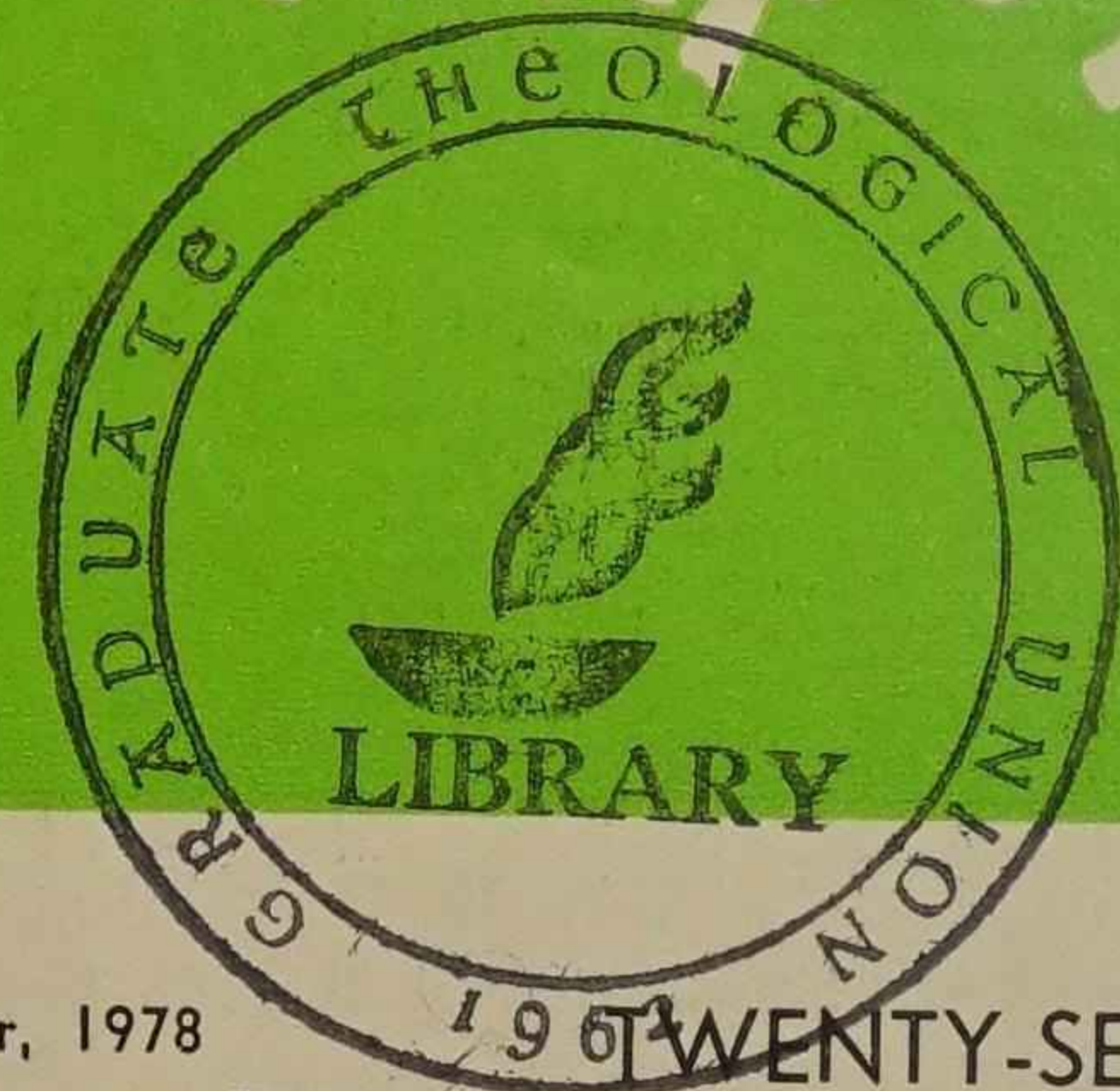




Parapsychology Review



Volume 9, No. 6 November-December, 1978

TWENTY-SEVENTH INTERNATIONAL CONFERENCE
OF THE PARAPSYCHOLOGY FOUNDATION
DEC 1 - 1978

CONTENTS

BRAIN/MIND AND PARAPSYCHOLOGY

REPORT ON PARAPSYCHOLOGY
FOUNDATION'S CONFERENCE
Michael Thorne Kelly 1

A Report by Michael Thorne Kelly

PSYCHOLOGY AND THE POLTERGEIST:
A REVIEW
Joel L. Whitton

BOOK REVIEWS
Inner Spaces 11
Philosophy and Parapsychology 13
Psychotronik 1977 15

