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Some Explorations with Dowsing Techniques

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Dowsing and related practices of motor automatism have been supposed to facilitate the efficient operation of ESP. It is assumed that many ESP impressions which remain subconscious and unnoticed may be expressed through involuntary and unconscious muscle movements. Tyrrell called them vehicles by means of which the ESP contents ride into conscious experience.² R. Tischner compared them to pipes of exceedingly small diameter in which liquids rise high above the level of a tank. He called them "the

¹ The experiments described here were carried out when the author was a Research Associate at the Parapsychology Laboratory, Duke University. While assuming full responsibility for this report, he wishes to express his appreciation for the kind counseling of Dr. J. B. Rhine, Dr. J. G. Pratt, and Dr. R. J. Cadoret.
² G. N. M. Tyrrell, *The Personality of Man*, Pelican Books, London, 1947.

capillaries of the unconscious" through which the ESP contents of the deeper levels of the mind filter into consciousness.³

In the golden age of psychical research automatisms were often employed. In regard to dowsing in particular, for example, there is the capital work of Barrett and Besterman⁴ in which some astonishing cases are reported. McMahan also published a good survey on dowsing.⁵ However, we still lack systematic investigations that clearly demonstrate the superiority of such automatisms over verbal ESP responses. It is very difficult to make such comparisons on the basis of experiments. To begin with, most of the dowsers whom I have met felt offended if I suggested ESP as an explanation of their work. Even when I could secure their cooperation for ESP tests, a subjective bias persisted. On the other hand, when working, say, with college students, the interest of the subjects may easily swing toward, rather than away from, automatisms because of the more dramatic procedures involved.

The dowsing problem has been but a peripheral interest of mine, that is to say, only a "side-romance." In the explorations reported here no systematic comparisons were made. The main purpose of the tests was to see if an unusually high scoring rate, which then might warrant an extensive research program, could be obtained. However, I decided to write up this brief exploratory work hoping that it might provide some useful material for systematic studies to be made by interested researchers.

DOWSING FOR METAL PIPES⁶

Through a professor of the Engineering College at Duke University who worked part-time for a local branch of a gas company we were informed about an astonishing case of dowsing for small-size metal pipes. A superintendent of the company, manager of a crew of sixty workers, made use of the method of dowsing for pipes if the pipe-line was not well mapped out and new connections were needed. According to our informant, Mr. Gwaltney, the superintendent, was nearly 100 per cent successful. We therefore contacted Mr. Gwaltney, and he was willing to take part in an experiment. He is a man of approximately fifty years of age, apparently task-oriented, well-measured in his actions, and workmanlike in his approach.

³ R. Tischner, *Ergebnisse okkultur Forschung*, Stuttgart, 1950.

⁴ Sir W. Barrett and T. Besterman, *The Divining Rod*, Methuen & Co., Ltd., London, 1926.

⁵ E. A. McMahan, "A Review of the Evidence for Dowsing," *Journal of Parapsychology*, Vol. 19, 1955, pp. 203-227.

⁶ This experiment was financed by a grant from the Duke University Research Fund.

Procedure

Pipes of 1 inch in diameter and 1½ feet in length were used as targets. These target pipes were placed in a vacant lot in two arrangements of ten small, shallow trenches each. The trenches were arranged in a straight line spaced 3 yards apart and were about 4 inches wide, by 5 inches deep, by 2 feet long. They were covered with boards 32 inches long, 9 inches wide, and 1 inch thick. For recording purposes, each arrangement of trenches was numbered from 1 to 10. Targets selected by means of random number tables were placed in two of the trenches while the remaining trenches in that particular arrangement were left empty.

In the first eight trials the targets were placed in the trenches by the experimenter. In all subsequent trials an assistant arranged the targets, and the experimenter was ignorant of their location. The assistant endeavored not to leave any clues which might possibly be detected by sensory means. He visited all of the trenches in the arrangement each time he set the targets and lifted all ten boards in the same way. The experimenter was never (consciously, at least) able to detect any visible traces that might indicate where the targets had been placed.

Mr. Gwaltney used two brass rods, each about 1 yard long, the ends of which were bent at a 90-degree angle to form handles. These handles were placed within pieces of ½ inch copper pipe thus enabling the rods to swing freely when the mounted handles were held in the outstretched hands of the dowser. In some of the trials he also used rods mounted on handles having ball-bearings, but the decisions which determined the results were based on indications from the brass rods only.

