

## EVIDENCE FOR THE PARANORMAL: GAINS AND LOSSES\*

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In July 1882, when delivering the first presidential address to the Society for Psychical Research, Professor Henry Sidgwick commented 'That the dispute as to the reality of these marvellous phenomena, —of which it is quite impossible to exaggerate the scientific importance, if only a tenth part of what has been alleged by generally credible witnesses could be shewn to be true,—I say it is a scandal that the dispute as to the reality of these phenomena should still be going on, that so many competent witnesses should have declared their belief in them, that so many others should be profoundly interested in having the question determined, and yet that the educated world, as a body, should be simply in the attitude of incredulity.' (Sidgwick, 1882).

The scandalous dispute rages still, if anything more fiercely than ever, with believers in the paranormal publicly derided by vociferous opponents in the shape of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) and their popular magazine *The Skeptical Inquirer*. More seriously, the academic establishment, in the shape of the selection boards for learned journals, are rarely willing to publish reports of parapsychological investigations, and the prestigious periodical *Nature* opened its pages recently to a commentary amounting to wholesale denunciation of the subject (Marks, 1986). It seems that the very existence of the phenomena we are supposed to be examining remains open to doubt and psychical research activities over more than a century have yielded little or no gain. Indeed, from a believer's standpoint they may be said to have incurred losses, since many of the dramatic marvels of Sidgwick's days, such as spirit writings on enclosed slates and seance room materializations, are no longer available for investigation and are regarded by many psychical researchers themselves as discredited or unconvincing.

My intention in this talk is to review what I conceive to be some of the successes and some of the failures of the prolonged attempts to identify, examine, reproduce and understand paranormal phenomena. I claim no special expertise for this task, scientific or philosophical, merely the qualification of having been an avid follower of the parapsychological scene for approaching half a century and a contributor to the Society's Journal since 1941. While not seeking to deny the serious problems of evidence in psychical research, I shall argue that, notwithstanding the inconclusiveness of much of the work, some gains have been made and further progress may be expected.

The boundaries of a discipline are always somewhat arbitrary, but psychical research has suffered from having started off with almost no boundaries at all. The declared purpose of the Society for Psychical Research at its foundation was 'an organized and systematic attempt to investigate that large group of debatable phenomena designated by such terms as mesmeric, psychical or Spiritualistic'. The declaration went on to refer to 'residual phenomena' which were '*prima facie*' inexplicable on any generally recognized hypothesis (SPR, 1882).

Such a wide and negatively defined remit, followed as it was by a virtual shopping list of curiosities to be investigated, is unsatisfactory because it implies

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that anything and everything superficially mysterious should be included, from sightings of the Loch Ness monster to disappearances of ships and aircraft in the Bermuda Triangle. Indeed, I have been present at some recent discussion about whether astrology and UFOs are matters for psychical research. Given this ambiguity, the public cannot be blamed for classing psychical research with all the different cranky works displayed on the occultism shelves of popular bookstores.

I have much sympathy with those who dislike the name psychical research, because of its associations with mysticism, spiritualism and the psyche, and want to replace it with the more respectable sounding parapsychology, but not if that means, as was at one time apparently intended, limiting inquiry to guessing games carried out in psychological laboratories. The substance is more important than the name.

Modern definitions of the subject are more restrictive than the Society's original agenda, but some loss of content has meant a gain in precision. The Society now professes to examine 'faculties of man, real or supposed, which appear to be inexplicable on any generally recognized hypothesis'. Robert Morris (1985), the first Koestler professor of parapsychology at Edinburgh, defines the field more precisely still as the study of 'new means of interaction between organisms and their environment'. This seems better, although I would prefer 'as yet unexplained' to 'new'. An interest in psychical research does not commit one to any particular position on the status of such concepts as mind, soul or survival of bodily death. It is well known, however, that the founders of the Society, many of them eminent in science or philosophy, were preoccupied with such matters and were attracted to the subject by the prospect of obtaining data to counteract the then prevailing mechanistic and anti-humanistic stance of scientific thought (Gauld, 1968).

Somewhat unfairly, sceptics have been ready to dismiss work by investigators who entertain the possibility of a spirit world, or the idea that man possesses hidden powers transcending the apparent limitations of the flesh. Persons having such intellectually unacceptable ideas are considered self deluded. That may be so, but it does not necessarily invalidate the observations they make or the data they collect in the pursuit of their unorthodox concerns. Disinterested intellectual curiosity is an unreal abstraction. A scientific worker often has a personal stake in one hypothesis or another and hopes for a particular outcome when embarking upon an experiment. The essence of the scientific approach is not the absence of faith or of speculation but a willingness to put ideas to the test. So long as an inquirer is not so bigoted as to fail to look at evidence against as well as for his predilection, his personal beliefs or desires are not important. A strong personal involvement can be a spur to rigorous investigation. It is in readiness to find he is wrong that the psychical researcher can lay claim to a scientific approach.

