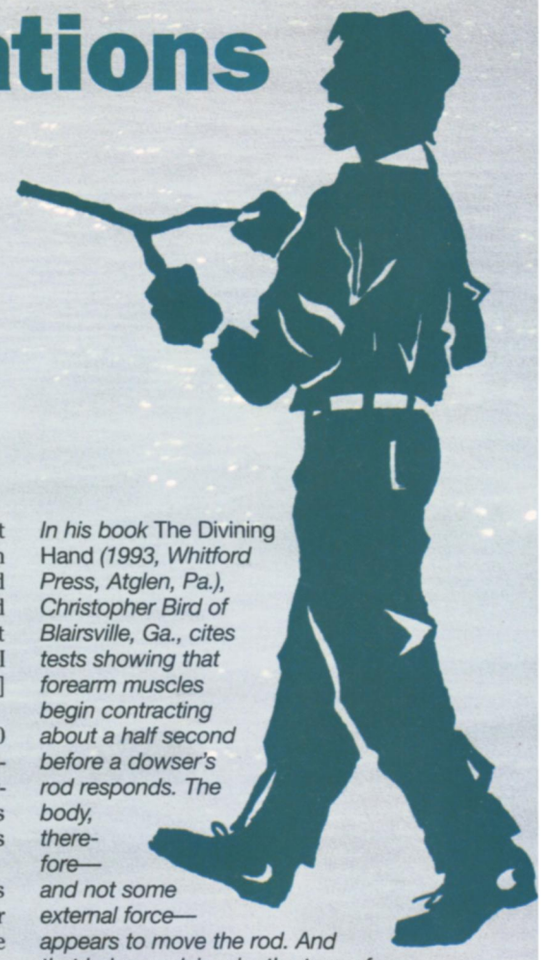
Dowsing Expectations

New reports reawaken scientific controversy over water witching

By JANET RALOFF



In his book The Divining Hand *(1993, Whitford Press, Atglen, Pa.), Christopher Bird of Blairsville, Ga., cites tests showing that forearm muscles begin contracting about a half second before a dowser's rod responds. The body, therefore—and not some external force—appears to move the rod. And that helps explain why the type of rod that a water witch or other diviner uses can vary so widely. Though dowsers traditionally have used a forked stick, today's "rod" may actually amount to no more than a pair of wires or even a V-shaped piece of plastic.*

Vincent Reddish first confronted dowsing about 6 years ago, long after he retired from the astronomy department at the University of Edinburgh. In the Scottish highlands, Reddish watched a "very pragmatic" chap clip a couple of pieces of fencing wire, hold one outstretched in each hand, and promptly locate a blocked drainage pipe.

"You're a scientist," the man said to Reddish. "How does this work?"

At the time, Reddish wasn't sure it did. But intrigued by the challenge, he returned to Edinburgh and tried dowsing for himself. In the May PHYSICS WORLD, the monthly magazine of the United Kingdom Institute of Physics, he reports that he can get dowsing rods to rotate whenever they pass over or under a linear stretch of pipe, cable, or telephone line.

Reddish's article and a positive new report by a German physicist have rekindled a long and sometimes acrimonious dispute.

For millennia, humans have scouted for underground aquifers and other natural resources with the help of dowsing rods. More recently, diviners have expanded their efforts by looking for buried utility lines.

Throughout dowsing's long and colorful history, people have wondered what might explain it. Some believed it the devil's work; others saw in it the hand of God. Skeptics frequently ascribe it to charlatanry or the practitioner's imagination. But critics and believers generally agree that whatever the cause, the rod serves only as a vehicle for signaling an effect produced on or by the diviner.

Indeed, it's the explanations for what a dowser's body might be responding to—and how unimpeachable the scientific evidence of dowsing's efficacy is—that divide skeptics and dowsers.

Robert R. Humphris happened into dowsing 20 years ago, when his teenage son came home from a summer job and began pacing up and down the driveway with a pair of coat hangers, trying to copy what he had seen plumbers doing earlier in the day. "I told him that he knew where the pipes entered the house," Humphris recalls, so it wasn't a fair test. "But he said, try it yourself. I did. And lo and behold, my [coat hangers] crossed. After that, I was hooked."

