

Grave Dowsing Reconsidered

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After publicly discussing my doubts about the effectiveness of dowsing for graves (Whittaker 2005), several individuals that dowse for unmarked burials, or have witnessed it, encouraged me to look further into the matter. They feel dowsing has been shown over and over to be an effective way of locating unmarked graves, and it is an inexpensive alternative to the more expensive and often ineffective geophysical methods such as radar or magnetometer survey.

At first glance, dowsing appears to be a good bargain; for virtually no cost, an entire cemetery can be mapped out, with all of the graves lined up in neat rows and sometimes the burials can even be designated male or female. This method seems to eliminate a great deal of headache and heartache. Maintaining a cemetery often brings with it legal and social liabilities and obligations, and many cemetery caretakers are glad to have such an apparently effective and useful tool, especially since cemeteries or the governmental bodies that oversee them are often underfunded. Add to this the reality that cemetery caretakers are often unpaid volunteers who do this work out of a sense of community obligation and it becomes clear why dowsing is a method that remains popular, and why many are reluctant to abandon the only remote-sensing instrument they can afford.

What is Dowsing?

Dowsing, also called witching or divining, is a method used by some to find underground objects of interest. There are innumerable variations in how dowsing is performed. The most common way is with two bent rods of metal. Some prefer copper or brass because they are not affected by electromagnetism, while others prefer iron, steel, or tin, because they *are* affected by electromagnetism. Many use whatever is on hand, such as coat hangers or pin flags. Some people prefer metal shaped like a Y, with the point sticking forward. Some prefer willow wood, some prefer witch hazel (possibly because it has the word “witch” in it). Some people use spinning pendulums. In the field, people walk in straight lines, some in curving lines, some stand still in one spot and occasionally move. Some do not enter the field at all, and dowse using a map (Barrett and Besterman 2004[1926]; Carroll 2003; Gardner 1957; Hyman 1996; Randi 1982, 1995; Vogt and Hyman 2000).

Currently dowsing is used by believers to find not only graves, but water, water pipes, broken pipes, buried electrical lines, lost people, buried foundations, archaeological sites, buried treasures, coal, oil, gold, gems, prehistoric trails, and “Earth Rays” (a magical energy emanating from deep in the planet). Essentially, dowsing is used to find whatever the believer wants to find below ground, or, in the case of lost people, hopefully above ground.

This wide variation in the methods and applications of dowsing leads to several questions: How does a dowsing rod know you are looking for a grave and not the deeper water table that invariably lies beneath in Iowa, or any of the other things dowsing is supposed to find? When dowsers look for human remains, how do the rods filter out animal remains? As an archaeologist and bone specialist I can attest that most excavations encounter animal bones, while human remains are very uncommon; how does the dowsing rod differentiate by species? A common explanation is that dowsing detects soil disturbances, and therefore finds graves, pipes, and foundations in this way. However, almost every inch of Iowa has been plowed, and is therefore entirely disturbed. If dowsing detects soil disturbances, then how does it detect water tables or minerals, which are not associated with soil disturbances? One explanation is that dowsing detects magnetic variation. This will be discussed in greater detail below. Other explanations for dowsing given by practitioners, as cited in the literature, involve extrasensory perception (ESP), cryptesthesia (a form of clairvoyance), divine intervention, the work of the devil, fairies, otherwise undetectable radiation fields, dielectrokinetics (a pseudoscience term for energy fields produced by living things), and other paranormal phenomena that extend beyond the realm of physics and therefore cannot be debated in a rational discussion (Barrett and Besterman 2004[1926]; Carroll 2003; Gardner 1957; Hyman 1996; Randi 1982, 1995; Vogt and Hyman 2000).