That is the ideal, but as we all know desire can overcome reason, as it so often does in love affairs. On the traditional scientific view of the nature of things, living creatures, including ourselves, are the products of blind forces pursuing an inevitable rule-determined path without reference to anything human beings hold dear. Consciousness in general and individual identity in particular are mere temporary epiphenomena in a vast, impersonal cosmos. Shakespeare put it

neatly in Macbeth's despairing words 'Life's but a walking shadow, a poor player,

That struts and frets his hour upon the stage,  
And then is heard no more; it is a tale  
Told by an idiot, full of sound and fury,  
Signifying nothing.'

Evidence for paranormal phenomena, the existence of which seems to challenge this gloomy view, exerts a powerful attraction. Cynics argue that there is a tendency to exaggerate the evidence for the paranormal, the will to believe in self-comforting myths being so strong, but it might equally be argued that evidence opposed to accepted wisdom invites rejection. Modern definitions of the subject may scrupulously avoid implications of transcendentalism, but for many people interest in the subject undoubtedly stems from the hope that a new and more congenial view of man's place in nature may emerge. This does not necessarily make for an uncritical approach. Having reached an age when evidence for survival might be personally welcome, I find myself less rather than more attracted by the survivalist interpretation of the material produced by mediums. The awesome implications of some paranormal phenomena, such as premonitions of seemingly unpredictable events, can as easily provoke incredulity as credulity. With the passage of time even the evidence of one's own personal experience may come to be doubted.

I believe the correct approach is to analyse the evidence on its merits without paying too much attention to a priori reasons for disbelief or to the possibility of world shattering revelations. Going back to the originally declared aims of the Society that is just what they were said to be, namely 'to approach these problems without prejudice or prepossession of any kind and in the same spirit of exact and unimpassioned inquiry which has enabled Science to solve so many problems, once not less obscure nor less hotly debated' (*ProcSPR*, 1882).

Now let me turn from these somewhat philosophical reflections to what concerns me more, namely the basic observations on which depend the claim that psychical research is a legitimate study, that is the nuts and bolts of the subject, or, in modern phraseology its data bank. How substantial are the data, how far are they reproducible and how have they developed?

The contention that subject matter for psychical investigation does not exist is easily disproved. From the Society's first Census of Hallucinations (Sidgwick *et al.*, 1894), and from a variety of surveys since (West, 1948, Haraldsson, 1977; Palmer, 1979), to say nothing of the responses of numerous lecture audiences, it has been shown that a substantial proportion of the population claim to have had one or more psychic experiences. In Palmer's survey of some 600 townspeople and students in Charlottesville, Virginia, over half of the respondents reported at least one personal experience of extra-sensory perception. Veridical dreams were described by 37 per cent of the sample, veridical impressions or visions by 38 per cent. Haraldsson, in his survey of a national sample of the Icelandic population, obtained by means of various reminders answers from 902 persons, 80 per cent of his target sample. Of those who replied, 64 per cent reported one or more psychic experiences.

The Census of Hallucinations was primarily concerned with apparitions. It asked the question: 'Have you ever had, while awake, a vivid impression of

seeing or being touched by another being, which impression, as far as you could discover, was not due to any physical cause?' Discarding doubtful cases, such as non-vocal sounds and feelings of a 'presence', 9.9 per cent of the 17,000 persons questioned recalled such an experience, most often taking the form of a realistic visual apparition. My own attempt in 1947 to obtain answers from a Mass Observation panel to an identical question produced responses from 1,519 persons, 14 per cent of whom reported some such hallucinatory experience, again the majority of cases being realistic visual apparitions. My respondents were not available for interview, so there was less chance to eliminate doubtful cases, which may have contributed to the higher incidence of positive replies, but at least there was no evidence of any falling off of these phenomena after a lapse of half a century. In Palmer's survey, in answer to the same questions, 17 per cent of his American respondents replied affirmatively. An excess of auditory cases accounted for most of the difference. About 10 per cent of those answering positively said that the hallucination had conveyed to them an indication of unanticipated accident or death. In the SPR Census, 8 per cent of the apparitions described first hand (80 out of 994) were said to have correctly heralded someone's death. A few coincidences with deaths might occur by chance, but the actual numbers, it was argued, were many times more than chance alone could explain. However, since the Census investigators showed that waking visions are not so exceptional as previously thought, and since the great majority, even of the most realistic apparitions, carry no clear meaning and coincide with nothing special and tend to be quickly forgotten, much as dreams are forgotten unless relating them to someone fixes them in the memory, it becomes difficult to assess the significance of seemingly paranormal coincidences that have been preferentially remembered.

