final sump, dowsed three years before it was entered at White Pit to yield about 100m of passages to a depth of 35m, lying over the active route of Swildons Hole on its way to Wookey Hole
- dowsing at Greendown Farm with Dave (Tusker) Morrison, followed by Hymac digging on the same day to reveal Clay Holes. This has been dug to some depth, and the predicted dowsing route is southwest towards Wigmore Swallet
- Dowsing at what became Templeton Pot with Tusker Morrison. This has been dug to an amazing depth and is predicted to enter St Cuthbert's
- The "Double Digger Dig" near Wigmore Swallet
- in the Western Massif of the Picos de Europa, a passage was predicted from a new pot 8/11, near the top camp of the OUCC 1992 Expedition at Ario, to a previously unknown exit at the Mohandi alp. After I left, this was explored and completely surveyed from 8/11 to the unknown exit, then named Pozu Mohandi (26/11)
- The work of several dowzers around the same track in the Ario alp was recorded and correlated. There was excellent consistency and repeatability for tracks of the same dowzers, as well as agreement between dowzers. However, insufficient data was available for statistical significance tests.
- A dowsing map of supposed passages around Water Icicle Close mine in Derbyshire was published. When an extension was dug there was seen to be excellent correlation between the predictions and the actual new passage.

If a single example of successful dowsing for an unknown cave system were to be desired, the predictions of my

1990 work with Bill Gascoine (reported in *Caves & Caving* 50) cannot be bettered. The “Eastern Valley Phreas” was predicted, the continuation of the Agen Allwedd, Daren Cilau and Craig a Ffynnon tributary caves to the south of the Clydach, on which a “blip” to the north east near Blaenavon is shown. This blip is no other than Ogof Draenen, first entered by cavers in 1994!

Conclusions

- The dowser’s central nervous system responds to the environment and this results in unconscious muscular reaction, accompanied by a nervous sensation.
- The movement of the rods is caused by amplification of small involuntary muscular contractions.
- The mechanism for detection may be magnetic or electric in nature, and high skin conductivity seems to be a contributing factor.
- The detector sites in the human body may be magnetite dispersed in tissue with nerves running through it, or the retinas of the eyes (needing light to activate them), the pineal gland and/or the adrenal glands.
- Water divining survives today because its practical utility does not place too great a strain on credulity.

I continue to plan experiments with the hope of discovering an explanation of the technique within physical and medical science. In any case dowsing results will ultimately be judged on their accuracy and practical value regardless of theories and opinions.

Author’s publications

John Wilcock’s dowsing bibliography

Papers by Wilcock, J.D. unless otherwise stated

1986 “Water tracing and modelling: A progress report with particular reference to the Peak Cavern System”, BCRA Cave Science Symposium, University of Bristol, 15th November 1986, *Cave Science* 13 (2), 69, British Cave Research Association

1987 “The Cheddar River Cave: A Hypothesis”, *Caves & Caving* 38, 18–19, British Cave Research Association

1988 “Dowsing the Dales. Part One: The Malham System”, *Caves & Caving* 40, 21, British Cave Research Association

1989 “Dowsing the Dales. Part Two: Penyghent and Fountains Fell”, *Caves & Caving* 42, 11–13, British Cave Research Association

1989 “Tracing the Wye Head Systems”, *Caves & Caving* 43, 31–32, British Cave Research Association

1990 “Dowsing the Dales. Part Three: Washfold Pot, Alum Pot and the “Third System”, *Caves & Caving* 47, 15–16, British Cave Research Association

1990 “Dowsing and Caves ... John replies”, (Reply to John Gunn and Anita Edmans), *Caves & Caving* 47, 42, British Cave Research Association

1990 “Dowsing at Higher Kiln Quarry”, *William Pengelly Cave Studies Trust Limited Newsletter* 58, 8–11

1990 “Dowsing the Llangatwg extension and the East Crop”, *Caves & Caving* 50, 21–22, British Cave Research Association, also reprinted in *Chelsea Speleological Society Newsletter* 32 (12), 147–148