SPR CONFERENCE REPORT
Susan Blackmore

RECENT LIBRARY ACQUISITIONS 21

DERMO-OPTIC PERCEPTION
Yvonne Duplessis 22

NEWS
Psychotronics Conference 20
Death Notice—Semyon Kirlian 20
Anthropological Psi 20
OBEs Wanted 20
Research Aid Coming 20
SPR Conference 27
ASPR Course List 27
Course in Spain 27
Editor Resigns 27

This August, ten scientists and thinkers were gathered together by the Parapsychology Foundation for a meeting in Montreal, Canada. The occasion was the Twenty-Seventh Annual International Conference of the Foundation. This year, these men were asked to engage a set of questions about the nature of man, the pedigree of which reaches at least as far into the human heritage as the first ritual burials of their companions carried out by Neanderthal men: What is the truth underlying our felt experience that we are at the same time unbounded, thoughtful mind and transient, predestined body? What is mind, how is it related to the brain, and where in the puzzle are we to fit psi phenomena?

Edward Kelly of Duke University in Durham, North Carolina, set the pace of the conference with his paper "Converging Lines of Evidence on Mind/Brain Relations." His primary contention was that we may be approaching a point where "converging lines of evidence from several sources can intersect to produce a decisive resolution of the mind-body riddle."

Unlike scientists and philosophers of a century ago, who had to be content with the assumption that in some gross way the brain was the organ of mind, we, according to Kelly, are becoming conversant with the structure and organization of the brain all the way down to the level of neurons and be-

low even that in some areas. More important perhaps, for the understanding of consciousness, we have begun to learn a fair amount about the brain's "functional organization."

Kelly explained that the connection between mind and brain has grown tighter and more detailed with advances in our understanding of the brain. He feels that on the basis of present progress, it isn't unreasonable to expect that the properties of minds can be ultimately explained by those of brains. He reviewed the current "official brain doctrine" which contends that the apparent duality of mind/brain experienced by most of us exists only in language. This doctrine is called the Identity theory because it insists that mental events are in some complicated way identical to classes of physical events occurring in the brain. As a current alternative to this view, he cited the work of Sherrington, Penfield, and J. C. Eccles. Eccles, in particular, has advanced complex and interesting arguments in support of dualism (the theory that mind is a distinct entity which only expresses itself through the brain rather than be-

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PARAPSYCHOLOGY REVIEW

Published bimonthly by the Parapsychology Foundation, Inc., 29 West 57th Street, New York, N.Y. 10019. Telephone: PLaza 1-5940. News items should be addressed to the Editor, Betty Shapin. Subscriptions: U.S. \$5 for one year; \$9 for two years; single copies \$1. Other countries: \$5.50 for one year; \$10 for two years. Printed in U.S.A. Copyright 1978 by Parapsychology Foundation, Inc. All rights reserved.

ing a product of the brain). Eccles has attempted, according to Kelly, to supply positive evidence of aspects of human activity that resist explanation in terms of brain function alone. However, Kelly feels that the best Eccles has been able to do is show that some brain phenomena are more simply explainable if you accept the existence of a "self conscious mind" which is responsible for all the "higher" mental phenomena, including the integration of both perceptual experience and voluntary motor activity.

On total, Kelly finds Eccles's arguments insufficient to exclude the possibility that brain processes might "in principle" account for the entirety of mental events. Among several specific criticisms of Eccles's dualist hypothesis, he lodged a complaint similar to one once voiced by William James. "What," he asked, "really is gained by ascribing complex mental functions of whatever sort to an entity of the type Eccles proposes? We are still faced with exactly the same problems we might have hoped to solve in terms of observable or inferable brain mechanisms; the problems simply recur in a relatively inaccessible domain." Kelly suggested that Eccles has too readily dismissed the possibility of some version of Identity theory out of a presumption about the limitations of machines. Old mechanistic models of the brain compared it to a gigantically complex, automatic telephone switchboard, "a network of passive relays." Such a comparison, Kelly agrees with Eccles, is entirely too simplistic. Unlike Eccles, Kelly recognizes much more appropriate mechanistic analogies. Contemporary mechanistic theory, explained Kelly, recognizes that the essential attribute of machines is not mechanics, but that their normal behavior is "bound by rule." It was the extrapolation of this understanding which led to the computer. The work of the English logician, A. M. Turing, made possible the idea that computers and brains could "fruitfully" be regarded as two varieties of a general class of information-processing mechanisms. This, in turn, led to the modeling of brain functions with computers.