Humphris, who just retired after 40 years on the electrical engineering faculty of the University of Virginia in Charlottesville, professes to have used his electrical background to rig up all kinds of dowsing tests.

Though any mechanism still eludes him, he has divined about 650 water wells. So far, he claims, only 18 have come up dry. Might his subconscious actually be responding to hydrological cues suggested by the lay of the land?

"I don't know, it may be," he responds. "My brother and brother-in-law are both geologists, and that's what they accuse me of doing." But except for those two, he adds, "the 17 other members of our family can all dowse."

Reddish says lengthy pieces of wood, pipe, or other materials on the surface can cancel out the response of his rods to buried or overhead lines—in some spots but not in others. Because the apparent cancellation tends to occur at regular, repeating intervals (generally a few meters apart), Reddish thought of the fringe patterns seen in interferometry. This "led me to build interferometers" to explore the phenomenon further, he says.

In PHYSICS WORLD, he concludes that his results "may be explained by supposing that linear structures interact with a radiation field to produce standing waves and that these induce a charge on the ground which is conducted through the body" in such a way as to ultimately affect the rods.

But Armadeo Sarma suggests a simpler explanation: the "ideomotor reaction" that can accompany wishful thinking. Sarma—a research scientist with Deutsche Telekom and director of the Society for the Scientific Investigation of Parasciences (SSIP) in Rossdorf, Germany—devotes much of his spare time to debunking pseudoscience and alleged paranormal effects. As an illustration of how the mind can play games, members of his society have learned how to trigger this ideomotor effect in people holding pendulums, he says.

"If you think about something or observe something, then you are likely to make small muscular movements in the same direction," he says. It explains why fans watching a soccer game may make reflexive kicking motions with their own feet as they watch a player do the same.

Dowsers tense their arms so that the rod exaggerates even a small movement. When a dowser walks across the ground and the rod moves by chance, Sarma says, the mind replays that action every time the dowser recrosses the spot. This may kick in a subconsciously driven rep-

etition of that first movement. Hence, the "power of suggestion for the dowser becomes a confirming one," he says—causing the rod to move again and again at the same spot.

Dissatisfied with anecdotal claims and theories, physicist Hans-Dieter Betz of the University of Munich decided to launch a multidisciplinary probe of dowsing. The observations he now reports in the quarterly JOURNAL OF SCIENTIFIC EXPLORATION demonstrate, he says, that good dowsers can indeed detect underground water.

That report has stirred the curiosity of many scientists who have regarded divining as parlor trickery or subconsciously prompted muscle movements. Betz, several said, is notable for appearing honest, "not flaky," and anxious to study the phenomenon seriously.

For this reason alone, concedes physicist Leonard Finegold of Drexel University in Philadelphia, Betz' report on dowsing has to be taken seriously. However, Betz has failed to convince him or many other skeptics that dowsing is real.

Over the years, many studies have purported to prove that dowsers could find buried or out-of-sight objects. But invariably, says University of Oregon psychologist Ray Hyman—who coauthored *Water Witching U.S.A.* (1979, University of Chicago Press), an oft-cited book on water dowsing—those studies were flawed or the performance of dowsers proved no better than chance.

And Hyman argues that both the design of Betz' tests and the absence of adequate comparison data flaw most of the physicist's analyses.

Take Betz' accounts of Hans Schröter, a civil and sanitary engineer employed by the German government. Schröter has spent much of his career prospecting for potable water in developing countries as part of a German technical assistance program. The first part of Betz' new report, running 43 pages in the spring JOURNAL OF SCIENTIFIC EXPLORATION, describes Schröter's water dowsing in 10 developing countries.

In Sri Lanka, for instance, Betz reports that only 27 of the 691 well sites that Schröter dowsed came up "dry"—that is, yielded too little water or water with unacceptable amounts of salt or minerals. "No prospecting area with comparable subsoil conditions is known where such outstanding results have ever been attained," Betz states.

Even if true, Hyman argues, that statement is unscientific. Betz not only offered few comparisons to nondivined sites in the same region, Hyman says, he failed to articulate which soil conditions he was referring to, or even to prove that Schröter divined his sites.