Mr. Gwaltney approached the arrangement with slow, measured steps. His arms were stretched in front of him nearly parallel to the ground. He stood from three to ten seconds on or near the board covering each trench. His eyes, so far as they could be observed, were almost constantly fixed on the rods. He usually went over the arrangement from two to four times before he indicated his choices. The calls were immediately recorded by the experimenter. Then we both uncovered the trenches until we found the pipes. Each session varied from working on one to four arrangements. The experiment was terminated when the time-limit for the grant expired.

The subject was paid at approximately the same rate he was accustomed to receiving for overtime work. However, he seemed to be little interested in the money, but, rather, eager to help in the experiment. He told us, "I want to help you folks to find out what it is that turns the rods."

Results

At the first session we obtained 5 hits out of a possible 8. In the next three sessions, when the experimenter did not know the targets, the high scores continued: 1 out of 2, 3 out of 4, and 3 out of 8. Then the achievement level drastically declined. The first half of the experiment yielded 14 hits; the second half, only 7. The results of the 50 trials where the experimenter did not know the targets are marginally significant ($P = .03$). The results are given in Table I.

TABLE I
DIRECT HITS OBTAINED IN DOWSING FOR PIPES

Conditions	Trials	Hits	P*
Targets Known to Experimenter	8	5	
Targets Unknown to Experimenter	50	16	.03
Total	58	21	.003

*P obtained by use of Tables of Incomplete Beta-Function.

The impression gained from the small amount of data obtained is that Mr. Gwaltney was able to score highly in the beginning, but subsequently his results declined rapidly. The decline effect is rather marked (from 14 to 7) but in so small a sample does not achieve significance.

In addition to the above dowsing tests, Mr. Gwaltney did twenty runs of ESP card tests in two sessions. These yielded a deviation of -2 , very close to mean chance expectations.

DOWSING FOR A RING

To complete this account, I should like to report one other small exploration of dowsing. In the experimental room at the Duke University Parapsychology Laboratory, ten small pill boxes, placed a yard apart, were arranged in a row. An assistant placed a ring in one of the boxes which was chosen according to random number tables. Two subjects (who were mainly used for pendulum experiments) made seventeen trials with the dowsing rods used in the same manner as was described in the Gwaltney experiments. They scored 4 hits. When the probability associated with this result is obtained by use of the Tables of Incomplete Beta-Function, $P = .08$.

PENDULUM EXPERIMENTS

The pendulum is also customarily used as a motor automatism in dowsing situations. Its use is especially popular in France and Germany where its operation is called "radiesthesia." Some very interesting experimental work with this form of dowsing has been done by R. J. Cadoret.⁷

He used an arrangement of 25 opaque squares in a five-by-five matrix (to be known as "A"). The subject stood in front of the rows holding a pendulum in his outstretched arm. The movement of the pendulum was supposed to indicate the row where the target (a penny) was hidden under one of the squares. After obtaining the row, which was recorded, the subject stood in front of the columns on the adjacent side of the matrix and the procedure was repeated. Both column and row having been selected by the pendulum, the square in the matrix on which the indicated row crossed the indicated column was taken as the subject's guess for the target. The probability of hitting the square beneath which the penny was to be found was $1/25$.

In the same session Cadoret's subjects also worked on another matrix (to be known as "B") of 25 large squares into which his back yard had been divided. In one of the squares a penny was buried as a target. The indoor matrix (A) served as a map and index for the outdoor matrix (B). With no penny under the squares of matrix (A), the subject was given the task of indicating, by means of the pendulum, that square in (A) which represented the square in (B) under which a penny was actually buried.

From the geometrical relationship between the squares indicated by the subjects' calls and the target squares of indoor matrix (A), Cadoret predicted the relationship between the calls and targets in the outdoor matrix (B) but with only moderate success.

On the other hand, Cadoret found a clustering of responses around the actual target instead of a chance distribution spread all over the matrix (B). He evaluated the distances between the calls and the targets and found some evidence for the cluster effect⁸ which would be the counterpart of displacement in card tests.

Both of Cadoret's problems, the clustering of calls around the target and the prediction from system (A) to system (B), might very significantly relate to the way ESP operates. Cadoret rightly points out that both of these findings might help in the effort to gain more control over ESP functioning by increasing its predictability and to harness it for practical applications, as well.

⁷ R. J. Cadoret, "The Reliable Application of ESP," *Journal of Parapsychology*, Vol. 19, 1955, pp. 203-227.