1990 (Farr, M., Wales Regional Correspondent; Howes, C., Editor) “New cave near The Tumble” [Resulting from dowsing in the East Crop area with Bill Gascoine, published in *Caves & Caving* 50 (1990). This detection revealed Ogof Draenen, entered 1994], *Descent* 97 (Dec. 1990/Jan. 1991), 6

1990 (Sparrow, A., Mendip Regional Correspondent; Howes, C., Editor) “Cheddar River Cave” [Reference to *Caves & Caving* 38 (1987) article, prediction that GB system will go independently to Cheddar Risings], *Descent* 97 (Dec. 1990/Jan. 1991), 14

1990 (Herbert, M.) “Dowsing”. In Jones, C. (ed.), 1990 “Greensites” [Reference to the Pant Mawr grid exercise] *South Wales Caving Club Newsletter* 108, 16–17

1991 (France, S.) “Detecting caves”. In Maxwell, W. (ed.), 1991, [Reference to the Pant Mawr grid exercise] *William Pengelly Cave Studies Trust Limited Newsletter* 61 (August 1991), 19–27

1991 (Jones, C.) “Project Greensites”, *South Wales Caving Club Newsletter* 109 (Summer 1991), 4–5

1991 (France, S.) “Jury still out in dowsing case”, [Wilcock, J.D. was Dowser W], *South Wales Caving Club Newsletter* 109 (Summer 1991), 6–9

1991 “Dowsing Dan-yr-Ogof and Pant Mawr”, *South Wales Caving Club Newsletter* 109 (Summer 1991), 10–11

1991 (Farr, M., Wales Regional Correspondent; Howes, C., Editor), “Greensites Project”, [Reference to the Pant Mawr grid exercise; results gave an enlarged view of a section of the passage at the correct angle], *Descent* 102 (Oct./Nov. 1991), 13