Real-World Tests of Dowsing

The first known written reference to dowsing or anything like it in English occurred in Abraham Cowley's *Pindarique Odes* of 1656: "With fond Divining-Wands, We search among the dead For Treasures buried ... Note, *Virgula Divina*; or a Divining-Wand is a two-forked branch of an Hazel-Tree... used for the finding out either of Veins, or hidden Treasures of Gold or Silver; and being carried about, bends downwards (or rather is said to do so) when it comes to the place where they lye." (quoted from the *Oxford English Dictionary* [1989]). Please note that it was used to find minerals, not graves or water, in a very different manner than modern dowsing, and the very first mention of dowsing in English also brings with it the very first hint of skepticism about it. The *Oxford English Dictionary* (1989), the definitive source for the history of words, shows how the practice of dowsing changed over the centuries to include just about every buried object humans wish to find. Accompanying these changes are just as many accounts of skepticism about dowsing, revealing that just because a practice is old, does not mean it is venerated. An early, well-articulated critique of dowsing occurred in Carpenter's (1852) essay, which suggested that subconscious cues produced subtle body movements that caused the dowsing rods to move, this is known as the ideomotor effect, a premise that is widely accepted to this day. See Vogt and Hyman (2002) for a detailed history of dowsing.

It was not until comparatively recently that dowsing was subjected to rigorous scientific testing, and testing has necessarily focused on water dowsing, by far the most common form of dowsing. In all of the controlled experiments, water dowsing was shown to be completely ineffective at predicting either the presence or depth of subsurface water (some of the many experiments and summaries of experiments include Carroll 2003; Enright 1995, 1996; Feder 1998; Foulkes 1971; Gardner 1957; Hyman 1996; Martin 1984; Raloff 1995; Randi 1979, 1982; Smith 1982; Vogt and Hyman 2002; Zusne and Jones 1989). Tests have ranged from real-world tests to tightly-controlled experiments with buried pipes or double-blind experiments in artificial settings; all of these tests, involving hundreds of dowsers, reveal that dowsing is no better at finding water than random chance. One interesting study (Foulkes 1971), demonstrated that dowsers were completely unable to find small buried objects in addition to being completely unable to detect water. However, just because dowsing is a complete failure at finding water and small buried objects does not

necessarily mean it is a complete failure at finding graves, a method not tested in the published controlled experiments.

Ideally, a controlled experiment should be set up to test for the ability of dowsing for graves, but the practical aspects of such an experiment make it unlikely to happen. A double-blind study would have to involve a grave with a real human body, since dowsers seem to be able to detect human remains and not animal remains. It is impractical to obtain a human corpse for such an experiment, and the experiment cannot be performed in an area with known graves, since there are often too many visual cues on the surface indicating where a grave is located even without a marker, such as placement near grave rows, surface depressions, or different vegetation over the grave. However, there are several published accounts in Iowa of graves or archaeological features being identified with dowsing rods, most of which were subsurface tested by excavation or wide-bucket augering.

Tests of Dowsing in Iowa Archaeology

Presented here is a review of every mention of dowsing at archeological sites I could find in the vast archives of the Office of the State Archaeologist, Iowa City. Most of these were accounts of dowsing for graves, the focus of this report. These reports were obtained by repeatedly canvassing Iowa-based archaeologists for information about dowsing; searching OSA databases, files, and reports; and working with the Iowa OSA Burials Program. I have left nothing out, and I am reasonably certain that I have exhausted all sources on dowsing and archaeology since the mid-1980s. Reports prior to the mid-1980s were difficult to search for because they tend to not be in the searchable OSA databases and most current Iowa archaeologists were not working as professionals prior to then. Although I have accessed several out-of-state reports on archaeological testing of dowsing, I have chosen to leave them out of this review, so as to not be accused of cherry-picking my sites (all of these out-of-state reports suggest that dowsing does not work).

Marshall County: Archaeologists investigated a possible unmarked cemetery identified by dowsing. No historic records indicated a cemetery in this area. Subsurface testing, including wide-bucket augers, found no remains or evidence of graves (Shields 2004).