⁸ Cadoret, *op. cit.*

While Cadoret used two matrices (indoor A and outdoor B) to stand for systems (A) and (B), it seemed unnecessary for me to have a separate "outdoor" matrix. The same 25 squares could be considered as system (A) with one kind of target, and at the same time as system (B) for another kind of target. Cadoret's experiment provided a near-distance (ND) test on his matrix (A) and a long-distance (LD) test on his matrix (B). The present experiment, however, was done in two parts, the first series including only ND trials on both systems, the second only LD trials on both systems. This provision eliminated confounding with the distance variable.

NEAR-DISTANCE PENDULUM EXPERIMENTS

Procedure

This experiment was done in the spring of 1956. We used three five-by-five arrangements of opaque plastic tiles. These squares had recessed bases which concealed the targets without being tilted. Under two of the tiles targets were hidden. We used two types of targets: money (at first mostly coins, later bills), and photographs of persons the subjects liked. The targets were randomized by an assistant by means of random number tables.

The subject stood at a distance of about one yard from the tile columns, holding the pendulum in one partly extended hand. The pendulum (a small button on a silk thread) soon started to swing in the direction of one of the columns. The subject named the column so indicated and the experimenter recorded the call. Then the same procedure was repeated in front of the rows. The subject was also allowed to use a "feeling" in her outstretched hand as a basis for her judgement for determining the call. This was done, however, in only a very few cases.

Two selected subjects were used. Mrs. K. was chosen because of her striking spontaneous experiences. Mrs. D., the other subject, who was briefly visiting the Laboratory at that time, was in the habit of using the pendulum for spelling out messages on a circular letter-arrangement and was familiar with this technique. The experiment was terminated when the subjects left Durham in July of 1956.

Results

The data were checked for direct hits on both targets and the results are given in Table II. There were 9 hits obtained, 2.6 more times than mean chance expectation. This is a high rate of success when compared with card-calling experiments. The sample size

was too small for evaluating this result by the usual CR method. The distribution might not have approximated the normal curve. Therefore the arc-sine transformation was applied.⁸ The CR thus obtained is marginally significant ($P = .02$).

TABLE II
DIRECT HITS IN NEAR-DISTANCE PENDULUM EXPERIMENT

Subjects	Total No. of Trials	Hits		Total Deviation	CR*	P
		Money	Photo			
Mrs. K.	70	3	4	+ 4.2		
Mrs. D.	16	2	0	+ 1.36		
Total	86	5	4	+ 5.56	2.37	.02

* Data transformed by arc-sine transformation method.

The data were also scored for displacement by Cadoret's method.⁷ The distances between call-square and target-square were measured in units the length of the side of one square. The mean chance expectation and the variance were assessed by use of Greenwood's formulae, which take the position of the call in the matrix into account. (For details, see p. 214 of Cadoret's paper.) The sums of the distances between target and call were very close to mean chance expectation for both subjects as seen in Table III. No indication of clustering near the target was shown.

TABLE III
DISPLACEMENT IN TERMS OF DISTANCE BETWEEN TARGET AND RESPONSE IN NEAR-DISTANCE PENDULUM EXPERIMENT

Subjects	Sum of Distances	Deviation	CR
Mrs. K.	160.0979	- 6.5487	- .72
Mrs. D.	42.8366	+ 5.2652	+ 1.24
Total	202.9345	- 1.2815	- .13

Cadoret proposed the hypothesis that the way the subjects miss the target in system A will be related to the way they also miss it in system B. He assumed that the missing might average in the same direction and approximately the same distance in both systems. He used the correlation method for gaining information about the

⁸ George W. Snedecor, *Statistical Methods*, (5th ed.), Iowa State College Press, Ames, Iowa, 1956.

⁷ Cadoret, *op. cit.*

distance and direction of missing in system A. This method still left him with a somewhat subjective choice and has been criticized on statistical grounds.

I tried to escape the subjectivity of Cadoret's method in the following way: I assessed the missing and hitting of the monetary targets in terms of distances in columns (right or left 0-4 columns) and in rows (right or left 0-4 rows). These, taken together of course, indicate both distance and direction. Then I assessed in the same way the missing and hitting on the photographs (or system B in my design). Where the same measures for each target were found, I scored a hit (e.g., row 2 left, column 3 right on money; and row 2 left, column 3 right on photograph). If the relation was not the same (e.g., row 3 right, column 0 on money; and row 2 left, column 0 on photograph), I scored a miss.

There is the difficulty that the predicted direction could not always be applied to the targets near the edges of matrix (B) because they extended over the edges of the matrix. To cope with this I eliminated all trials where the edge of the matrix would interfere with the predicted call-target geometrical relationship. This reduced the number of predictable trials from 43 to 21. No hits were found. Apparently the results of this series do not support Cadoret's hypothesis.