The SPR Census findings led to the theory that apparitions are telepathically induced hallucinations precipitated by a crisis happening to someone with whom the percipient has an emotional bond. Whether or not that is a correct interpretation, it would be foolish to dismiss so much anecdotal material as unworthy of investigation.

Psychical researchers are often criticised for having no testable theories to work with, being mere mystery mongers enjoying the collection of meaningless anomalies. Progress can be hampered just as much, however, by too heavy a concentration upon some favourite notion, such as crisis telepathy, or even by too great a preoccupation with evidence for extra-sensory perception. One might learn more about the relationship between inner worlds and the environment by studying the whole range of anomalous experiences and the contexts in which they occur.

Two other relatively common types of experience are *déjà vu* and out-of-the-body cases. In *déjà vu* the subject feels he is going through an experience for the second time; sometimes he thinks he can predict what will happen next. The sensation of floating out of one's body, which sometimes happens to a person apparently unconscious after an accident, may include the conviction that one is viewing the scene from above and seeing things that would be invisible from the body's actual position. In both types of experience the subjects may feel that they have exercised extra-sensory perception, but confirmatory evidence is hard to obtain. Episodes of *déjà vu*, with rare exceptions, are too evanescent to permit

any proper check on whether or not the feeling of being able to predict is illusory. Dr. Susan Blackmore (1978) has reviewed the published cases of apparent extra-sensory perception during 'out-of-the-body' experiences, but without finding convincing evidence. Either the subject might have obtained the information in a normal way, for instance, through being incompletely anaesthetised during surgery, or else their visions seem no more accurate than memory, inference or guesswork could produce. Many out-of-the-body experiences fail to tally correctly with the situation that is supposedly being viewed.

Palmer's survey suggested that the population could be roughly divided into three groups, those who report a multiplicity of ostensibly paranormal experiences, often of different kinds, those who report only one or two isolated events over a lifetime, and those who deny having any psychic experience. This would be expected on the popular belief that talent for varied psychical experience is limited to a minority of persons.

The psychologists Wilson and Barber (1982), in a seminal paper on what they term the fantasy-prone personality, propose that a capacity for creative fantasy underlies susceptibility to a range of phenomena including hypnotisability, visions, vivid recall of personal incidents and paranormal experiences. Their evidence came from a comparison of two groups of women. The fantasy-prone group were all rated excellent hypnotic subjects on tests of creative imagination and suggestibility and in their full and ready response to suggestions under hypnosis. They were mostly recruited from hypnotic studies and workshops conducted by the authors over a period of years. The 25 women who acted as controls were mostly students or graduates who volunteered. All but one of the 27 excellent hypnotic subjects were found to be fantasy prone personalities. Most of the time when they were children they had lived in a make belief world. Their imaginary playmates had been as real to them as actual people. When they pretended to be someone different they would completely lose themselves in the role. They had difficulty keeping their real and fantasy worlds separate.

As adults, the fantasy-prone women functioned normally in occupational and social situations and were capable of keeping their secret proclivities unknown even to close friends, even though their fantasies were so vivid that they sometimes confused memories of real events and memories of events they had imagined. Their fantasies were often accompanied by hallucinatory sensations. A majority reported having sexual orgasms when engaged in sexual fantasies. Though begun deliberately, once started a fantasy situation would assume a life of its own with the subject a passive spectator.

The fantasy prone group reported numerous psychic experiences, including automatic writing purporting to convey messages from spirits, apparitional appearances, seeing auras, powers of paranormal healing, dowsing, religious visions, premonitions and being able to give successful psychic readings of a person's past.

A rich fantasy life and powers of vivid recall can be advantageous in artistic callings, in obtaining creative inspiration and in producing feats of memory. The well known Russian psychologist Luria (1968) published a case study of a man who demonstrated a remarkable facility for remembering long lists of words and numbers by means of mnemonics. He was aided by exceptionally vivid imagery,

memories coming to him with almost hallucinatory intensity. His imaginative powers were so strong he could make his hand go cold by thinking of it dipped in iced water. He could switch off the pain of dentistry by inducing an out-of-the body experience in which he could watch the procedure from another part of the room.

The annals of psychical research contain even more amazing instances of creative fantasy, usually presenting in the guise of spirit writings or recollections of previous lives. One of the best known is the case of Mrs. Curran, an American housewife who, while supposedly under the guidance of a spirit called Patience Worth, produced, apparently without benefit of relevant education or literary training, long compositions written in a fair imitation of archaic English, including many witty poems and epigrams suggested to her by remarks made on the spur of the moment (Prince, 1927).