Site 13LE688: A U.S. National Park Service archaeologist used several geophysical methods to test for an alleged unmarked Mormon cemetery in Lee County that was identified by dowsing. After using a metal detector, cesium magnetic gradiometer, electrical resistivity, and electric conductivity meter over the alleged cemetery, DeVore (2003) found no evidence of graves.

Site 13HN398: Local informants reported one or more unmarked historic graves in this site area. Subsequently a dowser reported numerous graves, possibly associated with a family cemetery near a road in Henry County. Extensive mechanical excavation in the site area revealed no graves, grave shafts, or evidence of grave disturbances (Hirst 1994a).

Site 13CY22: Supposed unmarked cemetery graves identified by dowsing in Clay County, but these were never tested archaeologically (Hirst 1990).

Site 13JH593: Oral history and dowsing suggested several early historic unmarked graves were located at a site in Johnson County. Five 1-x-1 m units were excavated where dowsing said there should be graves. Four were negative. One, Test Unit 1, had small amounts of bone at 27 cm (11 inches) below surface. This bone was small and crumbly, not identifiable as human. Animal bone

was observed on the ground surface nearby, and the site may have been plowed. The buried bone was not associated with a coffin, grave shaft, or anything else to suggest that it is either a grave or human (Perry 1991). Given the shallow depth, the presence of animal bone in the site area, the lack of demonstrably human remains, and the absence of grave features, it is unlikely this site was a human burial.

Site 13HN314: This site area may encompass the unmarked Menefee Cemetery in Henry County. The Iowa archaeological site form, published reports, and Burials Program updates present at least four possible locations of grave locations in an area roughly 200-x-100 m (600-x-300 feet). In this large area are different clusters of grave marker fragments, historic accounts of graves, recollections and anecdotal accounts of graves, and dowsed graves (Hirst 1994b). However, at no point has anyone actually definitively documented a grave. Four areas were marked as possible cemetery locations by local informants and dowsers; these were investigated by ground-penetrating radar and magnetic gradiometer survey. The radar survey was inconclusive in all areas, the magnetic gradiometer survey suggested that one area may have disturbances indicative of graves. This area was near the location of displaced grave markers, and it cannot be determined if the anomalies identified by gradiometer are in the same location that dowsers identified graves, since no map was made of the dowsing spots (HDR Engineering 1997). While subsurface testing was recommended for this area, it was avoided by highway construction because of the gradiometer results. Therefore no testing of the area was made, and it is unknown if either the dowsing or gradiometer anomalies correspond to actual disturbances. This site demonstrates that in three of four areas dowsing obtained results different from remote sensing, and in the fourth area (located near grave markers), results are inconclusive.

Site 13CW21: During a Burials Program project in Chickasaw County, a dowser identified the possible location of unmarked graves. This area was subsurface tested with screened postholes, no graves or evidence of graves were found. In addition, the same dowser several times walked over areas which were shown in excavation to contain graves, but found nothing by dowsing (OSA 1989; Lillie and Schermer 1992).

Muscatine County Home: During a Burials Program project, a dowser said an area within the cemetery of the former Muscatine County Home contained no graves, but excavation revealed several graves (OSA 1998).

Madison County Farm: A local dowser reported that a portion of the former Madison County Farm contained an unmarked cemetery, even though there was no historical evidence of a cemetery at that location. Archaeologists monitored the mechanical stripping of a large area including the alleged cemetery, stripping to eight feet below surface in areas. No graves, grave shafts, or any features suggestive of graves were identified (Sellars and Ambrosino 2002). According to the project archaeologist, the dowser was so upset at the lack of graves that he accused the archaeologists of stealing bones, even though he had witnessed the stripping himself.

Johnson County Poor Farm: A dowser identified 94 possible graves at the Poor Farm Cemetery. It should be noted that the dowser had prior knowledge that a cemetery was in the area, and surface depressions were apparent. One test unit was excavated over one of these possible graves, but this location also had a surface depression over it. Excavation identified a probable grave shaft. No one would reasonably consider the excavation of a grave-like depression within a known cemetery a valid test of the efficacy of dowsing, a fact acknowledged by the dowser (Rogers 2004).

