*James Randi and the Experimenter Effect*Madam,

One of the theories which a number of para-psychologists subscribe to is that there is an Experimenter Effect [1]. This effect is then used to explain why sceptics invariably obtain null results when undertaking research into PSI phenomena. It is therefore important to report an experiment which a noted sceptic designed and controlled which yielded positive results. I am pleased to announce that Mr. James Randi's 30-year search for evidence of claimed paranormal abilities, which includes water dowsing, is at an end [2]. In a recent set of experiments held in Sydney, Australia, on 29 July 1980, Randi *et al.* [3] designed

and supervised an experiment in which a number of alleged water dowsers were asked to locate water which was flowing in one of 10 plastic pipes, which were buried approximately 50 cm below the surface of a ploughed field. Precautions were taken to prevent the dowsers from observing which pipe was activated, the pipe through which the water was to flow was chosen randomly and the experiment was double blind. Randi et al. were completely satisfied that no chicanery could occur (to quote Randi [4]). A second series of experiments was performed, in which the dowsers attempted to find brass and gold. The metal was placed in one of 10 cardboard boxes (chosen randomly as previously with similar precautions as the experiment described above) and the dowsers were asked to ascertain which box contained the metal. The announced results were as follows [5]:

Experiment Trials Success Probability I trial

Brass 26 0 0-1

Gold 35 4 0-1

Water 50 11 0-1

Mr. Randi then went on to point out that 10 per cent was the expected result by chance and then went on to average the results of the three distinct experiments of the metal detection and water dowsing. His conclusion was the results were consistent with chance (13-5 per cent v. 10 per cent, which was not significant). On the basis of this analysis, Randi at this point dismissed dowsing as a genuine phenomenon.

The analysis of the above experiments illustrates dramatically the need for the trained scientist to design and oversee such experiments as opposed to flamboyant, ill-informed conjurers. Any first-year science student would realize that it is completely illegitimate to pool the results of unrelated experiments in any statistical analysis. To forestall any suggestion that pooling is applicable, since all the phenomena are purported to be of the 'dowsing type' and that the dowsers claimed 100 per cent accuracy, it only remains to state:

(a) The conditions for the experiments for water detection and metal detection

are completely different and so the experiments must be analysed separ-

ately

(b) Irrespective of the dowsers' claim of 100 per cent accuracy Randi is only

concerned with the existence of the phenomenon, or not, and not with the

level of performance [6]. In fact in the above experiments no level of

significance was quoted—again an indicator of his ignorance of scientific

method.

A standard analysis of the experiments [7] yields the following results:

Experiment Trials Successes Probability

Brass 26 0 0· 1292 (2-tailed)

Gold 35 4 0-469

Water 50 11 0-009 (2-tailed)

Thus we see that the water dowsing experiment results are significant at the one per cent level and so the Randi experiment suggests strongly that the water

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dowsers are capable of detecting using their dowsing techniques.

It is gratifying that a noted sceptic has been willing to be involved in this experiment and has been able to obtain successful results. As mentioned earlier, Randi was quoted as saying that the experimental results were not significant. The most generous interpretation of this statement is that James Randi was deliberately setting a mental exercise for his audience and knew full well that the results were significant, or, alternatively, that he has once again displayed his abysmal ignorance of the scientific method and the most elementary principles of statistics. The more likely explanation is the latter, since it is hard to believe that Randi would deliberately misinform his audience. James Randi could have availed himself of the scientific expertise of members of his experiment, but apparently did not do so. In view of James Randi's apparent inability to recognize significant results we are forced to question how many previous experiments yielded positive results without Randi recognizing them as such. We wonder whether Randi's 30-year quest actually came to an end 29 years ago.

In view of the undoubted success of his own experiment, James Randi should now make good his promise to present the $10,000 to the water dowsers but a more magnanimous gesture would be to donate the money to a worthy charity. However, a much more interesting point is this: does the above experiment invalidate the Experimenter Effect? Two possible explanations are that among the co-experimenters there were such 'sheep' to overcome the 'goat' characteristics of James Randi or that water dowsing is not a form of psychic phenomenon. I am inclined to the latter since there is some evidence for good dowsers being sensitive to small electromagnetic fluctuations.

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REFERENCES

1. A. Parker, Parapsychology Review (5) 21 (1974); C. Honorton, M. Ramsey and C. Cabbibo,/ of the

American Society for Psychical Research (69) 135 (1975).

2. see the Omni interview with Randi, 1980.

3. The experimenters were Randi, D. Smith (an Australian electronics entrepreneur), Rev. T. NofF,

Father L. Drake, H. Brady, B. Williamson and J. Mills. The last four have scientific training in

geology, biology and hydro-biology. Messrs. Williamson and Mills are involved in water manage-

ment.

4. This statement occurred on a TV programme, 'Randi in Australia', which was shown in

November 1980.

5. I am grateful to Dick Smith for supplying me with the experimental results.

6. See the Omni interview (especially p. 108) where it is stated that a demonstration of divining of'the

presence or nature of a concealed substance' under 'controlled conditions' would be rewarded by

payment of $10,000.

7. I wish to thank P. Lochert, Dr. I. Kirkwood (of the Mathematics Department, CIT) and Dr. G.

Watterson (Statistics Department, Monash University) for confirming my analysis.

Madam,

Mr. R. A. Roberts raises two questions (Roberts, 1980) in regard to an earlier article of mine (Lawden, 1980).

Given the system of two light bulbs A and Β and a human observer, ψ Α describes the state when A is seen to be lit and i/% describes the state when Β is seen to be lit. i// c {=} Λ«/Ά + ^Ψε describes a state in which the observer is unsure

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