LONG-DISTANCE PENDULUM EXPERIMENTS

The long-distance (LD) test was begun early in December, 1954, with a series which utilized the services of a nonprofessional dowser (E.O.S.) from Missouri. He had some kind of "home-made" theory about dowsing and (as often happens) had built up a strong predilection in favor of his procedure.

Also, in the spring of 1956, I wrote to all the dowsers who had had some correspondence with the Parapsychology Laboratory since 1955. Only two of the correspondents were ready for the LD test, a professional dowser in Germany (A.E.) who was very self-confident and eager to participate; and an amateur dowser who provided two enthusiastic subjects in Colorado, his father (H.P.) and younger brother (M.P.).

In the analyses which follow, the work of all four of these subjects will be treated as a unit, in spite of the lapse of time between these series, because the differences in procedure were very slight.

Procedure

A drawing representing the 25-square matrix (the five-by-five matrix referred to earlier) in the experimental room was sent to

each subject. They were informed that this would be a kind of map-dowsing, and that the drawing was a map of the actual tile arrangement in the Laboratory. They were to determine the "call" the same way as in the near-distance (ND) test, except that the drawing was now to become the focus for the pendulum. Each dowser also received a photograph of the West Duke Building in which the Laboratory is located.

The experimenter randomized the target order according to random number tables. Targets were put under the squares and removed at appointed times, twice a day for the nonprofessional dowser in Missouri (E.O.S.), and once a day for the other dowsers in a subsequent experiment. The subjects could dowse at their convenience any time during the period the targets were exposed. The targets for E.O.S. consisted of a dime and a ring; those for the others, a coin (system A) and a photograph of a famous parapsychologist (system B). The subjects in Colorado and Germany were supposed to dowse on the same set of targets. However, the Colorado series was started later, and therefore one-fourth of the total trials in these two experiments have individual targets.

The series for the Missouri subject consisted of 30 sessions; for the others, 25 sessions each. However, A.E., (in Germany), missed half a session; and the Colorado subjects, H.P. and M.P., worked on only one set of targets each (photograph or coin) which they frequently switched between them, H.P. taking M.P.'s target and vice versa.

Results

The same checking and evaluation were applied to the LD data as were to those of the ND series. All subjects but one made a negative score concerning hits on the direct target, i.e., half of what would be expected by chance. The total deviation for the 155 trials is -3.2 and is not significant. These results are shown in Table IV.

TABLE IV
DIRECT HITS IN LONG-DISTANCE PENDULUM EXPERIMENT

Subjects and Location	No. of Trials	Hits		Total Deviation	CR	P
		Coin	Ring or Photo			
E.O.S. (Missouri)	60	0	0	-2.4		
A.E. (Germany)	49*	0	1	-.96		
M.P. (Colorado)	28	1	0	-.12		
H.P. (Colorado)	18	1	0	+.28		
Total	155	2	1	-3.20	1.57	.12

* One trial on coin missing.

The displacement evaluations by Cadoret's method also gave meager results. Only E.O.S. had a deviation of some promise, but it was in the opposite direction from that of the other subjects. (See Table V.) One can conclude that no definite relationship between the call and the target was indicated.

TABLE V

DISPLACEMENT IN TERMS OF DISTANCE BETWEEN TARGET AND
RESPONSE IN LONG-DISTANCE PENDULUM EXPERIMENT

Subjects and Location	No. of Trials	Sum of Distances	Deviation	CR
E.O.S. (Missouri) . . .	60	178.2472	+ 19.3977	2.05
A.E. (Germany) . . .	49*	117.9348	- 8.0119	
M.P. (Colorado) . . .	28	35.4912	- 3.3983	
H.P. (Colorado) . . .	18	37.5314	- 5.5091	
Total	155	369.2046	+ 2.3884	.17

* One trial on coin missing.

The prediction from the response-target geometrical relationship on system A (coin) to system B (photograph) was made in the same way as described in the ND series, except for the Colorado subjects, who made trials only in one system each. E.O.S. had 10 scorable trials with 3 hits which is six times mean chance expectation. This is too small a sample for drawing definite conclusions, but by means of Tables of Incomplete Beta-Function $2P = .02$. This gives us an indication that this subject might have had a consistent missing pattern of the type found by Cadoret. If this assumption is correct, one could guess that Cadoret has found not a universal lawfulness, but a partial one, which appears only in the data of a portion of subjects, as is the case with many other lawfulnesses of ESP such as displacement, run salience, or double task effects, etc.

