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PROCEEDINGS OF THE FIRST
**CANADIAN CONFERENCE
ON PSYCHOKINESIS**

AND RELATED PHENOMENA

JUNE 1974

NEW HORIZONS RESEARCH FOUNDATION

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Professor Roger Smook, *Department of Philosophy, University of Guelph.*

Dr. Alex Tanous, *Psychologist, Mental health worker.*

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*Apologies were received from the following invited participants who were unable to be in Toronto at the time of the Conference, Professor Arthur Abrahamson, Chairman of Toronto Society for Psychical Research, Professor John Beloff, Department of Psychology, University of Edinburgh, President S.P.R. (U.K.), Mr. Uri Geller, Professor Wyman Harrison, Department of Geography, University of Toronto.

EDITORIAL NOTE

The Conference took place 18th June, through 28th June. Plenary sessions for reading of papers were held on 20th, 22nd and 23rd June together with discussions, showings of films and videotapes and demonstrations of psychokinesis by Matthew Manning and by the "Philip" group. All other proceedings were informal and consisted of discussions and experiments with Dr. Tanous, Matthew Manning, and the "Philip" and "Energy Concentration" groups of the T.S.P.R. The Conference Chairmen have given a concise account of the experiments and demonstrations, and it has been inserted prior to the report of the plenary sessions (1 through 7 below). The latter report was prepared by the Editor from the audiotape record made by the Recording Secretary and the texts have been approved by the speakers. To simplify presentation and minimise printing costs answers to questions have been incorporated in the texts. The report though essentially accurate does not pretend to be completely verbatim.

Report on Demonstrations and Experiments performed during the Conference

DR. A. R. G. OWEN and DR. J. L. WHITTON

The following report has already been published in part (Owen, 1974; Whitton 1974).

(a) *Experiments with Matthew Manning.*

On 18 June Professor Josephson and Robin Owen tested Matthew Manning's ability to deflect a compass needle. When the experimenters verified that the subject was not bearing a watch or other metal object, Matthew passed his hand over the compass at a distance of about six inches above it. The report says:

The needle started at rest. When M.M. moved his hands, the needle moved about. The needle stopped immediately afterwards, in spite of the fact that it was very weakly damped so that it would have been expected to continue swinging for some time (*Brian Josephson, Robin Owen.*)

A similar experiment was recorded next day, 19 June, on videotape.

That evening Michelle Whitton and Robin Owen testified in writing that while Matthew was holding the stem of an *Oneida Stainless* fork so that the fork was fully in view the head of the fork bent back slowly nearly 180° . Dr. Owen, Robin Owen and Dr. Whitton recorded their testimony as to two other forks that had slowly deformed themselves while under observation in Matthew's hand. Together with Michelle Whitton they deposed that at about 8.15 p.m. a knife of somewhat robust steel construction — *Ashberry Stainless, England*, which had not been touched by Matthew, was in Iris Owen's hand about twelve feet from where Matthew was sitting. The witnesses noticed that it was in process of bending. It continued to deform until the blade was about 10° away from its original plane.

The following entries are taken from the logbook for 20 June:

At 2.03 p.m. Matthew bent an aluminium key (*Weisser, E41165*) to an angle of 5° about $\frac{1}{4}$ in. from the points (*J. Whitton, W. McQuestion*).

Two of the keys from my keyring (Volvo car key, *Taylor Lock Co. V79D*; housekey, *Cole National U.S.A. CO7*) taken off sepa-

rately — about one hour apart — were bent while Matthew held them in his hand. He did not leave the room nor did he exert any muscular effort on them that I could note (*J. Allen Hynek*).

At approximately 6.10 p.m. Matthew asked me for a key to attempt to bend. I removed my house key (*Dexter 28469T*) from my chain and handed it to him. Matthew clasped the key in one hand. Without leaving the room and with no visible muscular effort Matthew succeeded in bending the key. After it was handed back to me, the key continued to bend. (*Allen Spraggett*).

About 4.15 p.m., Professor Emerson gave Matthew a key which Matthew held in his hand. It bent through about 15° at a point about ½ in. from the tip. (*A. R. G. Owen, J. N. Emerson*).

About 4.00 p.m. while being watched by twenty or so people whose questions he was answering Matthew successively received two of Bruce Raymond's keys and held each in turn in his hands without applying any muscular effort. The keys were successively bent each in the space of about five minutes. One was the key of Bruce Raymond's apartment and had to be placed in a vice and subjected to ten minutes vigorous hammering by the building superintendant before it was straight enough to insert into the lock. Later that evening while driving with Bruce Raymond Matthew held in his hand a key (*F9, Fleur de Lys*, previously flat), supplied to him by Robin Owen. After about 40 minutes it was curved through 90° at about ¾ in. from the tip. During the night it continued to bend. On 21 June it was photographed but bent further and had to be photographed again. In its final state it had bent about 150° and was split through one-third of its width. (*A. R. G. Owen, Robin Owen, Bruce Raymond*).

About 6.45 p.m. Matthew held Margaret Sparrow's key (*Dominion Lock Co. Montreal — 145*) in his hand for a few minutes. It divided into two pieces the cleavage being at least ½ in. from the tip. (*M. H. Sparrow, A. R. G. Owen*).

The following items were recorded under 21 June:

At 5.22 p.m. I was sitting in the office next to Matthew who was telephoning Peter Bander in England. He was holding the receiver with one hand. Into the other I put a key (*Dominion Lock Co. Montreal DL6*). He held it quietly in the palm of the one hand. After five minutes he finished speaking and opened his hand to look at the key which had divided through at a place about ½ in. from the tip. (*A. R. G. Owen*).

About 9 p.m. Mr. D. C. Webster held one of his own keys (attached to his keyring) by the haft. Matthew briefly put his fingers round the blade which immediately bent. Matthew then did exactly the same with a key belonging to and held by a visitor — a very senior member of the University of Toronto (*D. C. Webster, A. R. G. Owen*).

At 11.15 p.m. Matthew bent a key (*Russwin 7-N, BA-1*), belonging to the front door of Laurentian University, without using any apparent physical force. (*M. A. Persinger, J. L. Whitton*).

All the keys mentioned above were ones that had been in use. However on 2 July 12 new identical uncut brass key blanks and 4 steel ones were bought at Reilly's Lock Shop, 16 Isabella St., Toronto, at 4.15 p.m. Between 5.30 and 6.30 p.m. Matthew bent one steel key, and five brass keys and bent and divided a sixth brass key. About 6 p.m. the next day Matthew was holding a brass key blank; it bent through about 30°. It was then noticed (by A. R. G. O. and R. E. O.) also to be divided half-through. While Matthew was still holding the haft the division in the shaft visibly increased as if there was a steady loss of metal. After about 10 minutes it had divided completely.

On 19 June Professor Douglas Dean took a number of Kirlian photographs of Matthew's fingers, using a portable Kirlian apparatus whose Tesla coil generator gave about 25,000 volts A.C. in the range 0.1 to 1 megahertz in pulses at the rate of about 50 per second. Polaroid Color-packs type 108 were used in the sawn-off back of a Polaroid camera which was sealed to a double black camera bag (devised by Robin Owen).

Matthew put his right hand into the bag with the middle three fingers in contact with the (back of the) polaroid film. He attempted so far as possible to maintain a normal resting physiological and mental state during a two second exposure as determined by a timer. Matthew then moved the same fingers to another location on the film and switched from his normal state into the state he is in when bending metal, that is, he turned the "power" on. A two second exposure was given, and repeated with Matthew's fingers in a third location but Matthew again in a normal relaxed state. In the resulting photograph the aureoles or coronas were much brighter for the "powered" state than for the normal state. In addition, whiteness filled up the "finger-prints" right into their centres giving a cloud of brilliant white. I have never seen that before.*

In further experiments Matthew was able to "concentrate the power" into a narrow area and also to direct it into the middle finger only. In an experiment with two Kirlian devices, one for the right and the other for the left hand, which, by trial, were calibrated for approximate equality, he was able to make the power go into the right but not the left hand and *vice versa*. (Douglas Dean).

(b) *Frequency analysis of electroencephalograms.*

On 22 June and several subsequent occasions one of us (J.L.W.) in the presence of various of the Conference participants (including Professors Hynek, Josephson and Persinger and Drs. Highman and Kurtz) using repeated sampling determined the power spectrum of Matthew's EEG in each of five states, (i) resting with eyes open, (ii) resting with eyes closed, (iii) making head, neck, and eye movements, (iv) talking,

*See the jacket of Manning (1974).

and (v) attempting to bend a key paranormally. As described in Whitton (1974) the distribution of power in Matthew's EEG spectrum when he was in state (v) was quite different from that in any of the other states. It was characterized by a large concentration of energy in the Theta waveband (i.e. frequencies between 3 and 7 Hz.) and also by a linear relationship between the peaks in the Theta, Alpha (8-13 Hz.) and Beta ranges conferring a peculiar appearance on the graph of the power spectrum so that it was dubbed a "ramp" function.

The striking and unexpected nature of this result is best conveyed by noting that spectra of this kind with a major concentration of energy in the Theta band are only very rarely encountered in the waking state; instead, they are characteristic of sleep in stage III or stage IV.

The experiment was repeated with Dr. Tanous as subject in states (i) to (iv). In the fifth state (v) he did not attempt paranormally to bend metal, but entered his OOB state. The experiment was repeated again with a third subject whose state (v) related to an attempt to view the experimenter's aura. Interestingly enough both subjects exhibited a large amount of Theta in their (v) state. It is possible therefore that production of Theta may be common during paranormal operations.

(c) Demonstrations by the "Philip" group.

On several occasions the "Philip" group demonstrated the "Philip" phenomena — both table movement and raps in "answer" to questions — in the presence of Conference speakers and other participants. In fact many of the visitors were incorporated in the group and sat or stood at the table, put questions to "Philip" and received answers often by raps under their own hands. Often the raps were audible several feet away from the table.

CONFERENCE PROCEEDINGS

1. Opening of the formal sessions.

Opening the plenary session of 20th June, Dr. Owen said:

Some of the distinguished participants have already spent some time in discussion and experiment at the informal sessions of this Conference. It is now the pleasure of myself and my Co-Chairman, Dr. Whitton, to welcome also those Conference speakers and participants whose duties prevented them from arriving earlier.

I would like to introduce our two Conference Presidents, William McQuestion and Donald Webster, who are the people who have made this Conference possible. Mr. McQuestion helps our work at New Horizons in various ways. At the moment we are feeling especially grateful to him because he very generously undertook to pay the costs of arranging this Conference. I have been told by several of our Toronto associates that, in their opinion, the mixture of personalities and talents represented at the Conference will be a memorable one and is likely to bring about a turning point in our understanding of psychokinesis. I would therefore very much like to express our appreciation to Bill McQuestion.

Our other Conference President, Donald Webster, is the original source of the inspiration and impetus which our institute, New Horizons, is contributing to the study of psychokinesis and related problems, because he is the founder and President of New Horizons and its long-term benefactor. I trust that before too long his effort and foresight will prove to have been worthwhile and to have led to important additions to human knowledge. While science is, and should be, truly international (as exemplified by today's gathering) I am sure that no one present will resent my expressing the additional hope that these initiatives will also contribute to Canada's scientific standing and reputation for introducing new things into the world.

2. The Empirical Evidence for Psychokinesis.

Dr. A. R. G. Owen: The evidence for psychokinesis.

Occasionally in everyday life a "kinetic" event takes place, e.g. the unexplained flight of a spoon described in *New Horizons* Vol. 1. No. 1. Events which are in some degree willed or intended, can properly be called "psychokinetic". The classical work in this field was done in Professor J. B. Rhine's laboratory where subjects demonstrated minute effects on the fall of dice.

More recently films have been made showing Mde. Mikhailova in Russia moving a compass needle, or the whole compass, or other objects weighing about an ounce, across the surface of a glass table.

Three years ago we ourselves made many observations of Jan Merta's phenomena. He was able to control the motion of a mobile consisting of two chicken feathers suspended by a thread inside an airtight jar. To develop this ability he put himself on a diet of European sausage and ryebread. When carrying out psychokinesis (P.K.), he controlled his breathing somewhat on Yoga principles and put himself into a relaxed state of mind "intending" the motion of the feather without strongly willing it to happen. (Compare with *Zen in the Art of Archery* by Mr. Herigell).

The force involved in moving the feather is about one twentieth of an ounce, which is about the same as that exerted voluntarily on a balance by Uri Geller at the Stanford Research Institute.

Yesterday our guest Mr. Matthew Manning on several occasions deflected a compass needle.

A number of historic cases of P.K. can be described as sub-voluntary. Thus on innumerable occasions the famous medium, D. D. Home would go into a light trance, and quite substantial objects would move in his presence, such as the accordion evidenced by Sir William Crookes.

My own interest in the subject of P.K. was aroused about 15 years ago by cases that seemed to be involuntary; i.e. the events do not seem to be the result of conscious volition by the people concerned. At the time even the parapsychological profession was luke-warm to poltergeist phenomena (or "spontaneous recurrent P.K.") as these happenings are called. Partly as a result of my own efforts, poltergeistery is now accepted as a valid paranormal phenomenon. What is interesting is that in their early phases these P.K. effects are quite involuntary at the conscious level. However they may be under the control of the unconscious mind. For example in the Karen case in Sweden in 1905 the phenomena were modified by hypnotising the lady on whom they were focussed (Owen, 1964).

People in a poltergeist situation frequently ascribe the strange P.K. events to the operation of disembodied "spirits". Careful examination of actual cases suggests however that the psychokinesis is a function of the

human beings present, and of them alone. This leads logically to a re-examination of the physical phenomena of spiritualism. For a century or more people have been sitting in the dark around tables in the hope of communicating with deceased relatives. It is often supposed therefore that the P.K. phenomena which are sometimes alleged to occur — production of rapping sounds — movements of the table or other objects — are fraudulent. However the same phenomena can be produced in settings which are more amenable to scientific evaluation. Thus the phenomena obtained in a circle with Stella Cranshaw by Harry Price in the presence of such fine investigators as Everard Feilding seem to have been genuine P.K. Moreover there was no positive indication that the P.K. events were the work of spirits or of any other being than the persons present — perhaps Miss Cranshaw herself.

During the last ten years Dr. Batcheldor, and then Mr. Brookes-Smith in England, each worked with a small circle of people who were not chosen because they were supposed to have psychic or mediumistic ability. They followed a theory first put forward by Dr. Batcheldor that if any group got together in a sufficiently cheerful and animated way, addressing themselves to an imaginary entity, or to the table that they sat around, then P.K. phenomena would result. This proved to be the case. Each group produced knocks and bangs in the table and elsewhere, and quite violent movements of their table and other objects. These results have been reproduced by the so-called “Philip group” of the Toronto Society for Psychical Research.

Originally this group embarked on an experiment in pure psychology in which in the course of weekly meditations they sought to experience a collective hallucination. The figure they wished to hallucinate was “Philip”, a completely fictitious 17th century nobleman whose imaginary biography had been written to ensure that if “he” manifested “he” could not be confused with a real spirit. In the event, as described in *New Horizons*, Vol. 1, No. 3, and in the film (and forthcoming book) *Philip: the Imaginary Ghost*, the group obtained not the spectre of Philip, but physical phenomena which appear very conclusively to be the product of group intention — voluntary collective P.K. or “P.K. by Committee”.

Recently a new form of P.K. has come into prominence, this is bending and dividing of metal, first made famous by Uri Geller. In March of this year we were fortunate enough to do what was in fact a proper experiment with Mr. Geller. It was done in the studio of CITY-TV in Toronto. So far from apologizing for this fact we regard it as conferring a great scientific advantage because the metal objects and his handling of them from first to last were kept under continuous view by the TV cameras. This resulting continuous record is a remarkable scientific document — it leaves no doubt that the objects — which were our own and recovered

after the experiment — were bent or divided by some unknown process and not by common trickery. (*New Horizons*, Vol. 1, No. 4).