All this must seem at first sight discouraging to the believer in the psychics' literal interpretation of their own experiences. It suggests that the subjects may be misinterpreting as paranormal events their own imaginary constructions. However, if it could be confirmed that persons with a gift for fantasy frequently receive ostensibly paranormal impressions during the process of conjuring up apparitions, pictures in tea leaves or inspirational writings, this could provide a useful lead for research. Wilson and Barber point out that the autobiographies of some famous mediums of the past, such as Mrs. Leonard and Eileen Garrett, describe childhood experiences indicative of vivid fantasy life. Maybe we should be looking out for visionaries as subjects for experimentation. If paranormal impressions are apt to emerge during vivid fantasies, perhaps we should be trying to use hypnotically induced visions, or hypnotic suggestions of increased psychic powers, to promote extra-sensory perception in laboratory tests.

The suggestion that persons who report psychic experiences have unusual powers of creative fantasy, and may have difficulty distinguishing their fantasies from reality, points to a need for caution in assessing claims about paranormal impressions. Like dreams, many apparitions reflect the viewers' personal emotional preoccupations rather than any happenings at a distance. I am reminded of the apparition of the woman in brown investigated by Edward Osborn (1949) when he was Editor of the Society's Journal. The percipient was troubled by a figure which appeared repeatedly at the office where she worked, where there was a tradition of ghostly visitations. She agreed to be hypnotized and in response to questioning under hypnosis she remembered the events immediately preceding each of her apparitional sightings. On each occasion something had been said or done to remind her of a bombing incident in the war associated with a woman in brown, about which she had some deep and uncomfortable feelings. In a more recent case published by a psychiatrist (Schatzman, 1980) Ruth, the subject, was troubled by a recurrent apparition of her father who would appear sitting in a chair at her home and seeming to watch her. Under the doctor's guidance she found she could induce the apparition when she thought about it, making it come and go as she pleased, although previously she had believed it to have a will of its own. As her hallucinatory abilities came more under her conscious control Schatzman was able to demonstrate that the appearances were real enough to provoke physiological changes. For example, when asked to make the figure come between her and a

flickering light, the electroencephalogram to which she was attached showed changes in brain rhythms just as if a real person had obstructed the light.

Given the tendency to mistake self generated images for external events, it is important to check carefully, when an impression is thought to have some paranormal content, that it might not have been unknowingly produced by inference or expectation, or elaborated after the event in subsequent fantasy memory. Some investigators, such as Louisa Rhine (1981) have collected and analysed numerous reports that have not been rigorously checked by personal interview or searched for documentary confirmation. This is a questionable exercise. Keith Hearne (1984), in an analysis of questionnaires from persons claiming to have had premonitory experiences, sent to him in response to a request in a newspaper article, found an overwhelming preponderance of women and an excess of persons with high neuroticism scores and also high Lie scores on Eysenck's Personality Inventory. Such features might well be characteristics of persons prone to fantasy rather than of those who had genuine premonitions. I prefer the approach of investigators like Professor Ian Stevenson who look for corroboration before taking a case seriously or adding it to a collection to be analysed.

Individuals who have frequent psychic experiences could be of great help in providing the necessary corroboration by recording accounts of their dreams, apparitions or intuitions as they occur and passing the record to an independent witness before it is known if the portent will be fulfilled. It has to be admitted that this is rarely done and when it has been done it has not produced definitive results (Hearne, 1986). Persons interested in systematic investigation are rarely the type to have many psychic experiences, but there have been noteworthy exceptions, such as Eva Hellström, who founded the Swedish Society for Psychical Research. For some 16 years she kept a diary in which she noted impressions as they came to her. Some of these cases have been published by Stevenson (1970).

A clever way to evaluate premonitions was devised by Cox (1956). He compared the numbers of passengers on trains involved in accidents with the numbers on the same trains one, two, three and four weeks previously. On the assumption that conscious or subliminal presentiments would cause some prospective passengers to change their plans, one might expect, as he found, significantly fewer passengers on the days when accidents happened. The idea was good, but unfortunately Cox did not control for bad weather which might account both for an increased likelihood of accidents and fewer passengers. As Keith Hearne has suggested, examination of the distribution of late cancellations of air flights in relation to air crashes might provide better data.

If spontaneous psychic impressions occur as frequently as surveys suggest and are as striking as the descriptions imply, one might expect to find a fair number of examples fully documented and investigated and sufficiently accurate to provide convincing evidence of paranormality. In practice, cases that are good or near perfect from an evidential point of view are rare, and I find this curious. I asked Andrew MacKenzie (1982), who has been collecting and publishing cases for many years, to select one he considered outstanding. He referred me to the case of Johnnie Minney.