Livingston Cemetery: In Appanoose County, areas with no marked graves near Livingston Cemetery were identified by a dowser as having possible graves. Coring by the Burials Program in these areas encountered no evidence of graves, and shallow trenching and coring by Anton Till, retired archaeologist, found no evidence of graves (OSA 2005).

Sites 13DT110, 132, 133: Three historic sites in Decatur County have been investigated by dowsers; DT110 is the location of part of the Garden Grove Mormon Settlement (1846–1852); DT133 is a Mormon cemetery; and DT132 is an early cabin site. Garden Grove and the cemetery were identified in 1983 through archival research and surface survey, not dowsing; dowsing at these sites began in 1987. Dowsers claim they found a cabin location, but admit that there was a visible depression in the ground before dowsing. Minor subsurface testing of the sites occurred in 1993, but subsurface testing occurred primarily at points identified by historic research and traditional archaeological survey, not dowsing. The depression was tested, and evidence of a burned structure was identified; however, this depression was found first by surface survey, and only defined by dowsing post-hoc (DeVore 1993). Tellingly, a dowser's first-hand account published with the report reveals something about the nature of the practice, "It was useful to have two persons working together as one person continually confirmed or challenged the findings of the other." In other words, dowsers obtained different, incompatible results if they did not constantly keep each other in check.

Discussion of Dowsing in Iowa

Of the 14 archaeological sites in Iowa which have been investigated by both dowsers and archaeologists, none displayed unambiguous evidence that dowsing was able to find graves or other archaeological features. Most, in fact, completely refuted the claims of dowsers. At eight sites dowsing failed completely, either by identifying graves that did not exist or by missing graves that were shown to exist by excavation (Marshall County Cemetery; sites 13LE688, 13HN122, 13CY22, 13CW21; Muscatine County Home; the Madison County Farm; and Livingston Cemetery). At Site 13JH593 four of five possible graves were shown to be nonexistent, and a fifth only contained shallow flecks of bone, probably animal, less than a foot below surface and was probably not a grave. Site 13HN314, the possible Menefee Cemetery, remote sensing found no evidence of graves at three of four locations, and at the fourth area it cannot be determined if remote sensing was observing the same anomalies as dowsers, since no map was made of dowsing spots and the area was never tested archaeologically. Of the 94 graves at the Johnson County Poor Farm identified by dowsing only one was tested archaeologically. The apparent confirmation of a grave is tempered by the fact that this grave was within a probable cemetery area and had a surface depression. Site 13CY22 was never tested archaeologically, and sites 13DT110, 132 and 133 were not tested at the location of dowsing finds, with the exception of a possible cabin foundation, which had a large surface depression.

Household Experiments with Dowsing

Since dowsing appears to be completely ineffective at finding anything underground, including graves, I decided to perform some simple experiments to further illuminate the mechanics of dowsing and to test some of the principles of dowsing. All of these are experiments that you can perform at home, if you want.

What Makes the Wires Cross?