Just as interesting as the fact that we have been able to validate Mr. Geller's phenomena for ourselves, is the finding that our guest Mr. Manning can also produce the Geller effect and has done so many times already since his arrival at New Horizons.

So-called "psychic", "spiritual", or "faith" healing when it is effective usually functions by purely psychological means. This is so even when the illness is physiological, because a boost in the patient's morale may heighten his own physiological powers of recuperation. However some healers seem to function by laying on of hands. In the case of eight such healers Dr. Justa Smith of Rosary Hill College, Buffalo, showed that when they held test-tubes containing various enzymes in solution, the chemical activity of these enzymes was increased. This would seem to be a psychochemical effect. It may be legitimate to regard it as a subtle form of P.K. "Thoughtography" — the apparent ability of the mind to affect photographic emulsion as demonstrated by Ted Serios or by Fukuri's subjects would also seem to be a psychochemical effect.

It is tempting to speak of P.K. effects as being produced by a 'force' but this may be misleading. The production of a P.K. effect by a living subject at a distant point bears little resemblance to the radiation of any actual physical forcefield from its source.

It is also tempting to think of P.K. and ESP as variant forms of the same force or field. However we should take warning from the situation in physics where attempts to unify the four basic forces have failed, only now are there some indications that the electromagnetic field and the weak nuclear interaction can be regarded as different manifestations of the same thing (Cline et al., 1974).

The purpose of this Conference is theoretical discussion of the manifold problems presented by psychokinesis, but discussion in the light of actual experience of P.K. as seen with one's own eyes. There is no complete substitute for such experience. We are therefore very grateful to have Matthew Manning with us.

Dr. Owen then introduced Mr. Matthew Manning, as follows:

It is a great pleasure to introduce our guest Matthew Manning from Cambridgeshire, England, because he is one of those rare persons endowed with a high degree of psychokinetic power. Furthermore we happen to be particularly well acquainted with the way in which his powers have developed. This is because my wife and I were in on Matthew's phenomena from the beginning when in 1967 at the age of eleven there was for some weeks mild poltergeist activity in the Manning household. In addition, Matthew himself has recorded the stages of his development

in his own book *The Link* (Manning, 1974) which is therefore a valuable scientific document. By the summer of 1967 it seemed that, like the majority of poltergeist people, Matthew had lost or suppressed his psychokinetic power, perhaps for ever. However, four years later, in 1971, poltergeist phenomena revived in abundance and with great vigour both at home and at boarding school where they were rather amply witnessed. It must have been at this time that I said that he might be the most powerful P.K. person in the world.

Interestingly enough, instead of being episodic, the newly revived P.K. ability proved to be chronic and lasting. I am quoted in Matthew's book (page 62) as having written that *if* he did retain the power it might take the additional form of mental phenomena (telepathy, clairvoyance, etc.), also that he might retain the power and achieve a high degree of voluntary control. It is pleasant to have a prediction verified. As will be discussed in a later section, Matthew succeeded in substituting other activities for the poltergeistery, but throughout has retained the capacity for P.K.

In January last Matthew found that this P.K. ability could be channelled into what, for him, was a new phenomena. After watching Uri Geller's television broadcast Matthew tried gently rubbing a spoon while mentally urging it to bend which, after ten minutes it did, suddenly becoming pliable and then drooping under gravity until it resembled a hairpin. He then bent a six-inch nail. As reported elsewhere, in this Conference during the last three days Matthew has bent 20 or 30 objects, keys and cutlery, often under close observation and testified to by witnesses in signed depositions. Some of these objects are exhibited. With them also are objects which he bent manually into fantastic shapes after they had become pliable. I should stress that metal-bending *per se* is not an activity in which Matthew sees significance. He has practised the ability lately merely for this Conference because we are interested in P.K.

Matthew Manning: My Metal Phenomena

I should begin by saying that I think that the power I use in metal-bending is some energy generated in the mind or in the brain and is identical with that which I use for automatic writing. It's just an energy and I can divert it, within certain limits, according to choice. I believe that everyone has this energy in a latent form; for some unknown reason it is manifest in a few people. So far as I can see the ability is not inherited in the ordinary sense (though, of course, it may have a biological, congenital or genetic basis), because there is no real history of psychic phenomena in my family. My mother claims only to have her fair share of feminine intuition, though I think she has a high degree of ESP; when I tested her with ESP cards she consistently averaged 9 hits out of 25 calls.

The availability of the energy doesn't seem generally to be affected by external circumstances such as time of day, season, moon phases or whether I am on the ground or in an aircraft. However, I do tend to produce an exceptional amount of phenomena just before a thunderstorm.

In the metal-bending I do not feel that any "spirits" or external entities are involved; I merely use crude energy to disturb the molecular structure of the metal. I use no preparatory techniques of meditation. I just concentrate on the metal object say, a key. For two or three seconds I direct all my thoughts into the object. Once I've done that, it will usually start bending and it continues to bend in the hand of myself or someone else. While I am concentrating I can feel something, perhaps energy, going out of my fingers. I do not feel this in my mind but actually in my fingers. I should make it clear that I do not concentrate on my fingers but on the key itself. The energy carries through my hands — it's like holding a lens up to the sun — the sun's rays become concentrated so as to burn a piece of paper. I just think about the key and then I feel the energy going out of my hand after I've thought about the key. The key will get warm but it may merely be warmth from my hands.

On occasion I can affect an object at a distance. This usually happens in an involuntary way. For instance on Wednesday we were all at supper in this room. Mrs. Owen was about twelve feet away from me and had just picked up her stainless knife. She noticed that it was starting to bend. Dr. Owen, Dr. and Mrs. Whitton and myself all watched it continue to bend. On Tuesday we all went to a place about 600 yards away for lunch; Dr. Owen had laid a spoon on his desk. When we came in we saw that it had bent. When I had poltergeist activity at school, events would often occur at distances of as much as 400 yards. On two occasions objects were moved at my home which was about 70 miles away.

3. The Psychology of Psychokinesis

The papers in this session were preceded by a viewing of three films

- (i) *Can We Explain the Poltergeist?*
- (ii) *A Mild Case of Haunting;* and
- (iii) *Philip: The Imaginary Ghost;* as well as
- (iv) the video tape record of Uri Geller's demonstration at CITY-TV.

Dr. Owen then introduced the session as follows:

Over the years it has become apparent that P.K. involves psychology as well as physics. The work of the English groups and the Philip group of the Toronto Society for Psychical Research have shown that voluntary P.K. results if a group, as a group, trains itself in a particular psychological skill. Mr. Jan Merta's work illustrates the same fact; he obtained

his voluntary P.K. phenomena only after learning how to put himself into the required state of mind. It is not yet possible to write a comprehensive textbook prescribing the psychological prerequisites for P.K. However, Dr. Whitton and myself both believe that some progress has been made and we offer our papers as a point of departure for future discussion.

Dr. A. R. G. Owen: The aetiology of poltergeistery

An extensive survey of poltergeist cases which I published in 1964 disclosed the following statistical facts about those individuals capable of spontaneous recurrent psychokinesis (i.e. poltergeistery):

- (a) their frequency in the general population is low. This unambiguously indicates that the faculty is idiosyncratic, implying a genetic or constitutional basis.
- (b) their ages occupy a bell-shaped distribution curve falling mainly between the ages of 10 and 20. Outriders occur beyond these limits but with rather low frequency.
- (c) poltergeistery is only partially sex limited, occurring perhaps somewhat (though not very much) more frequently in females than in males.
- (d) in a high proportion of cases nervous tension is detectable either in the poltergeist individual or in the family situation. In an above-chance proportion of cases there are overt signs of psychoneurosis (particularly hysteria) as indicated either by behavioural signs — delirium or somnambulism, or conversion symptoms — paralyses, blindness, hysterical fits, or comas.

In the past writers have argued from a rather vague perception of (b), (c) and (d) that poltergeistery is a function of the adolescent state and ascribed it to physiological exuberance and/or psychological stress. It is desirable however, to probe a little deeper. On the basis of (d) we may conclude that psychological stress is an aetiological factor. Also the sex-ratio (c) is curiously similar to some recent estimates of the sex-incidence of hysteria. But psychoneurosis (and hysteria in particular) have higher incidences in older age groups and a purely psychological explanation cannot apply to the age cutoff which has to be regarded as somewhat mysterious. It is equally unsafe to ascribe the cutoff to bioenergetic factors because the physical work in footpounds done in poltergeist P.K. is usually negligible in physiological terms, and well within the capacity of small infants.

The association with hysteria offers, however, a limited degree of enlightenment. There is a parallel with religious stigmatics, a notable proportion of whom show overt hysteria. But with stigmatization as with poltergeistery a large proportion of subjects (indeed the majority of

them) cannot be described as hysterical. Religious stigmatics, moreover, are predominantly female though male cases are known. Hence (by a legitimate inference from the statistics) hysteria *per se* cannot be the cause. However, it is easy to recognize those factors of personality which are common to the generation of hysteria and the adoption of stigmata. These are a kind of auto-suggestion, and a capacity for unconscious control of bodily processes manifested in skin lesions and blood flow in the stigmatic and in conversion symptoms in the hysteric.

To identify the personality factors common to the hysteric and the poltergeist subject, it is useful to go back to Breuer and Freud's *Studies on Hysteria* (1895). They said that human beings normally release nervous tension (or "excitation" as they called it) by (i) actual biological response (such as making love or by physically assaulting their enemies), or by (ii) a conscious psychological process of attrition (e.g. "simmering down"), or by (iii) surrogate physical activities (such as tensing the muscles, biting the carpet like Hitler, or smashing Dresden vases like Prince Bismark). If routes (i) and (iii) are blocked by circumstances and route (ii) is blocked by psychological repression forcing the excitation out of consciousness then neurotic symptoms may result: — phobic, obsessional, dissociative or conversional.

On this line of reasoning the factors comon to the aetiologies of hysteria and poltergeistery would be the initial charge of excitation and the tendency to repression. It would be incorrect however to regard the P.K. phenomena as essentially conversion symptoms. It is however plausible to regard them (at least in their early stages) as a fourth route, open to a few specially endowed people, of working off the repressed excitation; or, more precisely, it is route (iii) in the form of surrogate "paraphysical" activity. This explanation has the advantage of explaining one feature common to the vast majority of poltergeist cases, the fact that they are of limited duration — days, weeks or at most a few months. Sometimes this is explicable in terms of an alteration of the family situation in a direction which tends to reduce the causes of tension. However, one does get the impression that usually poltergeistery is self-extinguishing, as on the present theory it ought to be, for the simple reason that the phenomena (like the symptoms of fever) represent not the disease but its cure.

The above reasoning is a slight elaboration of what I said in 1971(a) and 1972(a).

Dr. Joel Whitton: The psychodynamics of poltergeist activity and group P.K.

In this paper on the psychology of the poltergeist phenomena (or spontaneous P.K.), I assume that the phenomena, whether table tappings

or object movements, are not hallucinations or sense deceptions but really took place and can be mechanically recorded. I assume also that these phenomena are produced by human thought directly without resort to fraud. I think that these assumptions are valid and adequately based on the observations of sincere and scientific investigators and various audio-visual records made in recent years. Although the existence of these phenomena has been established little progress has been made in understanding how the psyche produces physical effects. However, various attempts have been made at discovering the psychological meaning of poltergeistery — why it occurs.

In 1948 a psychoanalyst, Nandor Fodor, asked what is happening in the unconscious of a poltergeist person. On the basis of psychological observations of a poltergeist subject, Fodor believed that poltergeist manifestations resulted from a profound cleavage of personality — an explosive loosening of an infantile part of the psyche in which severe conflicts are kept repressed. Fodor acknowledged his theory to be an elaboration of the concept of “psychorrhagic diathesis” put forward by Myers in 1903. Fodor believed that this split-off part of the personality, because of the severe conflicts it contained, had enough energy or power to affect and modify space and objects. Fodor’s belief that the poltergeist phenomena was a result of a major personality disintegration was based on observation of a single poltergeist subject who was suffering from a particularly acute ‘emotional disturbance’. He did not report poltergeist happenings in individuals whose personality structure was intact. His observations were therefore somewhat biased as poltergeistery does happen in association with persons who do not have defects in ego structure.

Other analysts and psychologists have since reported observations and presented schemes to account for various parapsychological phenomena. A Jungian analyst, Dr. Mary Williams (1964), believed, as did Fodor, that the poltergeist represented a split-off part of the personality. Although she uses Jungian concepts to describe her study of a particular patient, “Roger”, who had poltergeist activity in his home and in her office, she believed that conflicts, if they became separated from the self — from the ego — tend to manifest through various body sensations and to be perceived in the behaviour of external objects. Two other psychiatrists, Dr. Jan Ehrenwald and Dr. S. R. Dean state that there is an area of personality resident within us wherein extrasensory perception and other paranormal phenomena interface with conscious awareness. Ehrenwald refers to it as the “psi-level of functioning” and Dean calls it the “ultra-conscious”. Both authors have pleaded for more open reporting of parapsychological phenomena and have raised the possibility of such phenomena occurring in dreams, psychotic reactions, delusional material and out-of-the-body experiences.

Ehrenwald (1954) also studied those factors in the patient-therapist relationship which can lead to paranormal phenomena. Usually the patient is emotionally dependent on the therapist and there is a close personal bond or rapport between them. As well both have an open and positive attitude towards the possibility of paranormal occurrences. The psychological significance of the particular paranormal "behaviour" (for so, in this context, it has to be called) to both patient and therapist is also important. By psychological significance Ehrenwald meant that the behaviour could be dynamically interpreted in the context of the transferences neurosis. Later (1955) another therapist, Balint, restated paranormal behaviour in the context of an ambivalent relationship between the patient and the therapist. He believed that when the therapist is temporarily preoccupied with his own personal problems, the patient may behave in a paranormal manner so as to redirect the therapist's attention back to the patient.

Let me give an example of a poltergeist phenomena occurring within the context of a therapeutic relationship with one of my patients.

Her name is fictitious as well as most of the details concerning her life. The events in the office are true. Margaret was a 42 year old married lady who had been in therapy with me for 8 months at the time of the following incident. In my office at that time was a coat tree of about 5 feet in height of standard structure with the usual prongs going up and with two pieces of wood with an X at the base. During the winter months, my overcoat and usually the patient's would be hanging on the coat tree. It was about 20 minutes into the therapy hour during the period when the patient's transference towards me was particularly hostile but was being repressed and avoided by the patient. Suddenly the coat tree toppled over and struck me on the right leg. In examining the coat tree with the particular arrangements of the two coats that were on it, I found that it would have had to tilt about 40 degrees from the vertical in order to topple over and had it been left at such an angle following the placement of coats upon it, it would have impeded my entrance-way and not allowed me to pass to my usual chair. As it had not so projected into the room, I was assured that it had been left in an upright stable manner and that its falling over onto me was due to an expression of anger from the patient towards me using a poltergeist force. This case was a dramatic example and not typical but it does illustrate what can happen. Margaret was a known and verified poltergeist subject prior to commencing therapy with me, and occasionally performed unconsciously such feats as I have described. One would actually have to see the circumstances of the coat tree to be assured that it was a valid poltergeist experience and I am reminded of Dr. Treviranus' statement to Coleridge. "I have seen what I would not have believed on your testimony and what I cannot therefore expect you to believe on mine."