Despite the initial and considerable success of such modeling, Kelly dis-

agreed with the notion originated from this research, that events at higher levels in the brain are reducible to events at the lower levels. Instead, what seems required to explain mental events is a distinctively "psychological" level of explanation. The attempts by computer simulation and artificial intelligence specialists to provide this come eventually to a crucial stumbling block. This block is the fundamental inability on the part of computers to distinguish, in a systematic way, between metaphorical truth and literal falsehood. Computers, apparently, cannot be programmed to have an overall sense of wholeness, a "felt Gestalt quality," at a level of generality which would enable them to extend analysis from what they already know to novel but appropriate contexts. Still, Kelly refused to preclude the possibility that future research would provide a mechanistic solution to this seemingly intransigent barrier. He did feel, however, that there is one area of human capacities in which mechanistic principles must fail: that is the parapsychological abilities which have been experimentally validated over the last several decades. Kelly said that psi abilities definitely represent a non-mechanistic "extra capacity of a fundamentally novel sort," which by nature resists machine duplication. He added that, to him, psi phenomena seem to be only the "leading edge of a pattern of connected developments."

Kelly described problems and phenomena in several areas besides those associated with psi which seem to weaken mechanistic arguments; where memory is stored in the brain and how it is accessed, how some people seem to have total visual recall and others do complex calculations, rivaling calculators, in their heads. He added to these, with some reservations, the evidence which lends support to the possibility that something "undeniably mental" can survive death. Kelly concluded his paper with the statement that he felt that something "fairly close to our present views (Identity theory) seems to remain provisionally tenable" as an explanation for mind. He then noted that the problematic phenomena he had just described may in the end "drive us on toward much

more radical revisions of our basic ideas on the mind-body problem."

Charles Honorton is director of the Division of Parapsychology and Psychophysics of Maimonides Medical Center in Brooklyn, New York. In his paper, "A Parapsychological Test of Eccles' 'Neurophysiological Hypothesis' of Psychophysical Interaction," he described research he did in his laboratory which may provide insight into the mode of interaction between a self-conscious mind and its brain.

According to Honorton, theories such as Eccles's, of dualistic interaction between mind and brain, can be empirically tested only if the hypothesized mind influence can be "physically detected under conditions that render explanation through physical reductionism untenable." Honorton asserted his feeling that psi research methodology can make a unique contribution to such an empirical test.

For Honorton, psychokinesis experiments done with random number generators, such as those of Helmut Schmidt, point the way to methodologies for such a test. Research in this area has been sufficiently extensive in his opinion to warrant at least "tentative support for the hypothesis that goal-directed mental activity can serve to induce small but measurable changes in the normal operation of remote physical devices." This has opened the way to testing Eccles's theory with a combination of random number generator, psychokinesis methods and biofeedback techniques.

Honorton described an experiment carried out at Maimonides which he considers only "a crude feasibility study," but which, he feels, generated interesting, if tentative, support for the possibility that a brain might be acted upon by an extrinsic mind. In the experiment, a subject, with the assistance of biofeedback, attempted to control the alpha activity of his brain. In another room, a random number generator was simultaneously being monitored. After the session, the orderliness of the random number generator, when the subject successfully controlled his alpha, was compared with its output when he was unsuccessful. These were also compared with a no-feedback baseline condition. The data analysis



Standing, left to right: Michael Kelly, Emilio Servadio, Norman F. Dixon, Charles Honorton, J. Bigu, Charles T. Tart.
Seated, left to right: Jan Ehrenwald, Karl H. Pribram, John Beloff, Thomas H. Budzynski, Edward F. Kelly.

showed that the random number generator deviated from randomness and became orderly to an extent of roughly one chance in two hundred when the subject was controlling his alpha. In the other conditions, where the subject wasn't controlling his alpha, there was no significant deviation from what would be expected by chance. This suggests to Honorton that the mind acts on the brain to change its state and that it does this possibly by psychokinesis.

J. Bigu, physicist at the Elliot Lake Laboratory of the Canada Center for Mineral and Energy Technology in Ontario, Canada, titled his paper "A Biophysical Approach to Paranormal Phenomena." In it, he focused on the possibility that some psi phenomena — specifically those of telepathy and precognition — could in some cases be the subliminal perception of complex environmental stimuli.

Bigu critically examined each of the currently known sources of stimuli available in the human environment which might serve as a carrier of information at a subliminal level. Besides the familiar low frequency radio waves,

he considered ambient neutrinos, piezo electric forces and a number of other energy phenomena, such as precede earthquakes, which make up our energy environment. He demonstrated that these forces can, in fact, affect human activity and experience in powerful, often unpleasant, ways. He described the main advantage of his theory as its "falsifiability"; that it can be tested empirically.

Bigu was careful to note that his theory cannot explain much of the "seemingly genuine psi phenomena." Its purpose, he explained, is only to "point out the general usefulness of such a biophysical approach to ostensible paranormal experience."

At the beginning of his paper, "Voluntary Movement, Biofeedback Control and PK," John Beloff, Professor of Psychology at the University of Edinburgh in Edinburgh, Scotland, asked, "Is the power which enables us to influence the target system in a PK [psychokinesis] experiment the same power, basically, as that which we deploy every time we voluntarily move our limbs." Rather than assume that PK represents some special power or

faculty which is "radically" different from anything else that is part of our ordinary mental life, Beloff suggested that we should examine the possibility, first proposed by Thouless and Wiesner in 1947, that PK is the external manifestation of a normal, on-going, internal process.