Mrs. Herbert, the percipient in the case, lived in Australia and had not been in

England since she was 18 months old. She came to stay with a friend Mrs. Ross who had herself lived in Australia, but for the past eight months had been residing at Vicarage Farm, Waresley, Huntingdonshire. Mrs. Herbert arrived there on 7 July 1966, only two days after landing in England. During the first night of her stay she was, as she describes it, awoken by a figure of a boy kneeling by her bedside, with a thin, drawn face and pleading look. She felt his hands clawing at her arm and knew he wanted to call his mother. Eventually she did call 'Mummy' and the figure disappeared. Next morning at 8.0 a.m., when Mrs. Ross brought her tea, she related her experience. It had impressed her greatly, for she kept mentioning it as she was being taken out sight seeing. That evening Mrs. Ross contacted Miss Minney, who had lived in the house all her life and now occupied separate quarters in the building, and asked if anyone had had any ghostly experiences in the place. Having heard what Mrs. Herbert had 'seen', Miss Minney explained that her young brother had died in the room where Mrs. Herbert was sleeping many years before (to be precise on 25 February 1921). He had contracted meningitis and died after months of wasting illness and his appearance tallied with Mrs. Herbert's vision. Miss Minney's aunt was visited. She was aged 95, but could remember the time when she was keeping house at the farm and the boy fell ill while his parents were away. During the illness he often used to call out for his mother during the night. Mrs. Herbert had hardly spoken to Miss Minney before this and could not have known this history. She is reported to have had 'one previous experience of a similar character, about which she is reluctant to speak' (Lambert, 1966).

The case is documented by a report set out by Mrs Ross, dated 10 July 1965, supplemented by a confirmatory letter from Mrs. Herbert, written after her return to Australia and dated 24 February 1966, and a brief signed statement from the old aunt. The story is most unlikely to have been fabricated. Two of the witnesses were interviewed by SPR investigators. The most plausible natural explanation is coincidence, Supposing that Mrs. Herbert was in the habit of experiencing visions, this one may have been remembered simply because it happened by chance to coincide with some past event. The closeness of the correspondence could have been over-played, since no written version of the vision was set down until after the percipient and the informant had talked together. In effect, like all such cases, even the most impressive, this anecdote falls a little short of conclusive evidence for the paranormal. Had the vision communicated more detail, such as a specific time of death or an unusual birthmark, chance coincidence would have been ruled out, but that degree of detail never seems to emerge.

For some years now a small committee has been dealing with accounts of spontaneous experiences of an ostensibly paranormal kind sent in to the Society. Follow up inquiries are made whenever a report looks promising, but little worthwhile has been obtained. Indeed, the disappointing rarity of clear and evidential cases, and the vast number that either do not purport to involve paranormal cognition or do not have any substantial claim to a paranormal element, or any corroboration of it, makes some researchers conclude that anecdotal evidence of this kind has little scientific value.

The Census of Hallucinations was concerned with mental impressions, but reports of spontaneous paranormal physical happenings are not uncommon.

Wilson and Barber (op cit) noted that the experiences reported by their fantasy-prone ladies included a belief that their presence caused electronic apparatus to malfunction, an effect that has recently been investigated by Michael Shallis. Unexplained movements of objects typically occur in households during outbursts of so-called poltergeist activity, but similar incidents are also reported by individuals who have experienced them as isolated events occurring when they have been on their own. If we are to study reports of paranormal intuitions, perhaps we should also consider these rarer cases of unexplained physical effects. Palmer's survey included such incidents and Charles McCreery has made a collection of such cases in order to study the characteristics of the persons who report them.

For many years the investigation of paranormal physical effects was unfashionable among the psychical research establishment. Whereas incorrect mental impressions can be excused without accusations of deliberate lying, tangible physical effects are either genuine or fake. Sceptics attribute the present dearth of physical mediums to technological developments which now permit filming and recording in spite of the darkness and other restrictions commonly imposed at seances. As we all know, notwithstanding some impressive case reports (Cornell and Gauld, 1979), poltergeist occurrences are tantalisingly difficult to investigate since the phenomena usually cease when an investigator arrives. According to press reports, however, there is no lack of new cases to challenge investigators. With the development by Cornell and others of apparatus for registering physical effects while the investigators remain at a distance, more definite data may emerge. Meantime, one can understand why physical phenomena have acquired an aura of unrespectability. It is ironic, therefore, that in recent years the best evidence for paranormal interaction between man and the environment in the laboratory should concern physical effects, but under the more respectable name of psycho-kinesis.

Fascinating as field work may be, experimentation holds out a better hope of discovering how paranormal effects come about and a better prospect of attracting the scientific interest and talent needed to develop the subject. The effects need to be brought under control and reproduced under defined experimental conditions where they can be measured and their nature studied closely and systematically. It has sometimes been contended that this is in principal impossible, that extra-sensory impressions are essentially spontaneous and that attempts to induce them artificially yield either nothing at all or only pale and fleeting hints of the rich experiences of real life. My own view is that while the anecdotal evidence points to the existence of paranormal cognition, the impressions are usually vague and embedded in much irrelevant fantasy. They are not as unlike the elusive and fleeting effects obtained in the laboratory as is often suggested.