Now, poltergeistery is not like automatic writing which requires direct muscular activity to produce it. Poltergeist behaviour is somehow produced by the brain. Recent experiments published in *New Horizons* (Lloyd, 1973) indicated that the brain does respond to other person's thoughts when deliberate efforts are made to telepathically transmit those thoughts. These experiments suggest that there is some "force" emanating from the brain that contemporary physiology has yet to discover. Reported and verified poltergeist phenomena can be divided into two groups on the basis of whether the phenomena can be voluntarily controlled or not. In the involuntary type there is spontaneous and induced poltergeistery. Induced poltergeistery is involuntarily produced by the subject in response to some conditioned stimulus. The voluntary type of poltergeist activity can be autonomously controlled by the psychic subject. Now these two types of poltergeist phenomena can be conceptualized a little more clearly within the context of the structural model of the mind in psychoanalytic theory. This model of the structural viewpoint groups mental events into three categories: namely, the Id, Ego and Super Ego. Now, the definitions of these I'm going to deal with except Ego, which is essentially defined in terms of what its functions are. There are two groups of functions of the Ego. I realize that some of these concepts are new so I'll just divert for a moment. There are what's called maturational functions and these are some of the synthetic functions: creativity, perception, cognition, mobility. And there are what are referred to as the developmental functions of the Ego — our defence mechanisms that we use and our object relations. In this model the developmental functions of the Ego, our defences, and the way we relate to other people are usually associated with conflict. They are a learned process, whereas the maturational functions, our synthetic functions and our ability to think and perceive and move around, are what I refer to as autonomous functions; that is, they are free from conflict. In this model poltergeistery could be considered as a symptom defence pattern against some conflict and as long as the conflict is unconscious and unresolved, the defence or symptom (i.e. poltergeist behaviour) is involuntary in its action. The defence or the symptom will be evident whenever there is an internal or environmental event that re-enacts the conflict.

A familiar example of this kind of symptom is a tic. A tic is an involuntary motor behaviour pattern that is used by the ego unconsciously as a method of coping with some conflict. For example, the conflict of wanting to grow up and be strong and self-assertive but by doing so losing the maternal protectiveness and the family caring environment. If the tic symptom is conflict associated, then each time the threat of growing up is encountered, the tic is produced involuntarily. To an outside observer, this happens spontaneously or can be induced if you create the conflict situation for the person, they'll start "ticing;" or sometimes it'll happen

spontaneously and that's because certain things are going on inside their own minds. If the conflict is resolved, the tic symptom may still persist, but it is no longer driven by conflict or anxiety, and we say it is now an autonomous symptom that can now be voluntarily produced without approaching the conflict situation.

In developing a psychological theory of poltergeist phenomena, there are three items to consider. First, is there an infantile experience or model of the poltergeist which the adolescent or the adult regresses to or re-enacts during period of poltergeist activity. In other words, the first item is, is there a model from infancy which an adult could mimic? The second item is, what is the nature of the defence mechanisms employed by the ego in an individual poltergeist? Thirdly, is there something common amongst individuals who have poltergeistery? In other words, is there a typical personality that experiences poltergeistery? In the first few years of life before the capacity for abstract and rational thought was developed, many experiences present themselves as if having an unexplained or magical quality. Noises or sounds may be heard, and objects may be seen to move or disappear or magically reappear. Sensory experiences of touch or smell which happen to us before we develop the ability to think about them, may be strange, unexplained and possibly frightening. For example, a baby may hear the footsteps of someone walking on a bare floor above his. Looking towards the sound, nothing is to be seen. Not able to conceptualize the fact that the sound is simply due to someone's footsteps on the floor above the ceiling or to someone moving furniture around, the memory remains in the baby as a strange unexplained experience. Fear could be associated with this experience. For example, if the noises were particularly loud or startling or if the baby was alone and anxious about something else already — for example, the absence of its mother. In the above example, if anxiety or fear is associated with this memory — this memory of a strange unexplained sound that the baby hears — the whole entire conflict complex, the strange noise and the concomitant anxious experience of separation from its mother; the whole thing may be forgotten and repressed and lie dormant in the unconscious for years. Years later, the adolescent or the adult may experience an anxious separation which may re-enact the early memory of the associated strange noises. The hypothesis that I'm presenting is that in those individuals who have the psychic ability to produce poltergeist activity, the re-experiencing of early sensory memories, because they are associated with a certain fear, leads to those memories being relived or acted out or externalized in the physical world.

Thus, to continue the above example, the current experience of an anxious separation or other situation causing stress does not in itself cause poltergeist activity. It is because a similar conflict or fear experience has been associated with unexplained memories in the past. It is the remem-

bering of the previous similar conflict and its associated memories that directly leads to poltergeist in those individuals who have that particular psychic ability. Every time there is a threatened or an actual separation from a loved person or object, footsteps or scraping noises are heard in the room overhead. The original experiences of strange and unexplained and frightening noises may even have occurred before birth. Mothers are aware that sudden noises or jerking movements of the abdominal wall will cause the fetus to react. Spelt, a physiologist, demonstrated in 1948 that the human fetus can be conditioned using classical paradigms of association. Soft vibrations on the abdominal wall do not apparently cause the fetus to react but if these are paired with loud noises — if the soft vibrations occur at the same time as loud noises — the fetus soon reacts to soft vibrations in a similar manner to loud noises by kicking and moving about. Recently, another analyst, Ployé, (1973) has also explored the possibility of intra-uterine memories affecting behaviour in later life. Now commonly, in the individual for whom poltergeist phenomenon are happening, there are certain obvious emotional conflicts and stresses. In Professor Owen's book *Can We Explain the Poltergeist?* there are plenty of examples for this. The above theory or hypothesis assumes that at some time in an individual's past, a model for poltergeist activity was associated with a conflict.

The next item to consider is what kind of defence mechanisms the individual who uses poltergeist has. We can define an ego defence mechanism in the following way. It is an automatically and unconsciously employed mental mechanism to secure resolution of an emotional conflict or to achieve relief from an emotional tension or to avert or allay anxiety. Of the fifty or so defence mechanisms, the following five may be typically seen in various degrees in some of the reported poltergeist cases; they are conversion, displacement, dissociation, symbolization and regression. These defences are not the only ones that are prominent in poltergeist cases nor are they always present but they do seem to be evident. Conversion is a technical word and it simply means the transmutation of aggressive or other impulses such as rage, love, sadness, that are consciously disowned and unacceptable to the individual, into some disguised symbolic external physical expression. Typically, for example, abdominal pains that are unexplained can often be shown to be the result of conversion defence mechanism. Displacement is a mechanism whereby internal emotional feelings are transferred and redirected to some substituted object or person. There is an internal feeling that gets ascribed to some external object. Dissociation is a process of separating or splitting off the feeling that one has about an idea or situation and relationship from that situation itself — splitting off of the feeling from the object. In symbolization, something outside of us, any particular object, becomes an outward representation of some internal idea. Regression is an interes-

ting defence and it has two forms. One is what we refer to as regression in the service of the ego. This, for example, occurs in hypnosis where the individual voluntarily regresses to a more primitive level of functioning. Another example is temporarily retreating from a successful situation in order to regroup one's defences and to reorganize them in order to go forward again. We temporarily shut ourselves off, regroup ourselves and then move forward. Another type of regression — a second type — is more pathological and it involves an escape from an overwhelmingly stressful situation.

I realize these descriptions are technical but the following case will illustrate these mechanisms. Again the name is fictitious but the events are real. Annette is a 22 year old single white Canadian female living with her 20 year old sister Joan and her parents. Annette is 22, her sister is 20 and they live in Toronto. There was a history of sporadic poltergeist activity in Annette and her sister that they could remember going back to at least when Annette was 8 years of age. This was sporadic and isolated and at the time did not have much significance for them. Recently when Professor Owen and myself were asked to investigate this case, the poltergeist phenomenon had increased in activity and had reached a peak during the week when both parents were on holidays. Mom and Dad had gone on holidays and had left the two girls for a week by themselves. In addition, Mother — to whom Annette was very close — was scheduled for a serious operation following their holidays. During the week her parents were away the two girls were not entirely alone as Joan's boyfriend was visiting more than usual and in fact was present almost all of the time. During this week, footsteps would be heard. Annette would hear breathing sounds in her bedroom and one evening, when Annette, Joan and Joan's boyfriend were sitting in the living room, Annette's bedroom door was seen to close and slam and could not be opened. Then suddenly one night Joan's hair as she was walking across the room was suddenly pulled back by some mysterious force.

It became evident to us that Annette, the oldest of the girls and the one without the boyfriend, was experiencing several conflicts. There was an actual and a threatened separation from her mother with whom she was very close. Her mother was away on holidays and when Mom was to come back, she was to have a serious operation. In addition, there was envy and quite evident indignation directed towards her younger and more attractive sister with her handsome boyfriend. Annette's own conflicts are symbolized by the poltergeist or heavy breathing noises in her own bedroom and by her bedroom closing and refusing to open. The jealousy towards her sister could have been displaced in some manner when Joan's hair was pulled. The poltergeist, as a concomitant of the re-experiencing of early conflicts, is utilized fortuitously by the mechanisms that the individual is using to defend against these conflicts. Thus, it

appears as though the poltergeist is a symptom of certain defences. The psychic ability to close the bedroom door and the actual closing of it is an event that can be used by the ego to symbolize and externalize a sexual conflict. The theory predicts that sometime in the past, the closing of a door or some related event became associated with this conflict. When the conflict is re-experienced or renewed as it was during that week, the memory of the closing is also renewed and that causes the individual unconsciously to actually close the door if the individual has P.K. ability. Hence-forward the individual's Ego can recognize the event of the door closing as a symbol it can utilize to represent the conflict. Thus, the poltergeist activity is not a defence mechanism but it may be symptomatic of certain defences. The entire process, this sequence of events, I've labelled the poltergeist reaction. If it becomes verified, it may even acquire the status of the "Owen reaction." The poltergeist reaction is a unique reaction and I believe should be grouped with other symptom neuroses such as conversion reactions. The poltergeist reaction has as its basis infantile experiences including strange unexplained noises and objects moving for which there was considerable anxiety and no cognitive explanation. The renewing of these memories does involve regression. In most of the reported cases of poltergeist activity, the regression is an escape mechanism that has been temporarily invoked because of overwhelming anxiety. When the stress is over, the need for regression passes and then the remembering of early memories stops and then the poltergeist stops.

Now the incidence of the poltergeist reaction is rare and probably reflects the rarity of psychokinetic ability. As also the incidence of some of the borderline personalities is small, the finding of the poltergeist reaction within a borderline personality is an exceedingly rare event. Mary Williams, whom I mentioned earlier, has reported such a case and I myself am currently treating one. Fodor's belief that the poltergeist is a symptom of schizophrenia is incorrect. His description of the violence and disintegration represented by poltergeisty is applicable only to the exceedingly rare cases of the poltergeist reaction within a rather unstable personality. Poltergeisty is almost always seen in the context of neurosis or character reaction if the phenomena is conflict associated. But if the poltergeist activity is autonomous, like a tic where the conflict has been resolved, then it can manifest in any individual who has the necessary psychokinetic ability.

In the Philip experiment regression was attained by consciously attempting to be child-like, by singing children's songs and deliberately behaving like children. This is shown in the film *Philip: The Imaginary Ghost*. In this regressed condition, thinking takes on a magical quality. As opposed to the adult who states that moving or levitating tables by thought is against the law of physics and therefore impossible, the child

simply states, "If I want it to happen, it will." However, even in the regressed condition, what is called the observing ego, that part of you that's still looking around is still functioning and usually this part of the main ego cannot accept the fact that poltergeist may be based on an emotional conflict, and perhaps also cannot accept the fact that the self really has this extraordinary power to control objects from a distance. This, I believe, accounts for the curious way that poltergeist subjects explain their poltergeist activity on the basis of external agents or guides, extra-terrestrial beings or energy from spirits. Thus, Uri Geller, in a projective defence manner must have his UFOs; the Philip group must have Philip and George Southwell must have the hanged airman (cf. Branston, 1974). Balint summarizes this defence concisely when he says, "Projection states that the uncanny powers which produce parapsychological phenomenon dwell not in us, everyday people, but in mediums, in healers, in waters, woods and caves or in God's unfathomable grace."

The theory that I have presented would predict that the members of the Philip experiment are re-experiencing a common conflict. The story of Philip, unhistorical and invented for the sake of the experiment, may offer us clues as to what this conflict is. Philip, the imaginary Philip, was an English gentleman who took a mistress, Margo. His wife Dorothea became jealous and accused Margo of being a witch. When Margo was burned at the stake, Philip did not intercede. Subsequently, overcome by guilt and depression, he committed suicide. It's possible to interpret that Dorothea had an unresolved electra complex. Philip is the replacement of her own deceased father and when any other woman threatened to attract the love and affection of Philip Dorothea re-experienced her initial conflict with her father. Now in the original story to which the group worked in forming their image of Philip it was said merely that Dorothea accused Margo of witchcraft. However, in retelling Philip's story some months after the physical phenomena obtained by the group had commenced, the original author of the story — Mrs. M. H. Sparrow — added a nice touch to the effect that every time that Philip, who was a rather dashing and debonair English gentleman, approached another woman all kinds of poltergeist activity happened which seemed to be associated with Dorothea. This is the same as saying that Dorothea re-experienced her early conflicts and this rekindled memories of earlier events and then she produced the poltergeist activity.

Dr. Owen who initiated the Philip project, nursed it through its early stages, and closely supervised the group, may have become the replacement symbolic father for the group; and as the group renews its oedipal and electra complexes, poltergeist activity happens. Note that the poltergeist in this particular experiment is involved with symbolization; where the poltergeist becomes an emotional source for comfort and security. Poltergeist is the object of the experiment, and is what "father" wants to

happen, so in a sense then the group regresses during its sessions to an early stage of childhood to re-experience a conflict and achieve a further resolution of it. As such, there is quite a considerable potential for group therapy in such a situation. In the Philip experiment, the symbolization of the poltergeist is in direct opposition to what we call a phobic reaction — one of fear. What in infancy used to be a fearful unexplained phenomenon, strange noises and movements, now by inversion and symbolization has become a protective loved phenomenon that is approved by father. As well, the actual poltergeist object in this context of a loved phenomenon, may be what we call a transitional object; something that gives us security, that we bring over from the past — like a teddy bear. However, in the pathologic poltergeist reaction, such as the one which occurred in my office, its original affect is maintained and the memories are experienced and externalized as fearful and unwanted. In studying the Philip group, one is impressed by the very close sharing of emotional feelings within the group. It is possible that one individual first discovered how to regress and experience a poltergeist phenomenon and then, by symptom identification, other group members developed it. In summary therefore: for an individual to have a poltergeist reaction, the following characteristics should be present. First, an innate psychic ability and potential to influence external objects at a distance. This has been labelled psychokinetic ability and is quite rare. Second, a temporal association between an unexplained phenomenon that could serve as a poltergeist model and a conflict and this could conceivably be common. Given these two conditions, the individual or group then has to re-experience the conflict in a context that allows the externalization and symbolization of the poltergeist model to happen. Once this occurs, if the conflict can be resolved, then the poltergeist continues but now it's autonomous and thus it becomes voluntary and that's what I think has happened in the Philip group. Their poltergeistery has come under voluntary control.

Dr. Owen, preparatory to re-introducing Mr. Manning said:

In the majority of cases a poltergeist outbreak remains involuntary and is of short duration. Those rather rare persons who continue to exhibit either the P.K. ability or some other unusual skill are consequently of great interest. Mme. Mikhailova as a young woman was the centre of poltergeist activity. She came to the attention of the physiologist, Professor Vassiliev, who, it is said, persuaded her to train herself in controlling the P.K. so that nowadays she can produce it, almost to order. Uri Geller as a child found that involuntarily he affected watches, keys, and other metal objects. Some years later he found he could produce the phenomena almost on command, but that from time to time P.K. events occur

spontaneously in his presence. The case of "George", recorded in the movie *A Mild Case of Haunting*, is interesting as an example of what one might call "symptom substitution". A phase of poltergeist activity was followed by one of trances, which then gave way to spontaneous ESP in the waking state (Branston, 1974).

Matthew Manning's experience is however even more interesting, not least because he has given a very lucid account of it in his book. I am going to ask him to speak briefly on this aspect.