Two aspects shared by voluntary movement and PK encouraged Beloff to re-examine the Thouless-Wiesner proposal. They are both "goal oriented or teleological-type processes" in the sense that the ends are achieved without any conscious awareness of how and they are both intimately bound up with the provision of feedback.

It is the issue of feedback on which Beloff focused most intensely. He reviewed Elmer Green's concept of "passive volition" (successful biofeedback learning takes place less from an act of will than of wishing). He noted the similarity of Helmut Schmidt's successful PK experiments to typical biofeedback training experiments. The work of John Basmajian which demonstrated that people can learn to control single muscle cells, was cited, as was William Braud's allobiofeedback experiment, in

which an observer apparently used PK to influence the physiology of a subject.

All of these works were wedded to an argument supporting Eccles's dualist hypothesis. Beloff feels that a psychic influence such as Eccles proposes, which can influence the brain at a distance, might be involved throughout the physical system, all the way into its external interactions. Beloff added that he thinks Eccles's arguments are weaker for failing to include the research findings of parapsychology.

Dr. Thomas Budzynski, of the Biofeedback Institute of Denver and of the University of Colorado Medical Center, in his paper, "Brain Lateralization and Biofeedback," reviewed the current literature on the localization of different mental functions in the two cerebral hemispheres. He also discussed the implications for teaching and for parapsychology of being able to train the two cerebral hemispheres independently with biofeedback.

Budzynski explained that a model of brain functioning which hypothesizes different functions for the left and right hemispheres of the brain can offer "at least a partial explanation of many of the phenomena which result in sudden or dramatic psychological or physical change." Important to the model is the ability of one of the hemispheres to generally dominate the other. With a reference to the voice patterns of many of the better known preachers and healers, Budzynski suggested that in many cases healing can be accomplished by lulling the generally dominant left hemisphere of the brain and interacting directly with the right hemisphere, which, he suggests, can precipitate "emotional or even psychosomatic disturbances" when it is in conflict with the left hemisphere.

He explained that many of the newer, body oriented therapies seemed oriented to reprogramming the right hemisphere as a means of alleviating symptomatology. He added that if, as some people believe, the minor hemisphere "subserves psi phenomena," then these same procedures should allow the enhancement of paranormal abilities. Perhaps, he suggested, the suspension of the critical, logical faculties may release the more intuitive,

creative minor hemisphere functions, one of which may be the ability to "receive or transmit psi energy."

In his paper, "A Progress Report on the Scientific Understanding of Paranormal Phenomena," Karl Pribram, of Stanford University in Palo Alto, California, offered a model of brain functioning which he has been developing since 1968. The model grew out of an initial intuition that the brain might store information in a way similar to a hologram.

"One of the implications of . . . a constructional, holographic brain process is that what we experience of the world is in us as much as it is in the world 'out there.'"

Holograms are films on which interference patterns of light, reflected from an object with lasers, are stored. When light is shined through a hologram, the viewer sees a perfect three dimensional image of the original object (a holograph) which is apparently suspended in empty space. Most important for Pribram's speculations, since each point of light reflected from the object is spread over the entire surface of the film, like ripples over the surface of a pond when a rock is thrown in, any part of the film, however small, contains the complete holographic image of the object.

Before going into the implications of this, Pribram reviewed the research done over the last ten years which supports his "holonomic" model. He said that the advent of inexpensive computers had made possible the simulation of the holographic process as it might be realized in the neural tissue of the brain. According to him these "hardware realizations made it obvious that [in the brain] object to wave [light, sound, etc.] storage to image construction [our experienced perception] is a linear process." The wave forms are expressible mathematically and they can be stored that way as neural transforms of the objects and of their images. The storage of wave patterns (the hologram) is thus reciprocally related to the imaging of objects. Thus, his theory states that the brain, at one

stage of information processing, performs its analyses in the frequency domain. Apparently, for the brain, objects and their images are frequency interactions; in a sense, immaterial.

Pribram offered his model as an alternative to James Gibson's "Ecological model" of perception, which proposes that the information which we "perceive" is inherent in the physical universe and that perception is a "direct" process. By contrast, Pribram feels that images are produced and are as much a product of the information residing in the organism as they are of information contained in the environment.