The attempt to obtain ESP under test conditions started long ago. The early hypnotists used to ask their entranced subjects to try to say what was happening at some distant scene. In the first years of this Society investigators found gifted subjects who seemed able, by means of what was considered to be thought transference, to describe or draw a picture that was being looked at by someone in an adjoining room.

Two problems beset these early trials, namely the undetected transfer of

information by normal means (by sensory cues, such as pencil sounds, or by rational inference about the targets likely to be chosen), and the difficulty of knowing how much to discount as correspondence by pure chance. A first breakthrough occurred when Rhine popularized the use of card guessing. Cards are easily concealed and, when shuffled or arranged into a random sequence, their order cannot be inferred, and the probability of guessing any particular number of symbols correctly by chance can be calculated rather easily. Rhine claimed initially that something like one in five of unselected student subjects could beat chance in simple card guessing tests. Had that finding proved repeatable, dispute as to the reality of extra-sensory perception would have ended there and then, around 1935.

Having made this advance the subject lost ground once more as it became apparent that Rhine's pioneering results were not being confirmed by others or even by his own collaborators' subsequent work. As techniques were refined, as rigorous methods of randomizing and recording were introduced, scores dwindled to chance levels. Every now and then, however, some experimenter would report small but significant extra-chance effects which made it impossible in all fairness to dismiss entirely the earlier claims.

For many years Rhine and others in his wake persisted in the hope of eliciting stable, extra-chance scores from unselected subjects, but the goal that had once seemed so near retreated further and further. Many ruses have been tried to improve performance. Electric shocks have been given for wrong guesses. Erotic pictures have been substituted for the plain geometrical symbols normally used as targets. Subjects have been given drugs, euphorants, stimulants, sedatives and hallucinogens. Autonomic responses, such as psycho-galvanic reflexes, have been used to detect non-verbal responses to targets. Hundreds of subjects have been made to guess simultaneously at the same target in the hope that a majority guess would prove more efficient. Trials have been carried out with and without immediate feedback of the result of each guess. On the assumption that subjects are easily discouraged, great efforts have been made to maintain a pleasantly informal, relaxed atmosphere, to avoid being too forcefully demanding and to encourage expectation of success. Supposing effects are influenced by mood, subjects have been allowed to choose their own time to try, and many tests have been done with subjects sitting in their own familiar home surroundings recording impressions of distant targets. Supposing that motivation matters, subjects have been offered prizes for high scores. Experimenters have given up forced choice guesses and reverted to free response impressions of picture targets. Supposing that an emotional bond is needed, identical twins and pairs of lovers have been enlisted as participants. In an effort to capitalize on beginners' luck, which might not be luck at all, only the first few guesses have been counted. Subjects' feelings of confidence have been used to try to point the guesses most likely to hit the target. None of these expedients, nor any of the many others tried, have proved sufficient to induce regular, repeatable positive results.

Experimentation went through a long and confusing phase when it was fashionable to look for the disguised responses that may have concealed paranormal effects. For example, subjects might be calling correctly at the start of a run and then incorrectly later, so that a positive score at the outset would be neutralized by a negative score subsequently, the so-called decline effect. If this

could be shown to be a consistent pattern it would be just as much a significant extra-chance result as an excess of correct calls. Some subjects with a negative attitude might be consistently mis-calling, counterbalancing others with positive scores. Dividing subjects into groups of sheep and goats, believers and sceptics, might yield contrasting blocks of data with significantly different total scores. Alternatively, some subjects might be unwittingly focusing their aim on the target ahead or behind instead of guessing the one that was asked for. Examination of all these secondary effects led to much statistical argument, since the effects in question were usually slight and the application of a multiplicity of analyses retrospectively might produce spurious positive results by chance. This might not have been such a problem had the effects been consistent, but there was no guarantee that with different subjects or different experimenters or even with the same personnel on a subsequent occasion that the same odd pattern would be repeated. One of the consequences of this trend was increasing complexity in the statistical methodology used to back the claim that extra-chance effects were present, and some bewilderment and loss of interest on the part of persons who had been keen supporters of the enterprise when it had shown promise of straightforward, understandable, unambiguous results.

In the midst of this morass of arguable results, every now and then a star subject emerges like Pavel Stepanek (Ryzi and Pratt, 1963), who could produce a consistent excess of correct guesses over a long period, thereby providing a tangible effect obvious to all without the application of elaborate statistics. Unfortunately dependence on star subjects has its drawbacks. Conditions that favour a star's performance may be peculiar to that particular subject and not generalizable to others. Few experimenters have access to a star, and those who do may be tempted to keep the subject to themselves, knowing that the precious flow of clear results may dry up at any moment. This provokes suspicion and criticism. The tragic example of the late Dr. S. G. Soal whose work with the star subject Basil Shackleton was vitiated when evidence was found that some of the target records had been falsified (Markwick, 1978) illustrates the dangers of working in self-imposed isolation. Because his research had been hailed at the time as the most striking demonstration of extra-sensory perception ever produced in Britain, this posthumous exposure set back the reputation of the subject considerably.