Matthew Manning: The evolution of paranormal abilities

In 1967 I was the centre of poltergeist activity that terminated after a few weeks. In 1970 both at home in Cambridgeshire and at school new and more dramatic phenomena developed and persisted into the following summer of 1971. One day I was trying to write a school essay but was not finding it easy, and I had to keep stopping to think what next I was going to say. As I sat with my pen poised above the paper ready to start writing as soon as I should think of something, my hand went down onto the paper in a completely involuntary way and began to write. My mind, meanwhile, had wandered completely from the subject on to nothing in particular. I watched, startled, as I wrote words in a handwriting different from my own. Then, slightly frightened, I pulled my hand away. The words were incomprehensible and sprawled over the page. It was only later that I realized that I must have written "automatically". I wondered if this was repeatable and in the succeeding days tried several experiments. Interesting enough several quite distinct handwritings eventuated. Equally interesting was the fact that subsequent to each session of automatic writing poltergeist activity ceased completely for several days. Since then I have regularly engaged not only in automatic writing (which has come in various hands, the styles of various periods and even in foreign scripts, such as Arabic) but in automatic pen and ink drawing in the styles of various known artists such as Picasso, Dürer, Beardsley and some styles which though quite distinctive have not yet been assigned to a known artist.

So long as I continue to do automatic writing or drawing then I get no poltergeist phenomena. But if I stop doing it then after a short while the energy builds up and poltergeist events occur. The last few weeks constitute an apparent exception because I have neglected my automatic writing and drawing in order to practise metal-bending for the sake of this conference so that you might have some psychokinetic phenomena to study. This seems to have the same effect as the writing; as long as I practise it I am free from poltergeistery but if I stop the energy builds up as before.

(In the subsequent discussion Matthew described some of his automatic writing and its presumptive sources. An exhibition of his work was made available to participants.)

4. Fields and Molecules

Dr. Owen introducing the speakers said:

I think you will find the following two papers of exceptional interest, not least because they converge on almost the same conclusion although they set out from quite different starting points. This is especially noteworthy because each speaker was totally unacquainted with the other's field of research and line of thought.

Professor Brian Josephson: possible relations between psychic fields and conventional physics.

The question I would like to put is whether "psychic fields" can exist, and whether psychic fields would contradict physics as we know it? I myself think there is no contradiction. Physicists study such fields as the *gravitational*, the *electromagnetic*, and also the *strong interaction*, which holds atomic nuclei together, and the *weak interaction*, which causes some kinds of radioactive decay. There may also be psychic fields and the question is; why are they seen by people doing psychic research and not by physicists? The answer simply may be: these are two sets of phenomena which are only weakly linked; only under special circumstances are they linked together. One example is a radio set which links electromagnetic waves with sound waves. Usually the electrons, protons, and neutrons in a piece of matter don't couple electromagnetic waves and sound waves very strongly, but if they are put together in a special way as in a radio set we get strong coupling and radio waves get converted into sound waves.

In high energy physics there is a very suggestive piece of evidence relating to the K_0 meson, whose behaviour can be interpreted as a response to certain very weak fields. There are two particles called the K_0 meson and the anti- K_0 meson which are very closely related. In fact, given time, the K_0 particle will convert itself into an anti- K_0 particle; the one particle will convert into the other, and they will keep changing back and forth. The K_0 mesons also can be thought of mathematically as rather like spinning tops or arrows or any elongated objects which can be regarded as "pointing" in particular directions. Now whenever a K_0 particle is produced it is pointing in a certain definite direction with reference to the field and particles which generate it. An analogy is a pendulum or plumb-line; in a gravitational field the plumb-line points in a particular direction — "downwards". In the same way, when a K_0 meson is produced

by collisions from ordinary matter as opposed to antimatter, it is produced, pointing, as it were, in a specified direction. Once it has been produced, the meson slowly spins round and changes its orientation, rather like the precession of a spinning top, which is a response to the earth's gravitational field. The behaviour of the K_0 meson in this respect involves a response to both the weak interaction and the "superweak interaction" which violates CP invariance. The latter response is especially significant, since this very weak "field" shows its existence only in this one system, by virtue of certain symmetry properties which it possesses.

Now let me switch to another possibility. Let's assume that there are mysterious fields about, which interact only very weakly with matter. Can there be circumstances in which we could observe them? Well; let's suppose that the effect of such a field would be to exert an extremely small force on an atom, or an atomic nucleus. This force might be so small that we couldn't measure it in matter in bulk, nor in elementary particle interactions because of the high momentum of the particles. However there is one situation in which these weak fields would have a noticeable effect. In biological systems there are objects of just the right form, which can act as detectors for these extremely weak fields. These objects are the enzyme molecules. Enzymes could be very sensitive to influences of various kinds, because in fact they consist of molecules which can change their shape very readily; thus if we had a force which acted slightly differently on atoms of different chemical elements, e.g. carbon, nitrogen, phosphorous, etc. then it could bend the enzymes. Furthermore, we know that enzymes catalyze reactions in living cells in a way which is extremely sensitive to their shape. Thus enzymes have just the properties that would be needed for detectors of unsuspected types of fields.

With regard to the existence of these weak forces that I have postulated, there seems to be no valid reason why many forces of this kind shouldn't exist. It may be that what one is able to discover depends on one's method of observation. Another possibility is that new kinds of forces can be generated in unexpected ways. This might be analogous to the way in which matter in bulk exhibits new properties distinct from those of its separate components. Matter can become organized in such a way as to show special properties, and in fact have particles and interactions of its own. In solid-state physics we talk of elementary excitations, e.g. the "spin wave" which can be transmitted through a magnetic substance. Now it may be that empty space has these properties, or alternatively it may be the brain which is organized in such a way as to develop an ability to transmit information within itself.

This leads me to another theme — the interconversion of various kinds of energy. This is happening all the time, as for instance, in a loudspeaker where the energy of electric currents is converted by a coil into magnetic

energy, then by the permanent magnet into the kinetic energy of motion of the coil, and finally by the speaker diaphragm into acoustic energy.

In other cases a process called "symmetry breaking" causes energy to be converted from one form into another. For example, when a piezo-electric crystal such as is used in crystal pickups is compressed, the elastic energy is converted partially into the energy of an electric field. In an ordinary crystal this does not happen for symmetry reasons — there is no preferred direction for the field to point in. But in piezo-electric crystals the crystallization process produces a coordinated assymetry which allows the two forms of energy to be coupled together. It is possible that certain types of psychic phenomena may involve coupling together of different types of energy which are normally uncoupled, by a similar process.

Finally I should like to mention the topic of zero-point energy. According to quantum mechanics, all objects are subject to continual vibration, even at absolute zero, and the most elementary calculation indicates that even empty space contains an infinite amount of energy as a result. A naive interpretation of this result (and therefore not the one commonly accepted by physicists) is that empty space, like coal, nitroglycerine or plutonium, contains a very large amount of energy if we know how to use it. While this is a tempting prospect, there is the obvious possibility of danger, and we ought to pay heed to the warnings of those whose interests lie on the spiritual side — not to encourage people who do not know what they are doing to experiment with psychic phenomena, and not to try to persuade gifted psychics to do anything they may have any doubts about.

Dr. Owen. According to the *Globe and Mail* the world energy crisis should mature in 25 years. Perhaps therefore our P.K. researches are not entirely of academic interest, but of practical import. If we work hard enough we may learn how to tap these ultimate energy resources in a manner consistent with safety.

I also ought to say that when he formulated his thoughts on enzymes as possible detectors of work fields, Professor Josephson was quite unaware of the research concerning the effect of healers on the activity of enzymes. We cannot help being impressed when totally different lines of thought converge in this way.

Professor Douglas Dean: Molecular effects of "healers".

I am going to describe some of the better research that has been done in that field of "psychic healing" which appears to be a kind of P.K. I would like to start with the work done by Dr. Bernard Grad at McGill University in Montreal. (Grad, 1961). He is a gerontologist and endocrinologist interested in the science of ageing, and I think we owe him a debt of gratitude that on a day in 1957 or so when a healer came into

his laboratory and told a fantastic story Dr. Grad did not send him packing as a lot of people would have done. This supposed healer was Colonel Oscar Estebany, who had come from Hungary in the uprising of 1956 and made his way to Montreal, and this was his story. He was a Colonel of the Hungarian army in a cavalry unit. He would get military orders that would require him to ride very long distances, much more than one horse could go; so he would arrange for a second fresh horse to carry on after the first horse was too tired to continue. As you might expect, one day the second horse was not there. Yet the first horse was worn out and he had his military orders to carry out. Intuitively he got down off his horse and knelt in front of it and stroked the forepaws, gentling we would call it, and it seemed evident that the horse liked this, seemed to be revived, and after 15 minutes he got back up in the saddle and rode on and completed his military orders. Being an officer in the army he had platoons of men on horseback, and one day when their horses were all worn out he ordered all his men to get off their horses and stroke the forepaws and then get back up in the saddle and ride on, but *they* couldn't.

He found out in this way that he had something in his hands which his men did not seem to have. He discovered also that when laying hands on members of his family their pains seemed to go away. He found out that if he put his hands round a bottle of water the power passed into the water and the member of the family could drink the water and the pain would go away, or also he could pass his hands around a wad of cotton wool and the power would go into the cotton wool; he could package this up and send it through the mail to distant relatives. They would strap it to their backs, go to bed, and if they had a backache the backache was supposed to have gone in 10 minutes. Well, he could understand if Dr. Grad had said, "Don't waste my time, get out of here"; but Dr. Grad is not like that and I'm so thankful. One of the experiments Dr. Grad had been doing was with mice growing goiters, which is a disease of an enlarged thyroid, and he wondered if Mr. Estebany put his hands around the goiter could he slow up its growth, thereby indicating healing. When you try laying hands on mice you get into an immediate problem because the mouse runs away, so they had to make a little box and put the mouse in each cell and cover it over with some wires and Mr. Estebany would hold his hands over for about 15 minutes.

In a typical experiment after three weeks the mean increase in thyroid weight was 6.7 mg. for treated mice as opposed to 9.8 mg. in untreated ones. Next, Dr. Grad wondered if it would be sufficient for Mr. Estebany merely to handle the cuttings that were put into the mouse's cage. These experiments in fact gave a similar result, e.g. 5.5 mg. increase for treated mice as compared with 7.1 for the untreated controls. Another experiment of Dr. Grad's involved cutting a little piece of skin off the back of a

mouse. The size of the wound was measured by tracing its outline on paper, cutting it out and weighing the paper. In a typical experiment 16 control mice were untreated, 16 given heat treatment, and 16 treated by Mr. Estebany. The table shows the numbers almost fully healed at various stages.

Days from Wounding.	Control	Heat	Estebany
1	0	0	0
14	0	0	14

This single experiment is already statistically highly significant.

When Dr. Grad brought these results in 1960 to Dr. Osis and myself at the Parapsychology Foundation in New York we didn't believe him; that was the mood of the time. We suggested that the healing agent was sweat from Mr. Estebany's hands. But Dr. Grad, and also Dr. Cadoret at the University of Manitoba, successfully repeated the experiment with paper bags around the cages.

Dr. Grad then tested Mr. Estebany with barley seeds which were watered with salt solution — the one per cent normal saline as used in hospitals. The seeds were separated into two groups, those watered with untreated and treated saline. The latter was "treated" in the sense that before it was used Mr. Estebany held the bottle containing it in his hands for a specified period of time. The experiment was first done informally and then using a strict double blind procedure. Strangely enough each experiment showed that the plants watered with treated saline were, to a statistically significant degree, the more rapidly growing ones. Dr. Grad then decided he must compare the physical characteristics of the treated and untreated saline, so by means of a Beckman DK-2 spectrophotometer he determined their transmission spectra. No differences in transmission and absorption were found for the range 400 to 2800 millimicrons, but in a particular portion 2800 to 3000 millimicrons of the infra-red, the treated solution showed lower transmission than did the untreated. Dr. Grad (1964) reported this result rather cautiously as he was uncertain of the reliability of the spectrophotometer in this range.

However, I brooded on this incredible result for nearly four years; then I telephoned Dr. Grad and asked him for three bottles of treated water and three of untreated, which I took to a woman chemist in a famous pharmaceutical company in New Jersey. She had just won an award for work on atomic spectra, and was kind enough to test the water with her own spectrophotometer. I should stress that I did not know which of the coded labels, A to F, referred to treated water, so that the experiment was genuinely double blind. Well: she got the same divergence as Dr. Grad did in the range 2800 to 3000 millimicrons. Then the transmission curves coincided from 3000 to 3600 where some divergence was

found. Thereafter they coincided up to 16,000 millimicrons except for a divergence in the neighbourhood of 4400. Another laboratory in New Jersey obtained a very similar result.

The chemists know what these divergences mean. Water is H_2O , two hydrogen atoms and one oxygen. The three atoms are not in a straight line. Instead the two hydrogens subtend an angle of about 105° at the oxygen atom. The chemists know this angle to remarkable accuracy, and also have a very precise value for the internuclear distance between the oxygen and a water atom. Now the deviation from the normal transmission curve for water means that the internuclear distance has been altered — probably increased. Also possibly the molecule has been further ionized so that it acquires a larger charge at one end. If so, the elongation of the internuclear distance will also alter the dipole moment of the molecule. Thus it seems that Mr. Estebany alters either the ionic or the dipole properties of some of the water molecules.

Dr. Dolores Krieger, who teaches nursing at New York University, did some experiments in which Mr. Estebany treated 19 patients by laying-on of hands for 15 minutes, morning afternoon and evening, for 6 days. The patients showed an average rise in the haemoglobin level of 1.2 gm. per 100 cc. of blood. The level did not increase over the 6-day period in a control group of 9 patients untreated by Mr. Estebany. Dr. Krieger is now testing 40 nurses to see if any of them have the same ability as Mr. Estebany. This experiment also gave significant results.

Dr. Justa M. Smith, O.S.F., Chairman of Biology and Biochemistry at Rosary Hill College, Buffalo, N.Y. decided to investigate the effects produced by Mr. Estebany on enzymes *in vitro* (Rindge, 1968). Dr. Smith was well qualified for this research because she was awarded her doctorate a few years ago for demonstrating that the activity of enzymes could be modified by magnetic fields (Cook and Smith, 1964). Enzymes are proteins which act as catalysts in the body which has some 2000 different ones. Each enzyme increases the rate of some particular biochemical reaction. Dr. Smith, in her doctoral work, showed that if a test-tube containing a solution of trypsin (one of the enzymes that aids in the digestion of food) is placed in a magnetic field, e.g. 13,000 gauss (which is very strong — that of the earth is only about 0.5 of a gauss), then the activity of the trypsin is increased to a significant degree. Now Dr. Smith is one of those biochemists who believe that if anyone is ill it is due to a malfunctioning of one of their enzyme systems. Therefore she reasoned that if a healer is effective it is because he increases the activity of one or more of the patient's enzymes. Dr. Smith therefore invited Mr. Estebany to Buffalo for laboratory measurements in which the activities of untreated solutions of trypsin was compared with that of solutions in tubes which he had held in his hands for 75 minutes. One series of experiments showed no effect, but the result of another series was very

striking. The treated trypsin showed an increase in activity of about the same magnitude as would have been produced by exposing it to 13,000 gauss. Naturally Sister Justa tested Mr. Estebany to see if he was generating an intense magnetic field near his hands. But measurements with delicate magnetometers showed that he had no magnetism. The force or field by which Mr. Estebany influences water or enzymes is therefore not the ordinary magnetic field.

More recently Dr. Smith (1972) has tested the effects of seven other healers on trypsin and acetyl cholinesterase, a brain enzyme. This repetition was very important as it confirmed her earlier results with Estebany. Also it showed that the different enzymes responded differently to the individual healers, and "mental" healing can occur.

I now should mention an experiment by Dr. Schoneberg Setzer who grew radishes with ordinary water and with water that had spent time in church sanctuaries during Sunday service. It was found that water that had been sanctified in this way grew larger radishes than the purely secular water on one Sunday, but inferior radishes the next Sunday. In fact repetitions showed a 14 day cycle which is approximately the semi-lunar period, so this may be a lunar effect rather than a consequence of having been in church in the presence of a congregation. However, irrespective of how it ought to be interpreted the effect itself seems to be genuine, because another series of experiments was done by a leading spectroscopist at a major chemical company in the United States. He measured the concentration of hydroxyl ions and the amount of hydrogen bonding in the two kinds of water and found the same kind of 14 day oscillation; in fact at Sundays near the full moon there was a decrease of hydrogen bonding compared with regular water, but at Sundays near the new moon the hydrogen bonding was in excess. Perhaps therefore this work initiated by Setzer falls into the category of subtle astrophysical effects, several of which I believe have been demonstrated in recent years. Even so, it has some relevance to our topic — psychokinetic forces exercised by humans — because it suggests that very subtle and weak forces can have chemical effects. Also the use of physical methods like spectroscopy make for more reliability than merely biological measurements or studies of growth as well as, perhaps, giving more insight into the precise nature of the effect produced.