DISCUSSION

The explorations here described were made by means of a wide variety of methods, but, in spite of this, one can easily group the tests into ND and LD categories. The long-distance or map-dowsing parts of the experiment gave no definite indications of extrachance effect. The subjects, however, seemed to be strongly motivated and self-confident about their chances of success. Perhaps they were too eager to permit the successful functioning of ESP; or perhaps map-dowsing is a poor test of psi capacity, at least for these subjects.

The near-distance work, on the other hand, warrants more discussion, because all three subjects scored positively and at a good rate. In the experiment with dowsing for pipes the score was nearly twice that expected by chance. In dowsing for the ring and in the pendulum tests the score was more than twice mean chance expectation. The dowsing for pipes and the pendulum tests approached marginal statistical significance. The chance hypothesis on all three experiments considered together may be tested by pooling the probabilities of each series (.031; .083; .018) by means of Fisher's formula. When this is done the resulting χ^2 is 20.0 and $P = .003$ (6.d.f.). (The first session with Mr. Gwaltney, where the experimenter knew the targets, was omitted.) Therefore the chance hypotheses in these tests may safely be rejected.

Although the laboratory tests seemed to be properly safeguarded, one can seldom be absolutely sure in field tests. The experimenter, however, could not discover any flaws in the precautions taken in the latter, in spite of consistently watching for them.

Did the dowsing give results encouraging enough for practical application of this method? I think we should be optimistic, because the dowsters hit twice as often as one would expect by mere chance guessing. It is difficult to predict just how the method would work in a natural setting. The chronological decline in performance seemed to be very rapid. However, this might not hold true for the natural situation where fresh excitement might be provided for each new try. The beginnings of each of the three series were quite impressive. The first three sessions in each series gave 2.5 (pipes); 3.3 (ring); and 4.8 (pendulum) times more hits than expected by chance alone. This exploration, in my judgment, provides good encouragement for more systematic research on the problem of dowsing.

As far as the replication of Cadoret's experiment is concerned, my efforts were almost a failure. I found no definite indications for displacement measured by his method. The prediction from one system to the other seemed to work with only one subject out of the four tried, but even this is only supported by statistically weak evidence.

It is true that as far as the prediction from system A to system B is concerned, my method was dissimilar to Cadoret's. Discrepancies in procedure and evaluation might also be a factor. My guess is that Cadoret may have hit upon a lawfulness characteristic of ESP for a certain type of subject, but not as a generally applicable rule. However, his hypothesis and its implications for practical application are too important to be left with uncertainties. We need further experimentation.

OBSERVATIONS

In addition to the experience with my seven subjects, I have met and talked with several other professional and amateur dowzers. Most of them have constructed their own personal theories on dowsing. The theories are of a bewildering variety, and are naive for the most part, but they stick to them with all the passion of a Fundamentalist for his Bible.

I have wondered if there is any association between having a "theory" about dowsing and being an effective dowser? There might be one or more. The dowzers use these theories of theirs for housing a multitude of clues which they have observed in the movements of the rods and in their own bodily feelings. Minute differences in movements are associated in their minds with the depth of the water, the amount of water, the width of the "stream," soil layers, etc. My very vague guess is that a good dowser is a person who knows how to make sharp self-observations and to remember and systematize them for their use as the indicators of certain ESP contents. There seems to be a patiently and meticulously worked out language of muscular signs which acts as a channel of communication between the unconscious of the dowser and his conscious mind. It resembles symbolic dream interpretations, but the associations are more stable and permanently fixed. This sign language constitutes a private world which, in the main, has significance for the individual only.

It is also worth-while to remember Sir Charles Sherrington's question concerning the deeper significance of the movement of the divining rod.⁴ It would be interesting for Freudians and Jungians to apply their interpretations to the "rod" and to the symbols "water" and "mother earth." There are indications reached by depth psychological studies that the touching of genuine symbolism might release tremendous mental energies in the psyche. The dowsing situation might actualize some deep-seated symbols in the unconscious of the dowser which could provide very strong motivation for ESP to act.

On the other hand, the fact that one has a theory for which he stands or falls in itself may give a tremendous motivational charge to the dowsing procedure.

If these observations and rather vague inferences should prove to be true, they might open further possibilities for the control of ESP. Experimentation in this direction is much to be desired.

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⁴Barrett and Besterman, *op. cit.*, p. 275.