Dowsers commonly use metal wires to find things; where the wires cross is where the object is buried. I decided to experiment with wires to get a better sense of the sensations of dowsing. I created two simple dowsing rods from two wire coat hangers, cut off the hooks, bent them into an L-shape, and held the short ends in my fists, letting the long ends extend forward. This, I believe, is the most common form of grave dowsing in Iowa. The first thing I noticed was that the wires were very unstable, and tended to swing on their own unless I held very still. I experimented with what range of motion caused the swinging, and it appeared that the rods would swing if I changed the angle of my hands slightly, or bent slightly forward and then back. I then walked in a circle, over the same route, to determine under what conditions the rods crossed. They would cross at different positions in the circular route I made, rarely in the same spot twice. I paid careful attention to when they would cross, and soon realized that *the act of paying attention* caused them to cross. When I consciously meditated on every aspect of my body and physical position as I dowsed, the rods would invariably cross. At first this seemed incredible, and the possibility of ESP as a cause of dowsing success seemed plausible. But then further observation revealed a simpler explanation. When I concentrated, I tended to slow down and bend slightly forward. This is instinctive and unconscious. Anyone who has worked in front of a computer all day and gotten a sore back and shoulders knows that you tend to unconsciously bend forward while concentrating, and we all slow down slightly when we are distracted while walking. Bending just slightly forward changed the angle of the rods, causing them to drop 1–2 degrees and come together very slightly, a motion amplified by my very slight deceleration. Upon accelerating slightly to my normal walking speed, which required me to straighten up just a little, the rods would increase their inward momentum because of the pendulum effect, and cross quite dramatically. In other words, what my mind perceived affected how my body moved which was amplified by the dowsing rods. All of this occurred very subtly, and would be difficult for an observer to see because of all the other movements going on in the body as it walks, but with almost no practice, I was able to get the rods to cross at will with extremely subtle movements, often by only slightly tipping my head forward in an almost imperceptible manner.

This can explain many of the instances when dowsing rods cross in the field. When dowsers approach an area where they either consciously or unconsciously suspect something should be (such as an unmarked spot in a row of cemetery markers, or a spot where other dowsers have identified something) or subtle visual cues attracts their interest slightly (such as a surface depression or vegetation change), they naturally slow down a little and bend slightly forward, and then resume their walk at a normal pace, and the whole process triggers the rods to cross. In this case the spot was not identified by the rods, rather it was identified as a spot of interest by the subconscious or conscious mind, which then instinctively causes the body to react in a way that makes the wires cross. It is spots like these— depressions, open areas in grave rows, areas of different vegetation, etc., that are most likely to have disturbances— therefore the dowsing rods, reacting to what your conscious or subconscious mind has perceived, appear to be able to find disturbances.

Conclusion: Simple experiments demonstrate that dowsing wires will cross when the dowser observes something of interest; this is an example of the subconscious ideomotor effect, first described by Carpenter (1852). This does not disprove dowsing, but demonstrates that simpler explanations can account for the phenomena observed by dowsers.

Are Dowsing Rods Attracted to Disturbed Soil?

One of the more-plausible explanations for dowsing is that the rods are somehow attracted to disturbed soil, perhaps because disturbed soil has slightly different magnetic properties than surrounding soil. To test this hypothesis, I went to a nearby landscaper's yard where soils and gravels of different types were piled. Standing still next to a large pile of soil, the rods would not point at it or away from it any more than they would point to any other direction. I tried this on several sides of the pile, and on several different soil and gravel piles, both while walking and standing still, and the only consistent result I obtained was that the rods tended to point away from the breeze.

I then walked up and over the soil piles with the dowsing rods, and concluded that the rods tended to cross or diverge as I walked up the soil pile, but this was caused by the difficulty of keeping the rods level while walking up and down slopes. On the level tops that occurred on some piles, the rods would not automatically cross in any predictable manner, and behaved the same as they did on level ground.

Conclusion: While dowsing rods do not appear to be affected by the presence of large amounts of disturbed soil, they do make passable weathervanes.

Are Dowsing Rods Attracted to Human Bodies or Coffins?

Since I could not get the dowsing rods to become attracted to disturbed soil, I then experimented with trying to get them to be attracted to coffins and bodies. I briefly considered testing this by obtaining a pig carcass and burying it six feet deep in a wooden box, but abandoned this effort on account of the time, expense, and damage it would do to our lawn. Furthermore, some dowsers would object to using a pig carcass, since dowsing seems to only find human remains, as discussed above. While I possess neither coffin nor corpse, we do own a nice old wooden chest with metal hardware, and I have a perfectly-alive wife. While I could not get my wife to get in the box to test my theory because of concerns that it would damage the chest, she was willing to lie on the floor while I dowsed over and around her and the box. In both cases, the dowsing rods were not attracted to either my wife or the chest when I held the rods still, and when I walked around them or passed the rods over them they would only cross when I intentionally made them, as discussed above.