Returning to the question as to what is special in the case of Mr. Estebany's hands, and those of other healers, let me record my own opinion. I think that healing hands emanate some kind of force while the healer is healing and that the especially large flares and coronas which occur in the Kirlian photographs of the finger tips of healers demonstrate this.

(Professor Dean concluded his address with a display of Kirlian photographs including those of healers such as Krivorotoff in Russia and Mrs. de Loach in New Jersey).

5. Physics and Metaphysics

Dr. Owen, introducing this session, said:

In science though in general it pays to be cautious, like any other good thing caution can be overdone and on its account excellent scientists have often failed to make important discoveries. In the hope that we may avoid that pitfall I have encouraged the speakers to be as bold in hypothesis as they wish, because it may be that we can only assimilate P.K. into a system which harmoniously embraces both physics and psychology only after both of these sciences have been submitted to what I call "concept therapy", i.e. therapy applied to ailing or aged concepts.

I think there is a faint similarity between the exploits of Professor Smook's "matter-creating monads" and Professor Josephson's idea that possibly the mind can alter the Hamiltonian of matter. After all, the latter would be equivalent to changing the actual nature of matter (i.e. the mode of existence of matter) at least temporarily and locally. It seems to me that although the speakers set out from totally different starting points they are concerned with the same problem — how to bridge the chasm which separates physics and psychology. Professor Smook assimilates the problem of P.K. to the mind-body problem; Professor Josephson points out that quantum physics is enigmatic perhaps because its theoretical system contains observers but makes no allowance for these observers having a psychology.

Professor Roger Smook: Psychokinesis from the standpoint of philosophical idealism.

In discussions of P.K. there occurs one particular conceptual model which is applied apparently in complete exclusion of all other possibilities. I am, of course, alluding to the idea that some form of energy is transferred from the P.K. subject to the P.K. object. Sometimes the experience of the P.K. subject does in fact suggest that this may actually be the case; for example, Matthew has spoken of a tingling sensation in his hands while key bending. However in other cases where the P.K. subject acts at a distance without contact it is not obvious how energy flows, or if energy flows. An example of this was the bending of a fork at ten foot range as described by Dr. Owen.

I would like to suggest as a kind of 'thought experiment' that we abandon energy flow as a model for the P.K. process. Let us see how we could explain P.K. effects if there were no flow of energy whatever. The resulting line of thought takes in the direction of philosophical idealism, and harkens back to George Berkeley, Leibniz, and also to William McDougall, the psychologist and psychic researcher. More recently, Professor Mundle (1967) has put forward an idealist theory though somewhat half-

heartedly and with diffidence. However, I would like, at least for the purposes of the present discussion to employ the idealist approach, for what it is worth.

Now, what are the advantages of philosophical idealism? Well, basically what we do in idealism is to dispense completely with the idea of matter — more precisely with matter as something alien to mind. Of course, even the idealistic approach requires us to render some account of what matter does, and how it seems to behave, but this is done without supposing that there's some kind of stuff 'out there' which is *fundamentally* different from mind. As a model for what is involved in an idealistic theory of matter let us begin by considering mental imagery. If one conjures up an image into one's mind, that image can be regarded as being a kind of matter. We could if we wanted to, call such an image 'psychic matter'. It is a type of matter which was brought into existence by the activity of the person who is mentally imaging. However, this type of matter — the image, (or, if you like), the symbol — it not really alien to the mind which produced it. After all, the mind actually brings it forth. Admittedly, we do have a sort of dualism. But it is not that radical dualism, which materialists tend to insist upon.

Following this line of thought I would like as a kind of experiment in reasoning to further develop the idealist point of view according to which there is nothing at all in the universe which is alien to the mind as such. This also involves putting forward a certain concept or method of what constitutes a person — a human being. This model regards a person as a hierarchy of monads. *Monad* is a term introduced by the philosopher Leibniz in his *Monadologie* published in 1714, to describe a hypothetical entity which is nonspatial, indestructible and indivisible, and partakes of the nature of mind. Leaving aside for the time being the characteristics of the monads which I conceive of as constituting the personality of a human being, I must admit that, at first sight, one experiences considerable resistance to the notion that a human personality — the self — is composite rather than unitary. Mind, person, and individual consciousness are very fundamental notions and we have a strong belief that the self is a whole, and not divisible. On this view even psychological dissociation such as occurs in trance states or in hypnosis or in automatic writing, cannot be regarded as a dividing of the self because, by hypothesis, the self cannot be divided. However, though I am not putting the composite model forward in any dogmatic sense, it is worth noting that dissociation is readily explicable in terms of a hierarchy of monads; if one monad abdicates the chief role or dominating position in the hierarchy, there are other monads which take over.

My primary concern today is, of course, not the theory of personality, but with explaining P.K. I would like to start with the mind-body prob-

lem. I believe that this famous problem may really be one of P.K. The more we think about how we move our bodies, the more incomprehensible it becomes. It's really a very hard thing to understand how a person moves his body, unless we regard a person as being simply a machine which I, for one, find it difficult to do. We can however, explain how the mind can influence the body if we introduce the hypothesis that the person is a hierarchy of monads. In this model there is in particular one monad which is in control; I call this the dominant monad. So far, so good, but henceforward the theory becomes somewhat adventurous. I postulate a group of other monads closely related to the dominant one. These I call "matter creating monads". A monad "creates" matter in a way analogous to the way in which I create a mental image in my own mind. When I summon an image into my mind then I form it and shape it; sometimes even I can in my mind's eye "see" the image in three dimensions. These postulated matter-creating monads do exactly the same sort of thing except that they stand in the same relation to physical matter that I stand to my psychical matter.

As to the nature of monads, let me say that by monad I mean a purely psychical entity — an entity that unfolds a psychic life, but which has no physical component at all, being wholly a psychic thing — an entirely mental type of being. Now, if one thinks about it, one sees that every change in the physical world happens through creation and destruction. The mere fact of change requires the destruction of objects and their replacement by others, or, alternatively, the abolishment of one state and the creation of a new state. This is also what happens in my own psychical life where I can modify my own mental images. For instance, I can visualize a pencil, and then remove the eraser from its end. I'm king in my own little realm — my psychic realm — and I can annihilate the eraser instantaneously. For the purpose of our model we assume that the matter-creating monads function analogously with respect to physical matter, and that normally they do this in a very lawful and orderly fashion, so that no anomalies or inconveniences arise.

It is important to postulate yet a third type of monad. This last is not a matter-creating monad; instead, it is a sense-data-creating monad. I will explain later how I conceive these to be operating. Meanwhile we note that according to this model the person consists of three types of monads, some of each kind. In Leibniz's philosophy his monads were, as he said, "windowless"; there was no communication between them. In my model however, I postulate telepathic interaction between the monads constituting a person. Telepathy is assumed as a basic unanalyzable fact. Mind-body interaction is conceived of as happening in the following way. Suppose I want to move my body, then my dominant monad sends out a telepathic instruction to the matter-creating monad, which actually creates and destroys in a way exactly corresponding to a motion

of the limbs. Normally there is a conservation of energy, so that the occurrence can even be construed in a materialistic way.

On the present hypothesis the physical objects that are created by the matter-creating monads have a reality, but it is the reality of a purely psychical thing which has come into being in somewhat the same way as our mental images do. How does the individual gain his particular sense impression of the object? Well, I suggest that the sense-data-creating monad is also on a telepathic relationship with the matter-creating monad or monads, and relays the appropriate impression to one's dominant monad. The sense-data-creating monad is in contact with the matter in the world and it is this which leads to the telepathic impression causing the dominant monad to see the matter from a certain definite point of view.

We can now take account of P.K. Normally the dominant monad is only able to contact a certain limited group of matter-creating monads. However, we can suppose that in exceptional circumstances its range of contacts can be enlarged. No longer restricted to communicating with monads associating with maintaining its own body, the dominant monad could enter into liaison with "foreign" matter-creating monads so that its intentions would manifest in action at a distance — physical effects at a remove from the person's own body.

My model is admittedly a high unparsimonious way of looking at things. It postulates the existence of many monads. Indeed there is nothing in the theory to prevent us assuming the existence of monads which are not connected with people at all. The critic may say "You are bringing in a lot of spirits". This is a fair point to make, and I do not seek to elude it. Indeed I frankly confess that I do seriously entertain such a possibility. This is not all loss: my theory offers certain positive advantages; it avoids the radical alienation of matter from mind which is characteristic of many philosophies.

I would like to speak about Philip, briefly if possible. (As if one could deal briefly with any of these fascinating and challenging topics!) Maybe, in that situation the dominant monads of the several members of the group become capable of simultaneously contacting matter-creating monads other than their own. Coming now to the possibly simpler case of a single person bending a knife we have a single dominant monad contacting "alien" matter-creating monads. Normally, if that person moves his own finger he's contacting particular matter-creating monads that have to do with that finger. However, if he's bending a knife he's contacting other monads — part of the monad furniture of the world, one might say. Now the theory I have expounded is admittedly something of a *jeu d'esprit*. I have not wished to become entangled in speculative details, only to throw out to you a few ideas. However in the very act

of describing my model for P.K. I have come to think that this whole picture has value for explaining clairvoyance and psychometry as well as P.K. As various writers have pointed out clairvoyance is difficult to handle conceptually because of the selectivity involved e.g. in "down-through" guessing of a pack of cards, which totally rejects accommodation in a materialistic type of framework. For this and other reasons I have a certain faith in the idea that I outlined. They may seem wild according to some contemporary modes of thought, but I feel that in principle ideas of this general kind represent a necessary and logically indicated return to something which perhaps has been neglected far too long. I feel there has been too much talk of energy flow; other models ought to be looked at.

Professor Brian Josephson: Possible connections between psychic phenomena and quantum mechanics

The view of the world presented by quantum mechanics seems to be unsatisfactory to anyone who thinks hard about it, though most physicists tend to suppress their uneasiness and to say "Well, it works!" However, there may be a connection between psychic phenomena and the difficulties inherent in the quantum mechanical world-view. In classical physics — the world-view that prevailed until the nineteen-twenties — the world is just a group of interacting particles. In principle you know where all these particles are and how they are moving. You have equations of motion which allow you to predict where every particle will be at any future time. In the classical theory there's no doubt as to what reality is, and reality is the same for everybody — it's all the particles in their known positions. In quantum mechanics, however, it's not clear exactly what reality is. Now I am not at all sure that I can say anything significant as to what reality is, but I can speak about quantum mechanics and how it is formulated.

Quantum mechanics involves a somewhat mysterious mathematical quality called the wave function ψ , which has only a rather indirect physical significance. It is something one uses in order to obtain physically meaningful statements. Provided one is not observing the system, the wave function ψ changes at a rate given by $kH\psi$, where k is $2\pi/i\hbar$ and \hbar is Planck's constant, while H is the so-called "Hamiltonian" of the system. The Hamiltonian is related to the energy, and it is this function (or "operator") which actually determines how the mysterious wave function ψ evolves. All this is just a problem in mathematics, deducing from this equation what the value of ψ becomes. The really interesting question is not a mathematical one; rather it is, — how does one get from this very obscure description of the system to a knowledge of how the system actually behaves?

The peculiar thing is this: quantum mechanics *doesn't* say what the system is like now. Quantum mechanics says something quite different; it says what you'll observe if you make an observation on the system. Quantum mechanics gives a prescription for making observations. First *you* must decide just which feature you are going to observe. For example, if the system consists of a particle (e.g. an electron) you can select the position of the particle as the observable or the velocity of the particle as the observable but not *both*. If, for example, you choose to observe the position of the particle you will set up your observing apparatus accordingly. Quantum mechanics tells us that *however* you set up the apparatus and make the observation your results will be of limited value, as they will have a kind of built-in uncertainty. For instance, if you want to locate the particle you have to inspect it by shining light on it. But light exerts pressure, and in bouncing off the particle it will change the particle's velocity in an *unpredictable* way. Consequently the knowledge you have acquired of the particle's position is not much use for prognosticating its future position because you will not know how fast it is moving, or even in which direction.

The essence of quantum mechanics seems to be the inherent limitation in observing nature and thus in acquiring full information about it. However, this limitation itself may be just a reflection of the kinds of observation we can make. Maybe the physical description of the world would change radically if we could observe more things.

Another point which most physicists don't seem to think about is the fact that quantum mechanics itself does not legislate as to which quantity your apparatus will be set up to observe. This is a decision of the observer — whether for instance, to look at the position or the velocity of an electron. It seems that you just decide yourself which feature to look at. Perhaps there is a psychological element here which has to be specified, if we are to get a complete picture of the universe. The physicist says to himself, "Well, I know that if I set up such and such an apparatus, then I shall be observing the position and not the velocity of this particle". He doesn't normally deduce from a theory just which particular kind of observation he will be making. All that quantum theory provides is predictions of what will happen when he carries out the type of observation that he chooses to make. The wave function ψ doesn't describe the whole world, only the system itself, and the apparatus that observes it but does not include the observer as a conscious being. Thus the wave function cannot lead to any prediction as to what the observer will choose to do.

The wavefunction, it seems, cannot control the observer's intention. We may ask therefore whether the observer's intentions can influence the outcome of an experiment. Quantum mechanics only tells us the probability distribution of observed values of physical quantities. If the observer was emotionally involved in the outcome of the experiment and

particularly wanted one result to come out rather than another, perhaps that would shift this probability distribution. Physicists normally have a degree of detachment and probably wouldn't influence the results of experiments in just that way (if they did, they would end up in some other job). They might, however, have an influence in causing the experimentally determined probability distribution to come out just as they expected it ought to be.

Currently in physics there's the strange phenomenon that the laws of nature seem to keep on changing. New symmetry violations are being discovered, the velocity of light is found to be different from what people thought it was, and so on. An odd thing, which may or may not be significant, is that sometimes when a new observation is made different people get different results. In one instance a particular symmetry was broken on one side of the Atlantic, but not on the other; however, after a while everyone got the same results. The conventional explanation would be that errors were being made on one side of the ocean, but conceivably the true explanation is that the discrepant results were genuine, and that it was the process of communication of knowledge from one side of the Atlantic to the other which caused a kind of phase transition or ordering process, as a result of which identical results were subsequently found in both places. One might speculate that perhaps one can control not only the state of the system but the Hamiltonian itself. That is to say, perhaps one can modify the laws of nature. This may be the way in which psychic phenomena take place. One could make a force to act on something merely by modifying the Hamiltonian so that the object had more energy in one position than another. Psychic phenomena might thus be connected with altering the Hamiltonian which determines the equations of motion in a system. Perhaps also some kinds of psychic phenomena can be considered as establishing a coupling energy between oneself and the thing one wants to influence.

6. The Nature of ESP.

By way of introduction Dr. Owen said:

Parapsychologists feel that in some way extrasensory perception, E.S.P., is related to psychokinesis, P.K. There are logical reasons for this. Often the persons who manifest P.K. abilities also, it seems, possess or acquire skill in ESP. Examples are "George", Uri Geller, and Matthew Manning. Also in poltergeistery the P.K. person appears sometimes to exercise a fine control over the movement of objects that are out of his direct view. This suggests a degree of clairvoyance. In the Philip situation, group members get the impression that it is through a form of telepathy that their individual intentions are harmonised and their individual contributions to the P.K. force become synchronous.