One of the implications of such a constructional, holographic brain process is that what we experience of the world is in us as much as it is in the world "out there." For example, when you look out your window and see a tree being blown about by the wind, your perceptions of the tree, window, etc., are in your brain; holographs which may or may not bear a direct representative relation to the physical interaction in the world which gave rise to the perception. Pribram suggested that if what we "directly perceive" is a constructed image and not the true organization of the external world—and we mistake this perception as accurate — then perception would be both direct and constructional. He then wondered if this might also be the way the physical universe works: that the structure of the universe and the distribution of information (energy) might not be fixed, but be interactive. "For brain function, we found structure to be in the form of program [as in a computer] and distribution in the form of holograms. Is the rest of the physical universe similarly constructed?" In an attempt to answer this question, Pribram called on the theoretical work of physicist David Bohm. For Bohm, the subquantal domain of physical reality shows striking similarities to holographic organization.

Such a holonomic organization would, according to Pribram, allow one to know the "intrinsic properties" of the world, "the stoneness of stones," as well as the "extrinsic properties . . . the rules, structures, etc." The intrinsic

sic properties would be the ground in which the extrinsic properties are embedded in order to be realized. Pribram said that the most profound insight to be gained from holography is the reciprocal relationship between the frequency domain and the image/object domain. He added that this new duality raises a fundamental question. "Should mind be conceived as only an emergent property resulting from the interaction of an organism with its environment, or whether mind truly reflects the basic organization of the universe (including the organism's brain)." He said that in the holographic domain, what is organism is no longer sharply distinguished from what lies outside the boundaries of the skin. This means that each organism in some way represents the universe and in some manner each portion of the universe represents the organisms within it.

Pribram explained that in the frequency (holographic) domain, time and space are "collapsed" and, therefore, the ordinary boundaries of space and time become suspended. In the absence of space-time coordinates, causality must be suspended. "Complementarities, synchronicities, symmetries, dualities must be called upon as explanatory principles." Psi phenomena, Pribram said, may be the result of tuning in on the holographic domain. He reminded the assembly of the reality which mystics have experienced throughout history and across cultures: a universe in which all "things" are a unity. If such is the case, perhaps there is nothing "para" about the normality of psi phenomena, he suggested.

Charles Tart, Professor of Psychology at the University of California in Davis, California, in his paper "An Emergent Interactionist Understanding of Human Consciousness," offered a dualistic theory of consciousness which has empirical, testable consequences. He regards consciousness as a complex manifestation of interaction between what he labels as the "B system" (the brain, the body and those laws which govern them) and the "M/L system" (the mental and life aspects of reality).

He described consciousness as a systems property, "an emergent." In his theory, psi is the means of interaction between the B and M/L systems. He

distinguished between "auto psi" which is localized to the organism and "allo psi" which is the extraordinary expression of psi outside the physical bounds of the organism.

"... a psychic influence such as Eccles proposes, which can influence the brain at a distance, might be involved throughout the physical system, all the way into its external interactions."

Tart said that a great deal of information processing, decision making, perception and action may take place in the B system without involving any auto psi interaction with the M/L system. He explained that this would account for the habitual, automatic way that consciousness seems to function a great deal of the time. He also distinguished between consciousness and a state of "pure awareness" which he associated with M/L functions. He based the concept of pure awareness on accounts of mystical and out-of-body experiences. In his theory, allo psi and auto psi form a circuit between the B system and the M/L system. He explained that the M/L system can use allo psi to gather needed information from the environment and then influence the B system via auto psi, thus modifying the "emergent, the person's behavior, in ways which are need relevant."

Tart explained the uncommonness of allo psi phenomena by suggesting that the B system processing activity is so habitual and continuous that very little capacity is available to initiate or appreciate allo psi activity. In this case, the B system activity would represent a high level of "noise" which would obscure allo psi activity. In Tart's Emergent Interactionist view of consciousness, it is apparent that psi is being used a large amount of the time in everyone's daily life, but it is used "internally." He offered the possibility that allo psi might be enhanced by certain altered states of consciousness and by training.

One of the empirical implications of Tart's theory is that allo psi might be more apparent if research focused on experiments which involved high de-

grees of complexity. Tart suggested that current experiments might be so trivial, compared to the normal uses of allo and auto psi, that they don't "attract much attention." Tart predicted that allo PK, for instance, would work more successfully when directed toward super-complex, brain or computer-like systems rather than when directed toward simpler tasks. For Tart, the Emergent Interactionist position allows for some kind of survival of bodily death. He doubted that such survival would resemble what people generally imagine survival to be. He doesn't think that personal identity would exist for very long without the B system. This raised the question of what the pure awareness emerges from and, in this case, could personality be sustained in the M/L system after death of the B system.

Norman F. Dixon is a professor in the Department of Psychology at University College in London, England. In his paper, "Subliminal Perception and Parapsychology: Points of Contact," he pointed out the "remarkable similarities" between certain psi phenomena and the phenomena associated with subliminal perception. Subliminal perception is the term used to describe people's ability to take in information and respond to it without having any attendant conscious awareness of being exposed to the information. Dixon thinks that the similarities of the effects associated with psi and subliminal perception may indicate that they both depend on some of the same underlying physiological processes.