The possibility of experimenter fraud has to be taken seriously in this subject, not only because there have been several known and suspected examples, but also because the elusiveness and apparent dependence of the effects upon the personnel involved in the research, makes it impossible to conclude from failure to confirm a particular worker's findings that his claims were necessarily deceptive or based on incompetence. The best protections are team work, the spread of research into a variety of university centres, and the development of automated experimental procedures and recording devices which reduce the scope for human error and deception. All of these features are becoming more common.

The greatest disappointment in experimental research so far is its failure to identify the necessary or the limiting conditions for paranormal interaction with the environment. Each star subject and each successful experimenter produces somewhat individualistic results. There is no general agreement and no

consistency about the sort of task best suited to elicit paranormal effects. No way has been found to train subjects to perform better or to learn to distinguish their paranormal impressions from random guesses or irrelevant images. It is still disputed whether the evidence points to paranormal faculties being limited to a gifted few or detectable in many people given favourable circumstances. Apart from the suggestion that a degree of extraversion and a willingness to accept the possibility of the paranormal increases the likelihood of some result being obtained, no sure way to identify gifted subjects has been found. We do know, however, that the experimental effects reportedly occur whether or not the target is in someone's thoughts, or is at a distance, or is not yet selected when the guesses are recorded. Moreover, paranormal interactions go both ways, events in the environment may influence a subject's thoughts, and thoughts may affect events in the physical world.

We do not seem to have got very far in a 100 years of inquiry, but perhaps we expect too much. The phenomena are bafflingly complex and elusive, and the resources available are miniscule in comparison with what is thought necessary in conventional science. There has been, however, an undoubted advance in methods. With the development of automatic recording and the use of computers, the dull routines of hand counting and checking, and the errors that may occur in the process, can now be eliminated. Experiments can be carried out more swiftly and smoothly and presented to subjects more attractively. For example, guessing tasks can be incorporated into video games and the results electronically recorded and printed out on the spot.

The link between hypnotic states, vivid imagery and ESP, mentioned earlier in connection with Wilson and Barber's fantasy prone personalities, has received some support from experimental work. Many demonstrations of apparent divination and remote viewing by hypnotized subjects were reported in the nineteenth century (Dingwall, 1967/8). Recently, Ephraim Schechter (1984) has analysed published accounts of ESP experiments in which performance under hypnotic induction and under non-hypnotic control conditions were compared. Performance in the hypnotic state was higher than in the control condition in 16 out of 20 studies in which direct comparison was possible, the difference being statistically significant in seven instances, an outcome to be expected by chance less than 1 in 10,000 times. In no case was the performance significantly higher in the control condition than in the hypnotic condition.

ESP testing under the Ganzfeld or semi-sensory deprivation condition, which facilitates the development of vivid imagery, is also said to yield an unusually high incidence of positive results from a variety of different laboratories. Neither hypnosis nor Ganzfeld conditions, however, guarantee positive results or solve the problem of how to produce effects to order.

As illustrations of the change which modern technology can bring to the subject examples come to mind of laboratory researches in psychokinesis. The earliest attempts to reproduce paranormal physical effects experimentally utilized delicately poised physical systems, such as chemical balances or pivoted needles, in order to detect small forces, but the only movements obtained were produced by air currents and similar artefacts. Then Rhine, once more the innovator, hit upon the use of dice, asking subjects to will a predetermined face to fall uppermost. Dice throwing became the fashion, encouraged by the thought

that the outcome of random movements might be more amenable to influence than static systems. As usual, the pioneering work was open to criticism, and as with ESP testing the earlier straightforward PK results were superseded by secondary decline effects. In this instance, however, refinements of testing methods seem to have led to smaller, but more stable results.

The first example is the work of McConnell and Clark (1985) at the University of Pittsburgh. In one series of tests six dice were released by a remote control device to fall down a chute and onto a horizontal tray on which grid marks had been drawn so that the position of each die, when it came to rest, could be easily recorded. Five hundred students were enlisted as subjects. For the first six releases they were asked to will the dice falling with low faces (1, 2 or 3) uppermost to land on the left half of the tray. For the next six releases they had to will them to be displaced towards the right side. The students were under surveillance by a wide angle camera and by an experimenter, while the fall of the dice, from release to coming to rest, was followed by a cinefilm, which also registered automatically the time and sequence of each release and the instruction as to aim. This ensured that every trial was included on the physical film record, which was later machine read (as well as manually checked) when the results were analysed. A significant overall tendency for the dice to veer in the willed direction was found, the extent of the deviation being such as might be expected by chance once in two hundred times. The subjects in these tests had been given a choice as to which experimenter stayed in the room during the test, and it was found that the identity of the person present was significantly associated with the size of the effect observed, a result in line with the suggestion that PK effects are responsive to human factors. The McConnell trials represented an enormous effort, spread over a period of years, yielding a detectable and well controlled but very small effect.