- 1991 "Dowsing discoveries (II)", [Response to Steve Ellis, *Descent* 100], *Descent* 102 (Oct./Nov. 1991), 37
- 1991 "Dowsing the Dales. Part 4: South Ingleborough", *Caves & Caving* 53, 10–12, British Cave Research Association
- 1991 "Taffs Well and the Schwyll Risings", *Caves & Caving* 53, 25–26, British Cave Research Association, also reprinted in *Y Ddraig Goch (The Red Dragon)*, Annual Journal 91/92, 114–116, Cambrian Caving Council
- 1991 (Farr, M., Wales Regional Correspondent; Howes, C., Editor), "Dowsing beyond the Clydach", [Reference to the Llangattwg-Llanelly-The Tumble-Nant Maelor-Pontnewynydd-Risca-Taff's Well-Schwyll predictions], *Descent* 98 (Feb./Mar. 1991), 10
- 1991 (with Lavery, M.), "Dowsing the Picos", *OUCC Proceedings* 13, 70–73, Oxford University Cave Club
- 1991 "The Ffynnon Gisfaen System - The search for a parallel system to Agen Allwedd, Daren Cilau and Craig a Ffynnon under Mynydd Llangynidr", *Caves & Caving* 54, 23–24, British Cave Research Association, also reprinted in *Chelsea Speleological Society Newsletter* 33 (5), also reprinted in *Y Ddraig Goch (The Red Dragon)*, Annual Journal 91/92, 117–119, Cambrian Caving Council
- 1991 "Dowsing discoveries" (reply to Graham Mullan), *Caves & Caving* 54 (Winter 1991), 33, British Cave Research Association
- 1992 "Dowsing on Llangattwg and Llangynidr", *An exploration journal of the Llangattwg Mountain, The Chelsea Speleological Society Records*, Volume 19, I–IV and I–V
- 1992 "Report of the BCRA Hydrology Group Derbyshire hydrology weekend, Manifold Valley area, May 8th–10th 1992", *Caves & Caving* 57 (Autumn 1992), 45–46, British Cave Research Association
- 1992 (Howes, C.), "Dowsing" [report of lecture "On the possible scientific justification of dowsing for the detection of caves"], in BCRA Conference 1992 report (University of Bradford, September 1992), *Descent* 109 (Dec. 1992/Jan. 1993), 27
- 1993 "Dowsing the Dales. Part Five: the Fountains Fell Master Cave", *Caves & Caving* 60 (Summer 1993), 10, British Cave Research Association
- 1993 "... and dowsing answers?", [Response to Angela Garwood, *Descent* 109], *Descent* 110 (Feb./Mar. 1993), 36–37
- 1993 (Potter, D.H.), "Dowsing explanation" [criticism of Wilcock, J.D. letter in *Descent* 110], *Descent* 111 (April/May 1993), 36–37
- 1993 (Elliott, J. & Taylor, Forest of Dean Regional Correspondents; Howes, C., Editor), "Redhouse Swallet" [Reference to dowsing work there], *Descent* 112, 19
- 1993 (Fray, A.F.) "Last words?" [Reference to dowsing, and stating that static electric fields do carry information about objects in the earth], *Descent* 112, 37
- 1993 (Gibson, D.) "Last words?" [Reference to the investigations of dowsing and electric fields by the BCRA Cave Radio & Electronics Group; mention of the May 1993 Field Meeting at Water Icicle Close/Winster 22-23.05.93 at which Wilcock, J.D. gave a presentation], *Descent* 112, 37
- 1993 "The Water Icicle Close Biolocation Exercise", *Cave Radio & Electronics Group Newsletter* 13 (September), 6–8
- 1994 "The "dowsing welly" experiment", *Cave Radio & Electronics Group Newsletter* 15 (March), 10–11
- 1996 "Dowsing for caves", Paper presented to the Finding & Extending Caves Workshop, BCRA National Caving Conference 1995 (September), Reported by Plumb, K. 1996. "Finding and extending caves workshop", *Caves & Caving* 71 (Spring 1996), 38, British Cave Research Association
- 1997 "Dowsing for caves, Mendip Meanderings", Paper presented to BCRA National Caving Conference, Hidden Earth '97, University of Bristol, 13.09.97
- 1997 "An exploration of previous research on the dowsing method, and its justification as a practical technique for the detection and charting of underground watercourses and cavities", *Journal of the Staffordshire Industrial Archaeology Society* 16, 9-19
- [Jarratt, A.R., 1997.] "Five Buddles Sink - A lost cave rediscovered - Part 1" [Dowsing work by Wilcock, J.D. mentioned in "The dig", "The breakthrough", "Hypothetical drainage routes in the Priddy area"], *Belfry Bulletin* 50(1), December 1997, The Bristol Exploration Club, Priddy, 37-63
2000. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste and Cynon regions. Part 1, May 1999", *Westminster Speleological Group Newsletter No. 2001 April 2000, Cave science supplement* 1-3
2000. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste and Cynon regions. Part 2, Work to November 1999", *Westminster Speleological Group Newsletter No. 2001 April 2000, Cave science supplement* 4-6
- [Tye, F. 2001]. "The Double Digger Dig", *Descent* 159, 34-35, consultancy for dowsing carried out before the dig