He asked his audience to note that there are ten different "paradigms" which all involve reception of information without "awareness." Of these, nine have in common a causal, physical link between the receiver and the transmitting source. Only one of them, psi, fails to depend on a physical stimulus to link events outside the receiver with events inside him. Even with this profound difference, all ten are remarkably similar.

A multitude of experiments has demonstrated that words or pictures presented too briefly or weakly to enter conscious experience influence a variety of normal behaviors, including retrieval of previously learned material

from memory. Like parapsychological phenomena, certain factors, such as emotional content and motivation, seem to have a significant effect on the functioning of subliminal perception. After describing several additional points of contact, Dixon said that if the results of "extrasensory perception" were to be likened to those of subliminal perception, they would have to involve "preconscious semantic analysis, emotional coding, and access to long term memory." This led him to conclude that psi effects "lock into the nervous system at some stage prior to those responsible for these functions yet capable of modulating the arousal systems of the brain." The sensory relays in the midbrain, thalamus, associative cortex and the limbic system would be possible candidates for this "hypothetical mediating function."

Dixon added that there are grounds for believing that processes underlying subliminal perception in normal people are akin to those responsible for psychosomatic conversion symptoms in patients who involuntarily and unconsciously transform psychic conflict into somatic dysfunction. From this, Dixon surmised that these psychosomatic processes may be a special case of something that goes on in certain parapsychological demonstrations, namely "an influence of mind — of knowledge and feelings about knowledge — upon matter." He suggested that a joint examination of the three sets of phenomena — the subliminal, the psychosomatic, and the parapsychological — "may have a spin-off for our comprehension of all three."

Jan Ehrenwald is a psychiatrist affiliated with Roosevelt Hospital in New York City, New York. His paper was titled "The Right Hemisphere: Pathway to Psi and Creativity." The split-brain research of Sperry and other scientists along with his own clinical observations have led Ehrenwald to feel that the right hemisphere of the brain may play a major part in processing psi phenomena.

His interpretation of the data in support of a psi focus in the right hemisphere doesn't preclude left brain oriented psi activity. He feels rather that the left side is generally "too busy . . . adapting to the here-and-now . . .

to have 'time' and 'space' for psi." He noted that the left side of the brain "gives free reign to the right side to engage in dreaming, hallucinating . . . and the making of myths and metaphors"; all activities which he feels have some relationship to psi. He compared the difficulty that psi activity has in emerging into consciousness with the similar difficulty of subliminal perceptions which also have important connections to the right hemisphere. He suggested that a sort of filter exists which screens out information which is extraneous to here-and-now functioning. Ehrenwald also described several studies which indicate that a reciprocal relationship exists between psi activity and creativity. He then cited some of his work on highly creative men (Beethoven, Einstein, etc.) which indicates that these men had especially well developed right brain functioning. This further bolstered the psi-creativity-right brain connection.

"Contemporary mechanistic theory . . . recognizes that the essential attribute of machines is not mechanics, but that their normal behavior is 'bound by rules.'"

Emilio Servadio from the Psychoanalytic Center of Rome in Italy, contributed "The Mind-Body Problem, Reality, and PSI," in which he reminded the assembly that the body is a "largely alien entity even for a healthy normal person." He followed this with a discussion of the relationship of the Ego (our feeling of "I"ness which is the basis for the experience of consciousness) to the body. Whenever we attempt to throw light on the "famous, mysterious 'bridge'" that links the mind to the body, we are forced to use the Ego as our point of reference. Currently the Ego is said to be the part of the mind that "recuperates and integrates; the instrument whose mediation allows new and more convenient automatic processes to take place." It has historically been considered autonomous, though this issue of freedom has always been controversial.

Despite these descriptions of its functions and its quality of givenness,

Servadio makes it clear that there exists no satisfactory explanation of what the Ego is or what it does. He added that with respect to the body and external reality its actions are hardly autonomous. It bears more of a resemblance to an "appendix . . . of something else." Its vaunted "'primacy'" does not exist.

Having severely diminished the significance of the Ego, as we experience it, Servadio turned his attention to those mystical teachings which, like Zen, insist that it is possible to create an Ego which is totally different from the one with which we are so intimately familiar: one which can achieve "real autonomy and mastery in its relationship with the dark side of the mind, with the body, and lastly with reality." Many of these teachings see the organism, with its physical processes, the unconscious, with its drives and conflicts, etc., as a loan. They have "borrowed their present 'primacy' from an Ego that in the origin was — and potentially still is — free and unconditioned in its very essence." These teachings see the Ego as in bondage and they often liken freeing it to dying and being reborn.