Conclusion: Dowsing rods do not appear to be attracted to coffin-like boxes or humans lying on the ground, possibly because they do not have a powerful magnetic field. This is strong evidence that dowsers cannot detect buried humans or coffins, although it is not proof, since the manifestations of magnetic fields are likely to be different underground than on the surface.

Do Dowsing Rods Cross when Exposed to Magnetic Fields?

The fundamental premise of the most-plausible explanation for dowsing is that exposure to changes in a magnetic field cause the rods to cross. Experiments with refrigerator magnets indicated, not surprisingly, that the wire coat hangers were attracted to the small magnets when they were held less than an inch from them. However, this experiment with small magnets is not the same as a large, six-foot long anomaly such as a coffin, which would have a much larger, but relatively weaker, magnetic field radiating around it. Foulkes (1971) demonstrated that dowsers

are incapable of locating a buried electrically-magnetized cable, even one that produced a magnetic field far stronger than would be expected in nature.

A simpler experiment, one that most of you probably did in middle school science class, is to use a bar magnet and iron filings. Put a bar magnet (representing a highly-magnetic coffin) flat on a table. Elevate a flat piece of glass a few inches above it (representing the ground) and sprinkle iron filings (representing the dowsing rods) on the glass. You will notice something very interesting and important: the elongated iron filings line up parallel with each other, curving in graceful arcs from one magnetic pole to the other. They *do not cross each other* when exposed to the magnetic field. If a coffin or burial or patch of disturbed earth was strong enough to affect dowsing rods (a dubious premise, given the earlier experiments), the rods will always run parallel with each other and never cross.

An even simpler experiment is to observe a hand compass. A hand compass is far more sensitive to magnetic fields than dowsing rods; a hand compass will reliably detect the subtle magnetic field emanating from the earth's core, while dowsing rods will not. However simple experiments with a hand compass in a cemetery reveals that hand compasses do not point at graves, even modern ones with metal caskets.

Conclusion: The premise that dowsing rods cross when exposed to a large magnetic field created by a subsurface anomaly runs contrary to basic scientific understanding of magnetic fields, and does not hold up under simple experiment.

From the experiments above, it appears that dowsing for burials is based on premises that do not appear to hold up under simple household trials. Perhaps I was not dowsing in the correct manner, maybe I should have spread my elbows out instead of keeping them in, or I should have used brass rods, or I should have meditated on what I wanted to find, or I should have held a penny in my mouth, etc., etc., etc. It may be that my skepticism of dowsing has prevented it from working, this is referred to as the "Tinkerbell Principle" – if you don't believe in it, it doesn't exist. However true scientific instruments work whether you believe in them or not; a metal detector will find metal regardless of the beliefs of the operator, a radiograph will show bones whether you believe in x-rays or not. Belief in the efficacy of a system should not be required for the system to be effective.

Conclusion: The Perils and Limitations of Dowsing for Graves

Earlier researchers have demonstrated beyond a reasonable doubt that water dowsing does not work. As for grave dowsing, simple household experiments demonstrate that the fundamental principles of grave dowsing are probably incorrect. On the basis of the results from actual sites in Iowa, dowsing is, at best, only as good as common sense intuition at finding graves. One could speculate that dowsing is *worse* than common sense intuition, since I suspect that most cemetery caretakers have a pretty good sense of where graves are and could do better than the dowsers tested here, but I have no way of quantifying this suspicion.