Hyman is more impressed by a smaller comparison of Schröter's success in one Sri Lanka locale. A conventional drilling company sank 14 wells there, hoping to produce at least 100 liters of water per minute from each. Only three surpassed that rate; nine fell below 50 liters per minute. By contrast, Betz reports, Schröter "divined" seven sites, six of which yielded 150 liters per minute or more.

Even hydrogeologist Jay Lehr, former head of the National Ground Water Association in Dublin, Ohio, concedes that "Schröter would be a terrific asset to any company trying to locate water."

But "that his skill comes from a force field that his body can intercept and interpret is patently absurd," Lehr says. "People with such a high success at dowsing invariably have an understanding, whether they're aware of it or not, of various surface cues that increase one's chance of finding water."

Betz acknowledges that Schröter's experience in water prospecting and cooperation with drilling companies render him the equivalent of a geologist. As such, Hyman observes, Schröter may cue into geology—albeit unconsciously—during his dowsing.

To prove that Schröter relied on dowsing only, Hyman says, would require, at a minimum, blindfolding him, taking him to sites totally unfamiliar to both him and those working with him, and then asking skilled water-prospecting companies to select and drill sites in the same area.

Betz says such comparison drilling would have been impossibly expensive. But while acknowledging "sympathy" for Betz' situation, Finegold argues that only this would produce compelling data.

Hyman says that it's hard to evaluate dowsing without good records on what proportion of local, nondivined wells produces adequate, potable water.

In a few regions of the world where government records document all water-prospecting efforts, he points out, diviners have done well at finding water—but no better than nondowsing drillers.

As an example, Hyman cites Australia, where the government of New South Wales has long maintained detailed records on every water well drilled—several thousand in all. These documents show that "about 70 percent of the divined wells were successful, versus about 83 percent of the *non*divined wells."

Betz describes a series of more carefully controlled experiments conducted with dowsers in and around the University of Munich in the second part of his report, which appears in the summer JOURNAL OF SCIENTIFIC EXPLORATION.

In one test, 43 dowsers successively tried to divine, from the second floor of a barn, a pipe on the floor below. After each attempt, the pipe was moved. Statistical analyses indicated that there was only 1 chance in 1,700 that the best performance, that of Schröter, could be due to luck. However, most of the dowsers did no better than chance alone would predict.

In a second experiment, 40 blindfolded dowsers walked along a 13.5-meter-long plank in a field and noted where water might occur. Each individual attempted the task 40 times, with the plank being moved between each trial. Most dowsers failed to mark the same site each time. But certain individuals responded reliably within a meter of the same spot on each pass, a result with only a 1 in 100,000 likelihood, Betz said.

Skeptics note that from reading the report alone, it's hard to tell whether Betz took adequate precautions to prevent the participants from receiving aural or visual cues that might affect their performance.

"There are all sorts of experiments like this that initially look like they are without sensory cues—but in fact are not," Lehr says. "I guarantee you that if I or any number of skeptical scientists had been on hand to observe these experiments, it would be very easy to find flaws."

Hyman agrees. In particular, he doubts the value of the plank test. "It's virtually impossible to blindfold people and keep them from seeing down," he says. Even if the participants were adequately blinded, Sarma adds, their escorts were not. "There are any number of ways in which these individuals could have relayed some cues, perhaps involuntarily," he adds.

Since the Munich tests, Sarma says, SSIP has repeatedly challenged Betz to bring it dowsers for testing or to provide SSIP with the names of high-performing individuals. "Betz has consistently refused," Sarma told SCIENCE NEWS.

With a few notable exceptions, scientists will have no truck with dowsing. Divining's most outspoken critics come from the earth sciences.

To "water well drillers and the scientists and engineers who make a living in the groundwater industry," explains Robert Farvolden of the Waterloo (Ontario) Centre for Groundwater Research, "dowsing or witching for water is akin to astrology or fortune-telling—that is, something rather appealing . . . but which is unsupported by scientific evidence and professional experience."

Underground water is so widely distributed, Farvolden adds, that "in most settled parts of the world, it is not possible to dig a deep hole or drill a well without encountering groundwater." □