Should there be some basis for these mystical concepts, Servadio suggested that such a freeing might mean that "ultimately, the 'body' is controlled by a non-material, radiant principle and becomes its docile instrument." Furthermore, such a transition would take place at a level which, to appearances, would seem more or less marvelous or parapsychological. After considering the relationship between mind and body and suggesting that the familiar relationship might be overturned, Servadio extended the possibility of transformation to the relationship between "mind and what we call reality, i.e., the material world." He called on those mystical traditions which regard the material world as illusory and noted the relationship in such teachings between self-realization and the recognition that the material world is an illusion.

To end his talk, he quoted John White: "Certain esoteric, occult and spiritual traditions claim to have solved the mind-brain problem long ago, and parapsychology has rightly investigated them. If the rest of science will seri-

ously investigate their general position then their further indications for research should contain useful guidelines to the nature of the cosmic interface — the meeting ground of inner and outer reality. With a new perspective, and with an acknowledgment by science that much of value to it can be learned from metaphysical domains, neuroscientists would probably learn in rapid fashion the details of how mind and brain are related. Then that very old question would be a question no longer.’ ”

A recurring complaint about the dualist approach to consciousness during the discussions among the participants after each paper and during the round table at the end of the conference centered on what Jan Ehrenwald called the “homunculus within.” Medieval philosophers envisioned the soul (the essence of consciousness) as a spiritual man within the physical man. A dualistic theory such as Eccles’s revitalizes this metaphor of the homunculus. As Edward Kelly noted in his paper and Ehrenwald later readdressed, the homunculus metaphor evades the core question and fails to tell us anything about the ultimate source of consciousness. It pushes it away into an “infinite regress.” Ehrenwald suggested that rather than feeling forced to solve the prob-

lem prematurely, parapsychology could survive, as have philosophy and psychology, with such a “gap” in the understanding of consciousness.

Karl Pribram asked what is the connectivity between such a mind and brain as Eccles proposes. The holonomic model, by proposing an identity relationship between mind, brain and universe at a level outside of time and space boundaries, disposes of the problems of the homunculus and the nature of the connectivity. It also accounts for psi phenomena as a result of the suspension of ordinary object orientation; almost, believing is seeing.

Charles Tart felt that the phenomenon of people reviewing their whole life history in an instant prior to threat of sudden death belied an identity relationship such as Pribram’s, because he felt that such a thing couldn’t happen in a neural time frame. Pribram responded that the capacities of the retrieval system were not contingent on the storage (holographic) system and that under certain circumstances perhaps more of memory storage could be addressed than is usually possible, especially if central processing is the bottleneck and it can be taken out of the system by stress. Budzynski reflected that the right hemisphere is better at parallel processing than the left and that such experiences might reflect a

release of the right hemisphere in a high stress situation.

Norman Dixon wondered why we exalt consciousness when in fact it is highly restrictive and generally an inefficient information handler. He wondered if consciousness, at least as we generally think of it, might be more of a burden than an asset. Several of the papers had addressed survival. Beloff wondered if the holonomic model would account for the evidence tentatively supporting survival. Pribram assumed that in a timeless, spaceless domain there would be some sort of survival. Charles Honorton complained that Pribram’s theory offered no empirically testable consequences for the field of parapsychology. Honorton accused Pribram of philosophizing. In response, Pribram rejected the existence of a distinct “field” of parapsychology. He said that there was no “paranormal,” that everyone was in the “same boat.” The issue had become that there are simply phenomena in a universe. The concept of fields of study reflects nothing more profound than different styles of questioning. With this concern for the unification of science as well as of our understandings of the brain and mind, the Twenty-Seventh International Conference of the Parapsychology Foundation was brought to a close.

PSYCHOLOGY AND THE POLTERGEIST:

A REVIEW

By Joel L. Whitton

A poltergeist event is a sound, light or movement of an object that is not caused by any apparent physical action. It can be tape recorded or photographed, and defies physical explanation. It usually occurs spontaneously and is believed to be caused by the direct mental action of a person. The putative mental action is called psychokinesis.

Twenty years ago psychokinesis (PK) was looked upon only as a theoretical curiosity even among psychical researchers. Exceptions at that time were E. J. Dingwall, A. R. G. Owen, G. Pratt and W. Roll, who all in some degree pioneered the modern scientific research in spontaneous PK. That spontaneous PK does occur has subsequently been well established (e.g., Franklin, 1975, 1977; Hasted et al, 1975; Owen, 1964, 1975; Owen and Sparrow, 1976; Roll, 1972; Schmidt, 1974; Taff and Gaynor, 1976).

Many students of human personality have contributed to the psychology of psychic phenomena such as telepathy and PK. Critics who dismiss or "explain away" psychic phenomena and beliefs as defective reality testing (Hit-schmann, 1924), exceptional imagery (Learoyd, 1951), regression to narcissistic omnipotence and symbiotic fusion (Deutsch, 1953; Saul, 1938), projection of consciously disowned impulses (Freud, 1955; Gotten and Patten, 1934), compensation for inferiority feelings (Vessey, 1969), or fraud (Klass, 1975; Frazier, 1976) have in certain cases, and perhaps indeed in all cases, undoubtedly never seen a psychic phenomenon; perhaps they believe that psychology in its basic tenets rejects the paranormal, which it does not. Psychology never has made the claim that it is all-inclusive.