Having met numerous dowsers I can assure you that none of them are intentionally deceptive; to the contrary, dowsers are a very earnest group, providing what seems to be a vital service to people who desperately need answers. The problem is that the answers provided by dowsing are very often wrong, and this can lead to legal and financial problems for everyone involved. If a burial is missed by dowsing and the plot is sold to a family that then damages the existing grave while digging a new one, the cemetery officials who approved the sale on the basis of dowsing

could be held liable by either family. What legal defense does the cemetery caretaker have when there is no scientific basis for dowsing? In addition to the legal and financial trouble, caretakers need to be aware of the emotional pain this could cause both families, as well as the public embarrassment the caretakers would be subjected to when it is revealed that folk superstitions such as dowsing were used to determine the location of graves.

My final recommendation is for cemetery caretakers to stop using dowsing. I realize that this seems extreme, but working with incorrect information is worse than working with no information. The evidence that dowsing does not work is strong enough that any conclusions derived from dowsing are extremely suspect, and use of dowsing results in cemetery planning could put your organization at risk. Your best strategy is to use the alternative methods described in the companion report, *Locating Unmarked Cemetery Burials* (Whittaker 2005), and to make it very clear in all transactions that there is a possibility that unmarked graves exist in parts of the cemetery that lack grave markers.

Some day geophysical technologies will improve in cost and effectiveness and make dowsing a quaint relic of the past, in the same way modern medicine replaced the quack cure-alls of the early twentieth century. Until then, it is better to avoid simplistic pseudo-science that provides quick answers that at best do not help, and at worst can harm; cemeteries, and their caretakers, deserve better.

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References Cited:

- Barrett, William, and Theodore Besterman
2004[1926] *The Divining Rod: An Experimental And Psychological Investigation*. Kessinger Publishing, Whitefish, Montana.
- Carpenter, William B.
1852 On the Influence of Suggestion in Modifying and Directing Muscular Movement, Independently of Volition. *Proceedings of the Royal Institution of Great Britain 1852*. (1)147-153.
- Carroll, Robert T.
2003 *The Skeptic's Dictionary: A Collection of Strange Beliefs, Amusing Deceptions, and Dangerous Delusions* Wiley, Hoboken, New Jersey.
- DeVore, Steven L.
1993 *Quest for the Latter-Day Saints at Garden Grove: Archeological Reconnaissance at 13DT110*. National Park Service, Denver, Colorado. Submitted to Mormon Pioneer National Historic Trail Coordinator, Division of Planning and Compliance, Rocky Mountain Regional Office National Park Service.
2003 *Geophysical Investigations of Alleged Historic Mormon Cemetery Near Montrose in Lee County, Iowa*. United States Department of the Interior, National Park Service, Lincoln, Nebraska
- Enright, James T.
1995 Water Dowsing: the Scheunen Experiments. *Naturwissenschaften* 82(8):360-369.
1996 Dowsers Lost in a Barn. *Naturwissenschaften* 83(6):275-277.
- Feder, Kenneth L.
1998 *Frauds, Mysteries and Myths*. Third Edition Mayfield, Mountain View, California.