2001. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste and Cynon regions. Part 3, Work to November 2000", Westminster Spelaeological Group Newsletter No. 2001/2 July 2001, 5-7
2002. "Dowsing in the Hamps and Manifold Area", The Derbyshire Caver 113, 11-13 (Article and Map Part 1); 114, 13 (Map Part 2)
2002. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste and Cynon regions. Part 4, Pant Mawr Moor and Cwm Cadlan", Westminster Spelaeological Group Newsletter No. 2002/3 (July 2002), 5-6
2002. "The Science of Dowsing for Caves", Caves & Caving 92 (2002), 33-37
2003. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste and Cynon regions. Part 5, Cwm Cadlan, Mynydd y Garn, and Cadair Fawr", Westminster Spelaeological Group Newsletter No. 2003/1 (January 2003), 8-10
2003. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste and Cynon regions. Part 6: The area between the Mellte and the Hepste to the south west of Mynydd y Garn", Westminster Spelaeological Group Newsletter No. 2003/3 (July 2003), 3-9
- "Secret Underground" DVD for Redweather, Rose Cottage dig, Priddy, Mendip, transmitted on ITV
- Laverty, M. & Wilcock, J.D 2006. "The Ario Dowsing Experiment", placed on the Internet: <http://wiki.oucc.org.uk/ArioDowsing>, May 25, 2006
2006. "2005 observations on the Culiembro drainage", in Lowe, G. (ed.) 2006, Oxford University Cave Club Asopladeru la Texa Expedition, placed on the Internet: http://www.oucc.org.uk/expeditions/report2005/2005_report.pdf, 30-32
- 2006 Lecture to Hidden Earth 2006, Leek, 23.09.06 "Dowsing for caves" (Reviews in Speleology 8, December 2006, p.23 and Descent 194, Feb/Mar 2007, p. 33)
2007. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste, Cynon and Taff Fechan regions. Part 7: Pant Mawr, Porth yr Ogof and Cadair Fawr", Westminster Spelaeological Group Newsletter No. 2007/1 (January 2007), 4-9, placed on the Internet: <http://www.wsg.org.uk/online/nl/find.php>
- 2007 "Dowsing the Picos" OUCC Proceedings 14 (2007), 80-81
2009. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste, Cynon and Taff Fechan regions. Part 9: Mynydd y Garn and Llygad Hepste-fechan", Westminster Spelaeological Group Newsletter No. 2010/1 (January 2010), 14-16
- 2009 Reprint of [1993 "The Water Icicle Close Biolocation Exercise" Cave Radio & Electronics Group Newsletter 13 (September), 6-8], Orpheus Caving Club Newsletter 45 (7-9) July - September 2009, 35 - 39
2010. "Some further hypotheses concerning the drainage of the Pant Mawr, Nedd Fechan, Mellte, Hepste, Cynon and Taff Fechan regions. Part 8: Cwm Huw Bwb, Gwaun Cefnygarreg, Cwm Cadlan and Llygad Hepste-fechan", Westminster Spelaeological Group Newsletter No. 2010/02(April 2010), 7-13
- Laverty, M. & J.D. Wilcock 2010, reworking of "The Ario Dowsing Experiment, Picos de Cornion, Spain, 2005", Oxford University Cave Club
- 2010 Lecture to Hidden Earth 2010, Leek, "The history of dowsing at Water Icicle Close since 1993", 26.09.10
- 2010 "The history of dowsing at Water Icicle Close since 1993", abridged version of lecture to Hidden Earth 2010, Leek, 26.09.10, submitted to The Derbyshire Caver
- 2011, "Dowsing OFD's Sister System", SWCC Newsletter 127, 70-72
- 2011 Lecture to Hidden Earth 2011, Monmouth, "The Gaps on the Maps: The potential for new cave systems in South Wales", 24.09.11

Further Reading

A large number of general descriptions of dowsing methods have been published in books designed for popular reading (e.g. Graves 1976; 1986; Bird 1979; Naylor 1980). Hansen gives an especially good summary of experimental research into the techniques of dowsing. A more extensive bibliography can be supplied on request.

- Bird, C. 1979. The Divining Hand. E.P. Dutton, New York.
- Graves, T. 1976. Dowsing: Techniques and applications. Turnstone Books, London.
- Graves, T. 1986. The diviner's handbook. The Aquarian Press, Wellingborough.
- Hansen, G.P. 1982. Dowsing: a review of experimental research. J. Soc. Psychical Research 51(792), 343-367.
- Naylor, P. 1980. Discovering dowsing and divining. Shire Publications Ltd, Princes Risborough.