Another obvious question is whether ESP is not mediated by P.K.? On a crude view we could hypothesize that telepathy occurs when a thought in my mind causes (by P.K.) a flow of electricity in your brain. On this view, of course, the percipient is passive in ESP, but it is by no means obvious that this is so. This is brought out in Dr. Osis' paper which also deals with other puzzling aspects of ESP — its relative indifference to distance, and its fantastic selectivity — topics on which Dr. Osis' researches have made him the recognized authority (Osis 1965, Osis et al. 1968, 1971, Owen 1973). Dr. Tanous is actually one of the subjects with whom Dr. Osis has lately been working to elucidate the real meaning of travelling clairvoyance, and what he has to say is of keen interest.

Professor Persinger will expound a theory of telepathy which many of us will feel is one of startling novelty. It has the great merit of working entirely in terms of known physical principles. It is extremely important that although it postulates that telepathy is in actual fact "mental radio" there is in this theory almost no falling-off with distance, at least for telepathy between terrestrial locations.

Professor Persinger's model unambiguously posits that telepathic perception is the direct response of the brain to a carrier wave which has been modulated by another brain. Now it is an interesting fact that quite recently (Lloyd, 1973) we have in Canada learned how to exhibit the response of the cerebral cortex consequent on the transmission of a telepathic stimulus to the possessor of that cortex. This result, of course, does not tell us whether in fact the message is first received in the brain; however it is very exciting and has already made quite a stir in the world. As we have already received many enquiries we thought you would like to have an interim report on the progress of the research. In the absence of Dr. Lloyd, this will be given by Dr. Whitton who is familiar with the work.

Dr. J. L. Whitton: Response in the brain to telepathic stimulus.

I will commence with a brief review of the theoretical problem that Dr. Lloyd is involved with. If one presents an auditory or any other kind of sensory stimulus to a person then there is a small response in the brain waves. This cannot be seen directly because the ongoing brainwaves are so large that the response gets buried in them. To look at the response we require a technique for extraction of a weak signal from noise. This is done by presenting many repetitions (e.g. 64) of the stimulus seriatim and at equal time intervals. If the 64 collected time segments of the EEG are added up on a time point-to-point basis and divided by the number of segments then to good approximation the background brainwaves average to zero. What is left is called the Averaged Evoked Response. The shape (i.e. the time-profile) of this response to an auditory

stimulus is fairly specific. Clinically this is used for detecting hearing thresholds. One presents a tone and obtains the AER if it is loud enough. The experiment is repeated using tones of diminishing loudness until the threshold of hearing is reached when, of course, there is no response.

What I have described is the experiment as it should be. It is not true however that there is never a response below the threshold of hearing. Dr. Lloyd noticed that occasionally, even though the person could not possibly hear the stimulus, there would be a response! For about 15 years this had been either overlooked or assumed to be a machine artifact. About four years ago Dr. Lloyd began to wonder if, in fact, there was a stimulus but not a physical one. Perhaps the technician who was counting off the particular samples was somehow influencing this. By checking back into the equipment and doing some routine tests it was found that indeed this might be happening; somehow the technician telepathically, in time with the sample, was sending a stimulus to the person and it was the receipt of this that was being recorded.

Therefore in 1969 or 1970 Dr. Lloyd and some other Canadian physicians carried out a pilot study (Lloyd, 1973). Since then, the group has repeated this experiment. I have graphs of the type of response obtained in a standard Lloyd experiment which goes as follows. Two electrically shielded rooms are available. One of them is very effectively sound-proofed but connected, when desired, with the other room by an audio-communications system. The receiver sits in this room and the sender in the other. There is an observer with each subject. In the new series, each experiment consists of four parts. In A the receiver's EEG is measured. In B the receiver is in the room but not connected to the EEG apparatus. In C there is no receiver in the room. The sender is not told whether A, B, or C applies. The receiver is not told what the experiment is about. In case A we get classical auditing AER. In cases B and C we get zero signals. This is important as it shows that the sender does not P.K. the apparatus itself.

How does the sender synchronize a transmission with the time intervals in the averaging process? There are various ways of doing this and the sender uses whichever suits him best. In one method a light flashes simultaneous with the sampling of the brainwaves by the equipment. The sender watches the light flashing and at each flash he puts into his mind the mental image that he wants to send. There is a second method in which the sender activates the equipment by pressing a button when he's ready. Now the time required to perceive a light and react even only to the extent of forming a mental image is of the order of a fifth of a second. If a button has to be pressed it's even longer — a half second. Yet it seems that regardless of the biological limits involved the sender is usually able to link himself in to when the equipment is sending. Sometimes, of course, synchronization fails — the sender says he's losing the

ability to keep up with the equipment. In such a case no response is found in the EEG. The sender can almost predict ahead of time how accurate his timing is and whether there's going to be a response or not.

Dr. Lloyd had difficulty finding good senders because it requires a high degree of concentration to be able to send a stimulus on a repetitive basis. A technique I have developed myself when being a sender is learning not to look at the light or think about it. Nevertheless one becomes aware when one's cortex is responding and, having bypassed the operation of thinking about perceiving, one's response is almost immediate. However senders do require a considerable amount of training and it seems that some people never become proficient at it.

However it is interesting that in cases of successful transmission it seems to make no difference as to whether or not there is any rapport between the sender and the receiver. Also it doesn't seem to make much difference what the stimulus is, i.e. what kind of mental image the sender concentrates on. Just as in ordinary ESP experiments, the symbol never comes through in its entirety e.g. a "cup of coffee" is received as a cylinder and the colour brown. A "red triangle" is sometimes received as "red" and sometimes as "triangle."

Because some senders are better than others, to get the best consistent results Dr. Lloyd has always picked out the best sender and receiver to demonstrate. Of course, as in ordinary ESP sometimes it doesn't work even with good subjects. It may depend on the receiver's state of mind. In one experiment the receiver didn't know the nature of the experiment or expect to receive a mental impression. There was zero evoked response. Then the receiver fell asleep and there was a response, though only while she was in Stage II sleep! There was no response after she had awakened. She was asked to attempt to receive a telepathic message, and then we got evoked responses in the waking state.

In the Lloyd work originally reported the telepathically evoked responses were almost identical in pattern (i.e. time-profile) to an auditory response. What Dr. Lloyd was unaware of was that the pattern depends on the subjects. When he used another sender a different pattern resulted. The pattern seems to be reproducible with the same sender and receiver, but a different pair of subjects will give a different pattern. Thus one pair produce a triphasic response with a latency of about 0.3 sec. which is totally unlike any AER belonging to a sensory modality (sound, sight, tactile stimulus etc.). However this pattern seems to be reproducible in about 80% of experiments with this pair of subjects. With another pair there is a reproducible biphasic response at about 0.1 sec. latency. This pair only produces a response about 30% of the time but it is always at the same point.

Whether in the "Lloyd Effect" the message is conveyed by electromagnetic radiation is hard to say. In one of Dr. Lloyd's experiments a

door to the shielded room failed to close properly but the response was neither enhanced nor diminished. Following on a discussion with Professor Persinger I could suggest that some insight into this might be obtained if some benefactor would provide a 10 Hz. ELF generator suitable for some jamming experiments or even, for enhancing the telepathic AER.

Dr. Karlis Osis: Rival models for ESP.

Let me say that I'm glad to be here. You have something very very pleasant in Toronto. There is so much that is unusual — you seem to have the gift of going your own way without being brainwashed into conformity. Where do you get these beautiful people who do these beautiful things? They are so stimulating. I love to be with the Foundation where one certainly gets the feeling of looking at a new horizon.

For some years I have carried out experiments in which from the ASPR we send out people all over the world with picture cards in their pockets in order to test the effect of distance on ESP. What is impressive is the immense selectivity of the process. How does the percipient "locate" the agent, or "tune-in" on him? It is like seeking the needle in a pretty big haystack — the area of the earth is about 200 million square miles. It seems in our experience to be unimportant how much or how little information is given the percipient about the agent's whereabouts. Also the percipient need not know the agent personally. We find that there are many equally effective ways of forging a link between agent and percipient, e.g. by the percipient's handkerchief, or a photograph of him, or merely a physical description. Similarly we are able to get clairvoyance over vast distances with no agent at all. Whether telepathy or clairvoyance, none of this seems to fit any kind of radiation hypothesis, in which the perceived object sends out an energy which the percipient passively receives. If, for example, a percipient in New York is trying to perceive an object in Australia, one of a number of objects which, by hypothesis, are giving out radiation, how can the signal from the target possibly be unscrambled?

Indeed several other models have to be suggested. Thus Dr. Rhine conjectures that the percipient somehow reaches out to the object and brings the information back. Another hypothesis, associated with the names of distinguished people like Myers, Tyrell and Whatley Carrington, suggests that there exists a mind greater than ours. Could it be a kind of cosmic Ma Bell connected as if by a universal telephone system to an object, or to an agent, or to a percipient? Another model is suggested by the "out-of-the-body experiences" or OOB's as we call them. A surprising number of people feel that under suitable conditions they can "be" in one place while their body remains in another. Rather than scanning or sensing and organizing a perception, they feel as if they were

there with the object. It is difficult to find a method for researching the "reach of the mind" model or the Ma Bell model so as to distinguish them from each other, or from other alternatives, but lately we have been investigating OOB claims. The problem is, if one has something out there, away from the body — a mind, soul, monad, how does one catch it? Well, we proceeded by stages. First we selected the small number of people out of many tested who were able to describe accurately the objects and events in my room at the ASPR at times when they were in other cities.

We then found that some of these percipients tended to organize the information as if they were actually in the room looking from one definite viewpoint. We followed this up by making a special optical device. If one could put one's eye at a certain point one would see four quadrants each coloured differently. On one quadrant there would be a picture. The point is that part of this complex image is an optical illusion which does not actually exist. The whole figure can only be seen from the appropriate point. Hence, this provides a means of testing whether the percipient is organizing his perception from that particular location or viewpoint. In a typical experiment the percipient is in a soundproof room on the other side of the ASPR building. He puts himself into what, subjectively at least, is an OOB state. When he returns he describes what he has perceived.

From time to time we have set up physical detection devices to see if they could be triggered by persons out of the body. Only one subject (Pat Price) has on a few occasions caused the apparatus to register. This percipient "flew into" the box (subjectively at least) and it so happened that the recorder went wild as if something had disturbed the electric field inside the box.

We have studied the EEG in OOB persons in the hope of discovering if there is any modification of the brainwaves at the time that the percipient is (subjectively at least) going out of his body. All we got was some flattening of the peaks, i.e. lower average voltages, and increased Beta frequency with less Alpha. This is interesting, but of course, the same patterns can be got by asking the subject to do any of several mental tasks such as holding a particular image in the consciousness.

We have also compared the EEG patterns of subjects when high scoring and low scoring for OOB perception and found no difference.

To conclude I might say that we find that only a very very few individuals can produce consistently high scores when in their OOB state.

Dr. Alex Tanous: Out-of-the-body experiences.

My OOB experiences seem quite normal to me because they have been occurring since childhood. When I was about seven years old I began to find myself in places which I didn't recognise. The form of the experience

has not changed. I seem to myself to have become a very small point of light, my body seems to be no longer there, but the whole universe seems to have opened up to me. This is the state I enter when doing the experiments in OOB at the ASPR with Dr. Osis, of the kind he has described. The observers say that I can speak through the whole experiment, and describe what is going on, and what targets I see inside Dr. Osis' apparatus. I myself declare when (subjectively at least) I have left the body and the little ball of light which I seem to be is at its brightest. At that moment I name the target which I see.

An experiment was set up at another laboratory in New York to detect my presence physically when travelling OOB. A light-sensing device was chosen as possibly appropriate to my case in view both of my subjective experience and of my experiments in projection of light which I shall be describing later. A number of photomultipliers were set up in a totally black darkroom, which contained a totally black chair on which were placed two target objects, whose nature was unknown to me. I was in a small room in another part of the building. Simultaneously with my entering the darkroom OOB and describing my experience, the photomultipliers recorded five or six bursts of activity well above the average level for a perfectly dark room.

Attempts at photographing me (i.e. my actual physical body), have produced some strange results. Thus, Leonard Barcus photographed me on a couch by candlelight at the ASPR. The first three pictures showed the candle, the couch and myself. But in the fourth picture there was only the candle, and in the fifth and sixth pictures there was nothing, as in Ted Serios' "blackies". These were all on polaroid. What made it more striking was that Anne Johnson, who was also present, got exactly the same results with infra-red photographs. On another occasion when Joseph Goodavage was interviewing me, he took numerous polaroid photographs all of which failed to develop. Similarly when a television company brought cameras my voice was recorded but no picture. Even the monitors were blank.

Professor Michael Persinger: ELF waves and ESP.

In the Psychophysiology Laboratory at Laurentian University our primary goal is not only to understand how parapsychological experiences take place, but to predict and control them. Thus we would like specifically in experimental situations to control what (tentatively) has been called telepathic behaviour, and also understand and replicate so-called P.K. events. Today I shall discuss two experimental models which are quite testable and which seem to emphasize the importance of the environment in parapsychological experiences. I myself am trained as a psychologist and physiologist, but in graduate school my outside concentration was geophysics.

When one talks about energy exchanges with Psi phenomena I have to stop and note the fact that, so far as we know, there is *no biogenic* energy that can travel from the body to such unusual distances as occur in telepathic behaviour. Consequently, assuming the phenomena are real, the energy involved with ostensible telepathic events must be coming from somewhere else. Our first investigation indicated that perhaps this energy is coming from the environment.

The earth is a charged sphere surrounded by the ionosphere, which is a layer full of ions and charged particles, commencing at about 50 miles above the earth's surface. Essentially the earth-ionosphere construction is similar to a spherical condenser. The region between the ionosphere and the earth's surface thus constitutes a spherical waveguide within which certain electromagnetic frequencies can propagate with small attenuation.

These "Schumann waves" are extremely low frequency (ELF); the fundamental frequency is about $7\frac{1}{2}$ Hz. (i.e. $7\frac{1}{2}$ cycles per second), but significant harmonics (e.g. 14.5 Hz) do exist. A feature of the Schumann resonance is that the frequencies within the spherical wave guide can propagate round the earth at least once without appreciable attenuation. This is an interesting property because we know that telepathic behaviour seems to involve great distances. These Schumann resonance waves also have tremendous penetrability. It is almost impossible to shield them out; the ordinary shielded room, such as is used in most electrophysiological work, is very likely to be inadequate. In Germany, where much of the ELF research has been done, it is found that in order to shield out more than 95% of ELF one needs an underground bunker surrounded by several inches of steel. This constitutes a second parallel with psychic phenomena because we know that many psychic experiences occur inside buildings. A third characteristic of these natural frequencies, perhaps the most important one, is that, although they show diurnal and seasonal variations, none the less they occur all the time. Detailed description of the physical and biological properties of ELF fields can be found in a recent text (Persinger, 1974a).

Another feature of ELF waves is their time variation within biofrequency regions. In other words if we consider the brain as a generator of time varying electrical potentials (i.e. the cortical voltage measured in the EEG) we find that a proper maximum is developed at frequencies near 10 Hz. In fact, most of the electrical processes taking place in the brain, e.g. memory, occur at frequencies in this band. As mentioned, the ELF waves exemplify an energy which can be transmitted over long distances and through substantial material barriers. It should be now clear that they are at the same frequency as the basic electrical processes occurring in the brain. Calculations by my German colleagues show that if indeed the cortical voltage in the brain is oscillating at 8 Hz., and if

there is an electromagnetic field in the environment also vibrating at 8 Hz., then energy interaction can take place.

This model is very testable because a number of things can be predicted from it. For example, a significant number of nocturnal ELF fields propagate more between midnight and 4 a.m. than at other times. Also they have a geographical preference; e.g. it is easier to transmit at ELF field west to east than east to west. Furthermore, propagation of these ELF waves is heavily dependent on the local magnetic field. We can imagine lines of magnetic force coming out of the earth; ELF fields follow these lines. Just as the U.S. missile called the "Sidewinder" could follow a jet heat trail, so do the ELF fields use the magnetic flux lines as guides and transmission ducts. Consequently, if you disturb the static magnetic field of the earth you would modify the propagation of these waves.