In the more recent work of Jahn and his collaborators at the School of Engineering at Princeton University (Nelson *et al.*, 1986), a micro-electronic noise source was used to generate a random train of positive and negative pulses at rates of 100 or 1000 per second. The device sampled for each trial a sequence of 200 pulses, counting the numbers of positives and negatives. The subject, according to a predetermined aim, wills the output at each trial towards either the positives or the negatives. Thousands of such trials can be carried out in a relatively short time and the cumulative deviation from a theoretical mean (or from a baseline produced by the machine when the subject is not willing) can be charted. Very small but consistent effects were produced by different subjects, yielding total deviations to be expected by chance once in many thousands of times. Some subjects gave results in accord with what they had been asked to aim for more or less invariably, others did so only when allowed to choose for themselves the direction of effort, or only when the trial was initiated manually rather than automatically. These peculiarities Jahn calls subject 'signatures'. They confirm that the effects are influenced by each subject's thoughts and conceptions.

Jahn has used other types of random physical process and found that the effects are substantially independent of the type of system the subjects are trying to influence. It would appear that given the facility for recording vast numbers of trials quickly without great effort, subjects capable of producing small but

consistent effects are not hard to find. If this is so, and if the results are not the product of some feature particular to Jahn's personality or his laboratory setting, we may at last have the tangible and more or less reproducible effects experimenters have so long been seeking. Of course these low level PK effects are puny and of a very different order from the macro PK effects of poltergeists, metal bending and seance room phenomena. The connection between these experimental effects and the field reports has yet to be explored.

Another remarkable series of experiments in psychokinesis was published earlier this year (Schmidt *et al*, 1986). First, a supply of random six digit numbers was generated by computer. These were seed numbers to be fed into a computer programmed with a suitably complex mathematical conversion formula to generate from the seed a quasi random sequence of ones and zeros which is virtually unpredictable but completely predetermined by the programme. The computer counts the number of times each digit appears in the sequence and produces a total score, which may be high or low according to whether there is an excess of ones or zeros. Each seed number was paired with a randomly determined target, high or low. The subjects' task was to will the scores to come out high or low accordingly. A variety of precautions, too numerous to describe now, were included in the experimental protocol. These involved collaboration between several experimenters and the setting of predetermined numbers of trials to minimise the scope for experimenter error or fraud. In the event, in a total of 1,040 trials (that is seeded computer runs) scores deviating slightly towards the willed direction were obtained sufficiently consistently to produce odds of 300 to 1 against the result being due to chance.

The result was not only strong evidence for a small but consistent paranormal effect, it also pointed to an extraordinary feature in the anomalous correlation between the human factor and the machine output. Apparently, and one must stress apparently, subjects were able to alter retroactively, by an act of will, sequences that had been already fixed and actually recorded, for copies of the seed numbers, together with the sequences they generated, had already been deposited with a witness before the subjects tried to exert their influence. Effects such as this lead to philosophical speculations about non-casual interactions or observer-dependent physical events which I am incompetent to discuss. At least this research suggests potentially more interesting and challenging notions than the simple telepathy hypothesis that originally inspired parapsychological experimentation. This is surely progress of a kind.

To conclude: it would be wrong to despair because progress is slow or because phenomena seem to retreat in the face of critical scrutiny, for they never disappear altogether and new and more challenging findings continue to emerge. The scope for research, both in field work and in the laboratory, is greater than ever. Many borderline mental phenomena, such as enhancements of memory or other abilities under hypnosis or in dissociated states, 'out-of-the-body' experiences, subliminal perception, visionary phenomena of all kinds, including lucid and induced dreams, and the magical happenings reported to anthropologists, which in some cultures are accepted as matters of fact, may involve paranormal elements. Investigation into all these things would benefit from parapsychological input, regardless of the ultimate findings. In laboratory work, random number generators and computerized protocols, and use of Ganzfeld

and hypnotic conditions, show some promise of at least partial replicability. These techniques need to be exploited further, not just for demonstration purposes, but to explore the processes at work. Other lines of research, such as the use of animal subjects, need to be revived. There is no shortage of work to be done. If this Society can continue to encourage, promote and publicize such endeavours for another 100 years the scandalous situation noted by Professor Sidgwick may finally be resolved.

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