- Foulkes, R. A.
1971 Dowsing Experiments. *Nature* 229:163-168.
- Gardner, Martin
1957 *Fads and Fallacies in the Name of Science*. Dover, New York.
- HDR Engineering
1997 *Unmarked Menefee Cemetery Geophysical Investigation*. Summary Report, Iowa Department of Transportation, Mount Pleasant Bypass, Henry County, Iowa. HDR Engineering, Omaha, Nebraska. Copy on file, Office of the State Archaeologist, University of Iowa, Iowa City.
- Hirst, K. Kris
1990 *A Phase I Archaeological Survey of Primary Roads Project F-71-8(14)--20-21 a.k.a. 85-21010-2 Clay County, Iowa*. Project Completion Report Vol. 13, No. 100. Office of the State Archaeologist, University of Iowa, Iowa City.
1994a *A Phase I Archival Investigation of the Unmarked Spangler Farm Cemetery Primary Roads Project NHS-218-2(36)--19-44 a.k.a. PIN 93-44200-1 Henry County, Iowa*. Project Completion Report Vol. 17, No. 61. Office of the State Archaeologist, University of Iowa, Iowa City.
1994b *Archival Investigations of the Unmarked Menefee Cemetery, 13HN314*. Primary Roads Project NHS-218-2(36)--19-44 a.k.a. PIN 93-44200-1 Henry County, Iowa. Project Completion Report Vol. 17, No. 27. Office of the State Archaeologist, University of Iowa, Iowa City.
- Hyman, Ray
1996 Dowsing. In *The Encyclopedia of the Paranormal*, edited by G. Stein, pp. 222-233. Prometheus, Buffalo, New York.
- Lillie, Rboin M. and Shirley J. Schermer
1992 *Analysis of Two Early Historic Burials and Artifactual Materials Recovered from a Vandalized Site in Chickasaw County, Iowa, 13CW21*. Research Papers 17(1):89-105. Office of the State Archaeologist, University of Iowa, Iowa City.
- Martin, M.
1984 A New Controlled Dowsing Experiment. *Skeptical Inquirer* 8(2):138-140.
- Office of the State Archaeologist (OSA)
1989 Burial Project File # 349 [13CW21]. Office of the State Archaeologist, University of Iowa, Iowa City.
1998 Burial Project File #1250 [Muscatine County Conservation Board property; former Muscatine County Home]. Office of the State Archaeologist, University of Iowa, Iowa City.
2005 Burial Project File #1838 [Livingston Cemetery, Appanoose County]. Office of the State Archaeologist, University of Iowa, Iowa City.
- Oxford English Dictionary
1989 *Oxford English Dictionary*. Second Edition. Oxford University Press, Oxford, England.
- Perry, Michael J.
1991 *A Phase I Archaeological Survey of Primary Roads Project IR-8--6(138)241--12-52 a.k.a. PIN 89-52110-1 Johnson County, Iowa*. Project Completion Report Vol. 14, No. 45. Office of the State Archaeologist, University of Iowa, Iowa City.
- Raloff, Janet
1995 Dowsing Expectations: New Reports Reawaken Scientific Controversy over Water Witching. *Science News* 148 (6):90-93.
- Randi, James
1979 A Controlled Test of Dowsing Abilities. *Skeptical Inquirer* 4(1):16-20.
1982 *Flim-Flam! Psychics, ESP, Unicorns, and Other Delusions*. Prometheus, Buffalo, New York.
1995 *An Encyclopedia of Claims, Frauds, and Hoaxes of the Occult and Supernatural*. St. Martin's Press, New York.
- Rogers, Leah D.
2004 *Architectural/Historical Intensive Survey and Evaluation and Archaeological Reconnaissance of the Johnson County Poor Farm and Asylum*. Tallgrass Historians L.C., Iowa City, Iowa.
- Sellers, Jonathan R., and Leslie A. Ambrosino
2002 *Monitoring of Mechanical Stripping Operations at the Madison County Home Property, Madison County, Iowa*. Report CAS-378. Consulting Archaeological Services, Creston, Iowa.

Shields, W. Lane

2004 *A Phase I Archaeological Survey of a Reported Unmarked Cemetery Location, Primary Roads Project NHS-30-5(136)--19-64, Marshall County, Iowa*. Project Completion Report Vol. 27, No. 11. Office of the State Archaeologist, University of Iowa, Iowa City.

Smith, D.

1982 Two Tests of Divining in Australia. *Skeptical Inquirer* 4(4):34-37.

Vogt, Evon and Ray Hyman.

2000 *Water Witching U.S.A.* Second Edition. University of Chicago Press, Chicago.

Whittaker, William E.

2005 *Locating Unmarked Cemetery Burials*. First Edition. Office of the State Archaeologist, University of Iowa, Iowa City. <http://www.uiowa.edu/~osa/burials/LocatingUnmarkedBurials.pdf>

Zusne, Leonard and Warren Jones

1989 *Anomalistic Psychology: A Study of Magical Thinking*. Second Edition. (Lawrence Erlbaum, Hillsdale, New Jersey).