Now, we collected accounts of cases of telepathy and clairvoyance from various sources — the Journal of the American Society for Physical Research, as well as from some popular magazines, and plotted their occurrence distribution as a function of the hour and the day. It appears that they have a tendency to peak roughly between midnight and 4 a.m. This is what one would predict from the ELF model. We find also that there is a greater tendency for the putative agent in telepathy cases to be west of the percipient rather than to the east. This is, in fact, statistically significant, but we are aware that this is only a pilot study, and we plan to replicate it. Similarly the number of cases as a function of distance between the putative agent and the putative percipient falls off in the same order of magnitude as you would expect if an ELF field was involved with telepathy. According to the ELF model, if there is an interference with the propagation of ELF waves around the earth, then there should be a decrease in the number of "ESP" reports. This is indeed what we find. There is a significant negative correlation ($r = -0.68$) between the number of telepathy-clairvoyance reports and the U index which is a measure of the amount of geomagnetic disturbance throughout the world. When there is a geomagnetic disturbance the magnetic flux lines all over the earth's surface are shaken about and the propagation of ELF waves is impaired. Thus we have found a number of interesting parallels between telepathy and ELF propagation which suggest that ELF fields produced in nature, vibrating at the same frequency as electrical activity in the brain, may be involved in the production of ESP experiences.

But, what of P.K.? Well, if indeed the environment can be tapped for ELF, then an energy exchange will result. We have made some calculations which indicate that if a person had some peculiarity in his brain so that its power peaked at 7.8 Hz. then he would have the possibility of absorbing ELF energy, and using it in his body. Now there is a great

amount of energy available in earth's spherical waveguide, so that a considerable energy contribution is potentially available from the environment. Another interesting speculation concerns the harmonic frequencies of the ELF. Although the major fundamental frequency of the Schumann resonance is only 7 to 8 Hz., it has a second harmonic which peaks at about 14.5 Hz. According to the present theory individuals who have brain energy output peaking at both 7.8 and 14.5 Hz. should be the ones with exceptional P.K. powers. Interestingly enough, some of the Soviet literature indicates that when the Soviet medium is causing objects to move, then there is an increase in that activity (i.e. 3-7 Hz)*. One could argue that the energy is coming from within the medium. Alternatively, we suggest that there is a resonance taking place between her brain and the ambient ELF fields.

Of course there are various features which are not clear from the model. How is the energy focussed on the object which is moved? Also, why can't we all harness the Schumann ELF waves? Well, for one reason, most people have their alpha power peak around 10-12 Hz. However, certain people with thyroid problems and also certain kinds of psychotic patients have a different distribution of cortical energy output. It may be these individuals who are most liable to have telepathic, clairvoyant, or P.K. experiences.

Now the model is very testable. For example, we can actually put ELF energy into the brain. We have done this at Laurentian University and the data are promising. We take a putative agent and get him to look at an object. Meanwhile we detect his cortical voltage with an EEG apparatus and feed it through an amplifier. The amplified EEG which is now of the order of 10 volts is then applied to large flat metal plates. A "percipient" is seated between the plates and is exposed to an electrical field which is a "replica" of the brain potentials of the agent.

One last similarity between ELF waves and the natural electrical activity of the brain is worth comment. The magnetic component of the brain's field is of the order of a millionth of an oersted, which is very small compared to that of the earth, (about $\frac{1}{2}$ an oersted), but just the same order of magnitude as that of the ELF field. The amount of energy in the ELF field is, of course, very small. However, Professor Frank Brown, at Northwestern University, has shown that living organisms are sensitive to minute differences in the geomagnetic field though apparently the functioning of their nervous systems is unaffected by more powerful electric or magnetic fields. More detailed information on this model can be found in a recent book on this subject (Persinger, 1974b).

*C.f. page 193, this Journal, and Whitton (1974).

7. Luminosities and other Strange Phenomena.

Dr. Owen said, by way of preliminary:

In the present section we are putting together a number of phenomena which are doubtfully related but nevertheless, phenomenologically speaking, have something in common in that they all involve light patterns, luminous appearances etc. Professor Persinger's paper suggests a natural origin for some types of nocturnal light. But, as Professor Hynek shows, there are a number of nocturnal experiences which seem to fall outside the limits of seismic effects. In the UFO experiences, as with the appearances described by Dr. Tanous and by Matthew Manning, we are up against the problem of multiple witnessing which militates against the phenomena being entirely hallucinatory or subjective. Luminous phenomena, curiously enough, do not occur in poltergeist annals — the sole modern exception is the occurrence of flashes of light at Clayton, North Carolina (Roll, 1972). Whether visual experiences having a religious content can be legitimately discussed in parapsychological terms is a problem that has never been legislated for (Owen, 1972c). It may be permissible therefore to remark that the only event that I have heard of which resembles the wall projections described by Dr. Tanous and by Matthew was the vision alleged to occur in 1879 at Knock in County Mayo, Ireland (Delaney, 1961). Our justification for including a discussion of luminosities in a conference on P.K. is, of course, association with P.K. both in Matthew's case and in numerous UFO sightings.

Professor Michael A. Persinger: Thermoelectric and seismic effects.

Perhaps you have heard about allegedly haunted houses in which there are "cold spots", and of UFO sightings where something is seen that looks rather like a luminous object. I would like to put forward a model for predicting why certain kinds of unusual experiences take place in some areas. Part of the model involves the Peltier effect. If an electric current is passed through two conductors separated by a thermo-electric material a temperature change takes place depending upon the current direction. Such a temperature change will result if an initially high potential gradient discharges across the conducting layers through the thermoelectric material. We get what is called "heat reduction" at the interfaces. Preliminary calculations indicate that an initial voltage gradient of roughly 1000 volts per meter will cause the temperature at the junction to fall at least 5°C, this reduction being for approximately 15 minutes. This is the same order of magnitude as is claimed for the so-called cold spots of some "haunted houses".

This model predicts that the closer the junction is to the house the greater the cooling effect will be. Thus the foundation of an old house

would be likely to have more continuity with the conducting layer and the cooling phenomena would take place more effectively. Another event that could take place if the house was on the top of a hill is that any nearby thunderstorm or local electrical change could induce a peak voltage on the hill-top, energize the layer, and produce a cooling effect inside the house.

Now it seems at first sight as if potential gradients of 1000 volts per metre don't occur in nature. However this is not quite true. Such electrical potential can occur specifically in areas under seismic stress. Papers by Finkelstein and Powell at Yeshiva University, New York, indicate that in areas subject to seismic activity, people sometimes report seeing luminous objects. They have found that these areas have a high quartz content; if a very heavy mechanical stress is put on the quartz then potential gradients as large as 100,000 volts per metre are generated. Such voltages can locally ignite the air producing luminous appearances that could be mistaken for UFOs. Dr. Yutaka Yasui from Tokyo has published photographs of such luminosities associated with major earthquakes.

We do not expect these phenomena frequently in areas which have had recent big earthquakes, because a fracture of the geological strata dissipates the energy. Thus areas like some parts of California are not so likely to exhibit these phenomena as often as others. However there are many areas where seismic pressure is building upon the local quartz-like structures. Brown Mountain, whose lights were the subject of a report in *New Horizons* (Bessent, 1972), is such a region. Another area which we predicted is the famous New Madrid region which comprises southwestern Illinois, Missouri, Arkansas, and western Tennessee. Similarly, seismic activity is increasing in an area which includes New England and portions of the St. Lawrence Valley in the U.S.A. and Canada. We also predict that the sites of UFO "landings" would show an increase in manganese silicate and perhaps magnesium and iron because the passage of excessive current tends to destroy the thermoelectric material and associated natural Peltier condition.

Professor J. Allen Hynek: The strangeness of UFO experiences.

My own interest in UFOs dates from 1948 when I was teaching astronomy at Ohio State University, which is not too far from the Wright-Patterson Air Force base in Dayton. The Air Force needed an astronomer to help assess reports of strange flying objects and to weed out those which could be explained astronomically — meteors, stars, planets, etc. Assuming that it was merely a nonsensical craze I undertook this work as a kind of game. To my surprise I found however that about 20% of the reports baffled the mind, and resisted any rational explanation. That figure has continued down the years as a basic invariant. When you see a newspaper

report the chances are about 4 out of 5 that the observation has a perfectly normal natural explanation. It is that fifth one however, which is the interesting one. As you know, the Condon Committee gave the subject a half-million dollar burial, and the Air Force got out of the business. Nevertheless in the fall of 1973 there was an unprecedented wave of UFO reports in France and elsewhere as well as in the U.S.A. This differed from previous waves in that it had not been stimulated by journalists; most people believed the subject was dead. I decided therefore that something should be done. I and a few scientific friends had long before constituted ourselves informally into a kind of "Invisible College" for privately discussing the UFO phenomenon. What we have now done is to create the CENTER FOR UFO STUDIES, which has faculty member representation from U.S. universities and several national laboratories. (We held a meeting recently in conjunction with the American Institute of Astronautics and Aeronautics. This has a sub-committee on UFOs which acts as a link between establishment science and our kind of study). The centre has a "hot line" manned 24 hours a day by telephonists in the Wrigley Building in Chicago. Its number is 800-621-7725 and is toll free for calls originating within the U.S.A. It receives at least one call nightly because the number has been given to thousands of police chiefs and sheriffs. If a report is very dramatic then I am alerted and get on to it immediately. Normally however, next day we notify one of our 300 local voluntary investigators who then interviews the witnesses.

Now, what we study are not UFOs but UFO reports, and the people who make the report. The result of this study is to correct three popular misconceptions. It is not true that only crackpots generate UFO reports. The better reports tend to come from people with considerable technical and other training — pilots, air traffic controllers, policemen, etc. Indeed I have been particularly impressed by the number of policemen who are primary witnesses, i.e. actual witnesses — not just the people to whom the sightings are reported. Furthermore UFO sightings do not seem to be mere products of overheated imaginations. It is an important fact that UFO reports fall into a certain limited range of distinct patterns which is repeated all over the world irrespective of cultural differences. For example, we don't get reports of unidentified sailing objects, UFOs with wheels or with wings, floating Taj Mahals, or flying elephants. To use a terminology introduced in my book (1972, 1974), although the "strangeness index" is high, the reports fall into a very narrow band in the strangeness spectrum. I assign two index numbers to each new report. The strangeness index is just the number of information bits (binary digits) that the report contains that defy explanation by normal means. The other index is the witnesses' credibility, i.e. the probability that what they said happened did happen. When these indices are plotted in a two dimensional diagram, the payoff lies in the upper right hand region:

cases of high strangeness with high credibility. The third misconception is one that some psychologists share; they keep telling me, "It's all projection; people see what they want to see." In my experience this is just not true. Time and time again, I have been told by my most credible reporters, "At first we thought it was a balloon", or, "We thought it was an aircraft", or, "We thought it was Venus or Sirius". These observers go through a process of what you might call escalation of hypothesis. They're trying to explain it to themselves — first wanting a natural explanation, but not getting it; finally they're driven to the wall and wondering — "Well, what is it?"

If now we look at the factors which constitute strangeness we find elements which strongly suggest a linkage, or at least a parallelism with poltergeist phenomena and with phenomena in general, rather than with actual solid items of nuts and bolts hardware. This is one of the reasons why I cannot accept the obvious explanation of UFOs as visitors from outer space, despite the fact that as an astronomer I can agree with most of my colleagues that the chances of extraterrestrial life existing are enormous. Among the features which belie the idea of extraterrestrial visitation there is, first of all, the statistics of sightings. Some people are UFO prone, i.e. experience repeated UFO experiences. Another peculiarity is the alleged ability of UFOs to dematerialize; there are examples where UFOs have been shot at and have disappeared in a flash of light. In a variant form of this disappearing trick a cloud — almost a plasma — is said to develop around the object. The cloud becomes more and more opaque until it completely obscures the object. Finally the whole cloud disappears as though going into another dimension. Yet another queer phenomena was reported in a recent case. The observer — a medical man — saw two typical UFO disks. Each disk was shining a light down on to the ground. As he watched, the illuminated patches of light came closer and closer together. Corresponding, the two disks converged. Eventually the light patches coalesced. Simultaneously the two UFO disks seemed to fuse into one object.

The phenomena I have described seem to have a visionary or hallucinatory quality, and so to have something in common with mental phenomena in parapsychology and with certain types of religious experience (c.f. Vallee, 1974). But there are also similarities with poltergeist happenings, particularly electrical phenomena. For example, two brothers driving in Nevada saw four bluish lights "pacing" them. One blue light left the pack, so to speak, crossed over in front of the car and became a bright orange light over to the left. Then, the car's engine began to stutter, its lights dimmed, and it rolled to a stop. This behaviour of the car has been paralleled in hundreds of UFO reports. Meanwhile a further bright light appeared ahead of them on the roadway. One of the travellers got out and shone a flashlight in its direction; the light thereupon

seemed to come closer. The brothers became extremely frightened. Suddenly it seemed that the car was given a tremendous shove; the axle broke. Later I had the axle examined; the break was a perfectly ordinary one, typical of the kind that follows on the bearing being worn out. However it remains a fantastic coincidence that it should break just when the passengers were seeing five strange lights hovering around them. Interestingly enough, besides the effects and experiences already described, this case also included an episode quite typical of classical parapsychology — an ESP message received from a relative in time of crisis — a happening so frequently attested as to be almost commonplace. At the precise time that the brothers were being scared witless, their mother in Buhl, Idaho, felt the presence of one of them in her bedroom, and heard him say “Mom”.

This case was, of course, exceptional in having an episode of classical ESP type additional to the UFO sighting, and the attendant physical happenings, but the apparent electrical interference with motor vehicles is almost a commonplace of the subject. An official of the Northern Canadian Power Commission at Chesterfield Inlet, N.W.T., described an experience of himself, a colleague, and a visiting Professor from the U.S. while hunting caribou. (Incidentally, he remarked that since then they had been too scared to go out hunting; — which is lucky for the caribou!). The party came round a bend in a ravine and encountered an object which looked like two gigantic dinner plates, one turning one way, and the other rotating in the opposite sense at such a speed that it seemed to glow orange and blue. The top had a dome; the underpart, which had a slight dip in it, was no more than six feet above the ground. As they came round the corner the three skidoos they were riding all cut out — “The motors just quit”. Both the description of the object and the failure of the motors are entirely typical of many other accounts. In this case, as in most other reports, once the UFO experience terminates, the car engines return to normal working with no ascertainable fault or cause of intermittent failure.

A feature of some UFO sightings which suggests a kinship to those poltergeist cases in which the principal person suffers from conversion hysteria (c.f. Owen, 1964, 1971a), is the occurrence of various ailments such as temporary blindness or paralysis or skin rashes. These conditions are typically psychological in origin (Owen, 1971b) and from this point of view it is not surprising that UFO observers who suffer from them invariably recover after a time. Other UFO cases involve unexpected healings and to that extent resemble certain visionary experiences with a religious content which quite frequently are associated with a dramatic cure of certain ailments (mostly, it must be admitted, ones with a strongly psychological component in their aetiology). For example, one UFO observer, himself a physician, had shortly before the close approach of

an UFO sustained a severe cut, which was closed only by the recently clotted blood. According to his own and his wife's account, only an hour after his UFO experience while talking to his wife about it, he suddenly noticed that the wound had completely healed, indeed vanished from his skin. These cases of UFOs and wound healing are surprisingly common all over the world. In one that I investigated two police officers in Louisiana declared that one of them had been completely healed of a fresh alligator bite almost instantaneously while observing their UFO. So far as I am aware this seems to be beyond what can be expected of psychosomatic effects. It behoves us therefore to consider what features of UFO sightings are in disharmony with familiar psychological or parapsychological paradigms.

