

up to a brain-wave recorder (electro-encephalograph, EEG). The agent, in another room, concentrates on some famous picture in front of him, and waits until the EEG record indicates that the sleeping subject has reached the REM ("rapid eye movements") stage, which indicates that he is dreaming; then the agent awakens him and the subject reports his dream—or as much as he can remember of it.

Later on, more elaborate experimental procedures were used: but the paragraph above conveys the gist of them. Unfortunately the similarities between the picture and the reported dream can, once more, only be evaluated by statistical methods; and, however significant the results, they do not carry the same intuitive conviction as, for instance, the Guthrie experiments in which, when the agent drew a cross the subject drew a cross, and when the agent drew a fish the subject drew a fish. But if the picture shows a lake and the subject dreams of a boat or a bath-tub or a fish, the evaluation of "similarity" becomes more complex and less satisfactory, although associative images evoked by telepathy might be considered as remarkable as literal transmissions.

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The most important source of intellectual discomfort is the argument that ESP cannot exist because it contradicts the laws of physics. If parapsychological phenomena were restricted to telepathy alone, one could probably get around this objection by some sophisticated radiation theory—several of which have actually been proposed by various physicists both in Russia and in the West (see below). But telepathy is not the most puzzling of these phenomena. A number of researchers, starting with Rhine

himself, were reluctantly made to realise that some of their star subjects produced results showing more or less the same odds against chance if the target cards to be guessed had *not* been previously seen by the 'agent. Apparently they did not "read" the agent's thoughts; they seemed to read directly the symbols printed on the cards—including unopened packs fresh from the factory—without the intermediary of another human mind. This phenomenon was labelled "clairvoyance" and defined as "extra-sensory perception of objective events as distinguished from telepathic perception of the mental state of another person". Some form of "mental radio" had always been intuitively acceptable to open-minded persons, trusting that science would sooner or later discover how it worked; the perception-at-a-distance of inanimate objects was much harder to swallow, even with an unprejudiced palate. Gilbert Murray rejected the possibility of clairvoyance; other ESP researchers—for instance Sir Alister Hardy—accepted the evidence for it under protest, as it were. We shall see, however, that other eminent physiologists, such as Sir John Eccles, or psychologists such as Sir Cyril Burt, do not feel the same mental revulsion.

But even worse was to come. In 1934 Dr. Soal, then a lecturer in mathematics at University College, London, read about Rhine's experiments and tried to repeat them. From 1934 to 1939 he experimented with 160 persons who made altogether 128,350 guesses with Zener cards. The result was nil—no significant deviation from chance expectation was found.

"He was about to conclude," Louisa Rhine remarked, "either that the reports from the United States were phoney or else that Englishmen do not have ESP." She went on to suggest that the reason for Soal's failure was lack of emotional involvement on the part of his subjects: 'Soal's subjects came to him mainly in response

to advertisements. They were strangers to him, but willing to take the tests that were given in orderly, routine fashion by a careful and earnest experimenter who was doggedly trying to repeat someone else's [i.e. Rhine's] tests. After all, he was not carrying his own torch into the exploration of the unknown. His attempt accordingly was like a car without a sparking plug."¹⁷

Soal was on the point of giving up in disgust when a fellow researcher, Whately Carington, suggested to him that he check his reports for "displaced" guesses—that is, for hits not on the target card, but on the card which was turned up before it—or *after* it (Carington, who experimented with the telepathic transmission of drawings, thought that he had noticed such displacement effects in some of his subjects). Soal reluctantly undertook the tedious labour of analysing his thousands of columns of experimental protocols, and was both rewarded and disconcerted to find that one of his subjects, Basil Shackleton, had scored consistently on the next card ahead—i.e. precognitively—with results so high that chance had to be ruled out.*

Soal now set out on a new series of experiments with Basil Shackleton, supervised by other experienced researchers from the SPR (so that fraud would have had to involve the collusion of four or more people). The results were statistically so significant that the Professor of Philosophy at Cambridge, C. D. Broad, felt moved to write:

In my opinion psychical research is highly relevant to philosophy It will be enough at present to refer to a single instance, viz. Dr. Soal's experiments on card-guessing with Mr. Shackleton as subject, of which I gave a full account in *Philosophy* in 1944. There can

* S. G. Soal and F. Bateman, *Modern Experiments in Telepathy*. Faber & Faber, London, 1954.

be no doubt that the events described happened and were correctly reported; that the odds against chance coincidence piled up to billions to one; and that the nature of the events which involved both telepathy and precognition, conflicts with one or more of the basic limiting principles [of physical science].¹⁸

One particularly revealing feature transpired during these experiments. The time interval between two guesses which Shackleton found most congenial was 2.6 seconds. At this rate he consistently guessed at the next card to be turned up. If, however, the rate of turning up cards was speeded up to about half that time (an average of 1.4 seconds between guesses), then he guessed just as consistently the card which would turn up *two* ahead. In other words, he was somehow fixated on the event which would occur about two and a half seconds in the future. It should be added that the experiment was so designed that the agent who turned up the cards (in a different room from Shackleton's) could himself not know what the next card or the one after would be; if the agent wished to cheat, he would have to do precognitive cheating. Nor did the order of the cards depend on shuffling the pack. The order was determined by so-called "random number tables"—tables with columns of numbers arranged in a deliberately haphazard order or, rather, lack of order which are prepared by mathematicians for special purposes.

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But still worse was to come. From the early days at Duke University, in the 1930's, Rhine and his collaborators had experimented with throwing dice and "willing" a certain face to come uppermost. As Louisa Rhine relates, by 1934,