The most acceptable theory of poltergeist phenomena is that the people concerned themselves produce the physical effects, though they are usually unaware that they are doing so. However, despite some similarities, there are real problems in completely assimilating UFO sightings to phenomena already known in psychical research. For example, in the many cases where the object is seen by a group of people it is always seen from the beginning by all the members of the group. This bothers me, because if it were a hallucination then its hard to see how all the group could hallucinate simultaneously. If there is such a thing as mass hallucination with agreement as to details of the object's appearance, then that's a phenomena in itself, which is as mysterious as the UFO. We can ask if it's akin to a group poltergeist or P.K. phenomenon in the sense that the group, acting co-operatively like the Philip group, may be producing lights or images of objects. However the Philip group acquired its collective ability as the result of self-training and continued association, but group UFO sightings will occur when people who have previously been strangers to one another happen for the first time to be travelling together. One of the most interesting aspects is that the UFO sightings occur when they are in no way thinking about it. It just occurs; there has been no pre-conditioning of any kind.

It may be useful to list the characteristic features of UFO studies. In this I am happy to express my gratitude to Dr. Claude Cohaire, who is a member of our Center for UFO Studies, and a director of a division of the organization which in France corresponds to NASA. He has shown how scientific method can be applied to UFO reports. He compared about 200 well investigated French cases with a world-wide sample, and showed that statistically the French data agreed with the international reports. Generally speaking, the following facts emerge.

(1) UFOs prefer clear skies; that is, in 75% of cases there is at most scattered cloud.

(2) Close encounter cases (i.e. those where the UFO is reported

either on or very close to the ground) occur in relatively uninhabited regions — near isolated habitations and rarely in urban zones.

(3) The objects tend to be luminous. All nocturnal UFOs, of course, are luminous, but so also are the majority of daytime UFOs. UFOs are therefore essentially a luminous phenomenon and may have a stronger relation to what Dr. Tanous describes than at first meets the eye.

(4) It seems to be an almost universal finding that the objects change in colour as they accelerate.

(5) As regards movement, the typical reported behaviour is the ability to hover close to the ground and then take off with great acceleration, seemingly in violation of Newton's Second Law; the objects appear to have the ability to abrogate, at least temporarily, the inertial properties of matter. Alternatively this could be taken as supporting the visionary or hallucination hypothesis.

(6) As regards numbers of witnesses however, more often than not, there are at least two witnesses. This tells against the hallucination theory.

(7) When the objects are not silent, they are usually reported as humming, or as emitting the sound of a sewing machine, or of a dentist's drill.

I classify UFO reports in six groups.

(1) The majority of cases are nocturnal lights which cannot be explained as meteors or in any conventional way.

(2) Then we have the daylight disks — the daytime sightings, generally oval in shape — the traditional "flying saucer". (It may well be that the same objects appear at night as nocturnal lights).

(3) The third category consists of radar cases. The ones that I like best are those in which the radar confirms a visual sighting. For example, a high ranking officer of the Royal Australian Air Force told me how he saw an intensely bright light near each of the wing tips of the craft he was flying. After a while they drew off to a distance but continued to "pace" him. He asked the control tower if there was any traffic in his area. They reported back that there were two other aircraft, and that in fact he was the middle "blip".

The remaining three groups are called close encounters, i.e. sightings within a few hundred feet so that vision is effectively stereoscopic, etc.

(4) In close encounters of the first kind the observers may be frightened but there are no physical effects.

(5) In those of the second kind, physical traces are left. These are the most interesting because the traces can be photographed or subjected to laboratory analysis. In a case at Columbia, Missouri, the object seemed to have a metallic centre surrounded by an orange glow, and then a whiteish blue one. It seemed to come within 30 feet of the house. The telephone went dead, as was confirmed in an affidavit by the telephone operator in Jefferson City. The wind speed that night was certified by the weather bureau as only 5 mph. However the observers reported that the trees near the object swayed as if in a hurricane. There was a loud cracking sound; when the police arrived two hours later they found a branch, diameter $2\frac{1}{2}$ inches and 17 feet above the ground, ripped off one of these trees. The leaves on the branch and neighbouring parts of the tree were curled and shrivelled in a rather strange way.

This is typical of 800 or so cases in which physical effects such as broken branches or rings on the ground are found subsequent to the episode. For example in Iowa two girls in a farmhouse saw a luminous object pass their window which overlooked a soybean field that the farmer had inspected that afternoon. Next day he pooh-poohed the apparition, but found a ring about 40 feet across in which (as I confirmed myself) the soybean plants were unbroken but shrivelled and slightly charred as if subject to intense radiation from above. I walked over the surrounding terrain but found no sign that any farm vehicle had approached the spot. In Kansas a youth tending sheep heard a noise and saw an extremely brilliant lighted object descending; it was quite blinding. After some minutes it lifted off and left a glowing ring. The boy's mother, a nurse and therefore a person of some practical competence) took a polaroid photograph on which the glow showed up. She also stuck her fingers into the ground, to test whether the glow was warm. Her hand developed a numbness, and for two weeks she was unable to take her patients' pulses at the hospital. We took soil samples down to 14 inches. The soil in the ring looked quite different from normal soil. Also it was hydrophobic; a drop of water put on it would not sink in at all. We also found at Northwestern that nothing at all would grow in it, even though we tried to force water into it; but samples from other parts of the field were quite fertile.

Like the radar cases these episodes in which the luminosity of rings can be photographed, and where permanent physical and chemical effects are left, certainly militate against the assumption that the UFO experience is a purely psychological or psychical event.

(6) Close encounters of the third kind are those in which occupants — Ufonauts, humanoids, etc. — are reported. These narratives constitute the most bizarre and seemingly incredible aspect of the entire UFO phenomenon. As I said in my book, I would gladly omit consideration of

them if I could do so without offense to scientific integrity. Unfortunately one may not discard data simply because they may not be to one's liking or in line with one's preconceived notions, though I must confess to a considerable degree of prejudice against reports of humanoids stepping out of flying saucers. Maybe this involves an atavistic fear of the unknown, or of rivalry with another species for the ownership of the earth. However there are more logical objections to the ufonauts as reported. It is odd that the humanoids should apparently be adapted to our own gravity, and to the pressure and composition of our atmosphere. This would mean either that they are robots, or that they come from a habitat very like our own. Yet the stories of occupants are too numerous to discard even though they are much harder to understand than the other UFO categories; their number runs into the hundreds. Also (and this should be stressed) the close encounter narratives do not differ significantly from the other five classes in regard to geographical distribution, weather conditions, or professional qualifications of witnesses, except that among the witnesses there are no pilots, air traffic controllers, radar operators, or scientists, although almost every other responsible profession is represented.

The difficulty with these reports is that they usually contain many or all of the elements found in cases of type 5. As an example, I can cite a case investigated by the Westmoreland County UFO Study Group in Pennsylvania, who are closely associated with our Center. About 9 p.m. on 25 October 1973 a farmer, Stephen Polaski, and Trooper Burns of the State Police, heard a noise in the woods. Some fifteen other witnesses saw a bright red ball hovering over a field. As Polaski and two neighbours drove towards the field their auto headlights went dim. They saw the object slowly descending. Walking over the crest of a hill they saw it low down, sitting directly on the ground or hovering just above it. It was now bright white and illuminating the area. The object was dome shaped like a big bubble about 100 feet in diameter and emitting a sound like a lawn mower. They also saw two figures by the fence. Polaski, taking them for bears, fired over their heads. However, he then saw that they were strange. By comparison with the six foot high fence he could see that the creatures were over seven feet tall. They were covered with long grey hair and had greenish yellow eyes. They made whining sounds apparently directed at each other. Polaski eventually fired three rounds into one of them, who whined, and then accompanied by the other, turned round and walked slowly back to the woods. At the very moment that they turned the object in the field just disappeared. But on the ground it left a glowing white area (confirmed by Trooper Burns) bright enough to read a newspaper by. About 150 feet in diameter, the glow extended about a foot up from the ground. Plants normally growing on the spot could be discerned within the glow.

Narratives of the above kind are difficult to reject as out and out fictions or phantasies, because of the multiple witnessing. The object behaves in some ways as a mere phantom, but generates physical effects and leaves physical traces, behind it. Whether the objects and the creatures are projections or intrusions from another dimension or plane of reality, remains for the time being a subject of speculation. The practical study and on-site investigation of UFO reports will, I hope, continue, because I feel it brings us into contact with real scientific problems of the deepest import.

Matthew Manning: Luminous "pictures".

Light phenomena happened to me during the time that I was at the centre of a very violent poltergeist outbreak. On the first occasion while I was asleep in another part of the building, the prefect in charge of one of the dormitories awoke at 4.30 a.m. and saw a patch of light on the wall about the size of a dinner plate. As he watched it slowly grew until it was six feet across. He then left the dormitory and prayed in the corridor for half an hour. On his return the light had almost disappeared. On a second occasion a similar light appeared in the same room. I was awakened and fetched from my own sleeping quarters on the other side of the building. There was a strange sensation of ether-like cold in the room. The school matron, the prefect, and I watched the patch of light grow bigger and bigger until it reached from floor to ceiling as before. We ascertained that there was no light source projecting light on to the wall. When I put my hand up it cast no shadow on the illuminated patch, which seemed to be self-luminous. When I felt it it was very warm, unlike the surrounding area which was cool in the way a plaster wall usually is. Curiously enough, while all three observers saw the growing patch of light, they did not agree in respect of certain additional details. I saw a pattern very like the Biblical Crown of Thorns round its edge. But matron saw only a light pattern in the form of a centrally placed cross, which was invisible to me. On my going through a procedure described in my book (Manning, 1974) the light began to shrink until it was a saucer-shaped area, without the cross or the thorns, which disappeared completely when we switched on the electric light. While the luminous patch was shrinking the room temperature seemed to rise until it felt normal.

This event had a curious sequel. Next morning, after I had made my bed and left my dormitory, a prefect found near my bed a length of wire which had been twisted into a saucer-sized ring, and a piece of sheet music on whose cover was a drawing of a crucifix with a crown of thorns placed centrally over it. The piece was "The Saint John and Saint Matthew Passion". John, incidentally, was the Christian name of the Headmaster, who was much exercised in his mind concerning the poltergeist happenings. The origin of the objects is unknown.

Dr. Alex Tanous: Experiences with light.

I have had a number of strange experiences with light, some of which resemble those described by Matthew. For example, once when I was visiting Mr. and Mrs. Frank Myers at Manchester N.H., we had had dinner and were discussing Ted Serios. The thought came to me, if someone can put photographs on polaroid, why not put a picture directly on to a screen? I said to the company, "I'm going to produce a picture on your wall". I took care not to specify what it would be. In the event, Mr. and Mrs. Myers and their children and I, all saw the head and shoulders of a man — not a shadow, but an illuminated area — progress across the wall. We all blinked and rubbed our eyes and tried re-focussing them etc. etc. For a split second we were successful and briefly abolished it, but it returned. The Myers family swore an affidavit which I gave to Dr. Osis, who also got the statement confirmed by them on audiotape.

On another occasion I was visiting a lady in hospital and happened to look out of the window into the full glare the sun. I then stared at the wall, which was painted a light colour. Squares began to appear on it. However this was not a mere optical illusion because three of four other people and the nuns who were in the ward also saw the squares and asked what was happening. It lasted about a minute and a half.

The next episode occurred when I was in the home of Mrs. Poloski and seven other people — some were housewives but the men present were engineers, film technicians, etc., all highly critical. I was relaxing after talking to the group. The room was only dimly lit — a small electric candle over my shoulder. Mrs. Poloski suddenly put her hand on her chest as if having a heart attack and said "Dr. Tanous, are you doing anything?". I asked what she meant and she said lights were shining on the wall that she (alone of the company) was facing. We all turned, and for two hours watched a display of light streaming over the surface of the wall. This is testified to by affidavits sworn to by several of the people present. What startled them most was that the pattern included the picture of a ship. I did all I could to suppress the phenomenon — I closed my eyes — turned the room lighting on and off — but the pattern and pictures always reappeared as soon as we dimmed the lighting. However I was able to modify the picture; for example, I "detached" the ship and made it sail across the wall. Everyone saw this. Thereafter all sorts of images appeared — lines, crosses, etc. It seemed that though everyone saw luminous patterns on the wall they differed as to the details of what they saw.

Later, at the invitation of Alan Vaughan I went to the Dream Laboratory at Maimonides Medical Centre and produced some of these effects in the presence of Alan, Charles Honorton and Mr. Stubb from Durham, N.C. We sat in a dimly lighted room; I would look at a picture and then attempt to reproduce it as a light pattern on the wall. Alan and Charles

said they saw something but were not sure whether it was a telepathic projection from my mind or theirs.

My next experience was at a lecture I gave at Utica, N.Y. Normally I never do any demonstrations in public, but this meeting was to raise funds for purchase of a heart lung machine, and I said that I would attempt to solidify light. I explained that I would look at a 500 watt lamp at close range and then, in total darkness, I would make a ball of light. I did produce the light and about a dozen photographs of it were taken. Subsequently I did it twice more in public and once in the laboratory with Vera Thelman. At Dr. Osis' invitation I did the experiment with photomultipliers at the ASPR which I described earlier.

I do not know how it fits in with the light projection phenomena or whether it is something unrelated, but I got some Serios-like effects when a group of medical doctors in Boston were studying my physiological responses. They set up a camera in a totally black hospital darkroom. I tried to solidify light in the same way as in Utica. Of the four pictures that they gave me, the first shows a bed in front of me with a coffin upon it; over it there is a shape like a hand made of luminous energy. The others continued to show the coffin, but show the hand more bright and concentrated rather like the ball of light in the Utica pictures.

EDITORIAL POSTSCRIPT

Since the Conference a detailed account of the EEG "ramp function" finding has been published (Whitton, 1974) and other experimental work at the Conference has been briefly described by Owen (1974) and alluded to in Matthew Manning's book *The Link* (1974). A verbal report on these and other P.K. topics was given by Dr. Whitton and Robin Owen at the Tarrytown Conference on *The Physics of Paranormal Phenomena* (21-23 Feb. 1975; sponsored by the Foundation for Parasensory Investigation, The John L. Tishman Foundation, and Lab Nine Ltd).

Developments in our knowledge of psychokinesis acquired subsequent to the Conference have been reported in the next issue of this Journal *New Horizons*, Vol. 2, No. 1 which is published simultaneously with this issue, and include further elaboration of the "Philip" research, a report on the metallurgy of a "Gellerized" object, and the discovery that paranormal "Philip" raps differ acoustically from raps generated by normal percussion.

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Important Movies

The following movies (16mm. colour and optical sound track), professionally made, may be hired or purchased from George Ritter Films Limited, 2264 Lakeshore Boulevard West, Toronto, Ontario M8V 1A9, Canada. Tel. (416) 252-2291.

PHILIP, THE IMAGINARY GHOST: A film, professionally made, showing how a group of ordinary people developed a revolutionary new technique for generating genuinely paranormal physical phenomena (sounds and movements of objects) during their efforts to make their own ghost. (16 minutes).

MATTHEW MANNING: STUDY OF A "PSYCHIC:" This movie, made on location in England shows how Matthew, an English schoolboy, developed the strange powers of psychokinesis and clairvoyance, and brought them under voluntary control. (30 minutes).

Important New Books

Obtainable through any bookseller.

THE LINK: By Matthew Manning. (Published by Colin Smythe, Gerrards Cross, England and Holt, Rinehart and Winston, New York).

This book is the record of an eighteen-year-old boy Matthew who "is one of those rare persons endowed with a high degree of psychokinetic power". He is also remarkable for his ability to harness this power and channel it into metal bending like Uri Geller, or, as he himself prefers, to redirect it into clairvoyance, and automatic writing and drawing in a variety of classical styles.

PSYCHIC MYSTERIES of CANADA: By Dr. A. R. G. Owen (Published by Fitzhenry and Whiteside, Toronto).

Written in a clear but entertaining style so as to interest both scientists and laymen, Dr. Owen illustrates the subject matter of psychical research from Canadian sources, and explains the remarkable new discoveries in this field that Canadians have made in the last few years.

(Published in the U.S.A., by Harper and Row, New York under the title — *PSYCHIC MYSTERIES of the NORTH*).