A. R. G. Owen in a comprehensive survey (1964) of the preceding two centuries of poltergeist (PG) cases found that neuroses are among the possible etiological factors. Neurotic symptoms in the PG individuals primarily included anxiety, dissociation and conversion. Anxiety appeared to be a precipitating factor in PG cases and conflict of a neurotic nature (i.e., unconscious) was at the basis of PG outbreaks (c.f., Dingwall, 1945). Owen (1964) suggested that in some cases the PG appeared to be an hysterical conversion symptom, and as such served to disguise conflict and afforded apparent relief from anxiety, and had value in "secondary gain" by attracting attention and sympathy. "Primary gain" was in repression of the idea, belief, wish or desire the individual had not been able to consciously tolerate. If the conversion mechanism loses secondary gain value, as in the case of Mathew Manning's (1974) prankster poltergeist, the ego defenses against anxiety may attempt another mechanism. Mathew found that automatic writing (dissociation) was useful in "inhibiting" the PG (Manning, 1975).

Rogo (1974b) envisaged the PG as "a vehicle of expression." This is a popular term for conversion symptom and is a restatement of Owen's (1964) prior observations, though Rogo may have developed the idea independently.

Most of our current theories of personality privilege us to witness behavior only at the level of conflict and psychic breakdown, and therefore force us to find or invent sufficient psychopathology to engender the paranormal (Whitton, 1978). Thus, in our assumption of the trueness of the Freudian psychology, our hidden assumption is that PK events must have symbolic significance and that something is symbolized because it needs to be so on account of its potentially conflictual nature. The theory of PG being a conversion symptom presupposes then a state of neurotic conflict within the PK subject. However, in Owen's (1964) early report, and more fully developed in later reports (1971, 1972, 1975a), the observation is made that the PK event need not be a conversion (or neurotic) symptom, but may merely represent a surrogate physical activity, like muscle tension or nail biting, as an immediate mechanism to discharge nervous tension. It is useful here to remember that Carl Jung (1963) believed that not all symbolic material was conflictually based; the unconscious by means of (symbolic) concrete images may convey that which defies communication by words and which consciousness uses.

Whitton (1975) proposed that the PG may model an archaic memory from infancy. In the early period of life, before the capacity for abstract and rational thought is developed, many experiences may present as having an unexplained or magical quality. A baby may hear footsteps of someone walking on a floor above him, but looking towards the sound nothing is to be seen. Not being able to conceptualize that the sound is due to someone walking around upstairs, the memory may remain in the baby as a strange unexplained experience. Such an experience may be frightening, perhaps particularly so if the baby was already anxious about something else, for example the absence of its mother. In this manner fear and anxiety may be associated with unexplained noise.

By association I do not refer to mechanical behavioristic conditioning, but to the more generally accepted usage of the word; that is, association is constructive. All of it proceeds by explicit or implicit relational integration (Burt, 1968). The mysterious event is constructively incorporated and integrated into the current needs or frustrations of psychosexual development. This concept of PG is not dissimilar to Ehrenwald's (1954, 1971, 1974a) ap-

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proach to telepathy as being effectively utilized in the symbiosis between mother and child, and which may be relationally retained and re-experienced in later fusional conflicts particularly with the analyst as a mother object.

The roots of Whitton's (1975) theory originate in Jung, Owen and Ehrenwald, i.e., that the PK event may not be a conflict symbolization, but a surrogate, although anxiety associated, physical realization of an archaic memory. It certainly may be available for adoption by the ego in its struggle to avoid conflict and to control anxiety through symbolization and conversion, and as such it could be described as a PK reaction.

Whitton's theory predicts that the PK reaction will involve pre-Oedipal themes of fusion, separation, and individuation. As such it may account for the apparent rarity of PG cases and, in correspondence with stigmata cases, may be only employed by the PG individual when verbal language fails in the expression of primitive ego feelings and conceptions of fusion and separation.

There are other theories in the literature concerning the psychology of PG. Nandor Fodor (1948) believed that PG manifestations resulted from a profound cleavage of personality; his theory is an elaboration of the concept of "psychorrhagic diathesis" originally put forward by Myers in 1903. Mary Williams (1964) also believed that the PG represented a split-off part of the personality. Analogically their theories are intriguing; a split-off projected and externalized part of the personality may be the medium to effect the actual PK. There are two teleological theories. Ullman (1973) explained telepathic abilities in schizophrenics as a learned behavior to aid in vigilance, and Balint (1955) believed that, in the context of an ambivalent relationship with a therapist, a patient may behave in a paranormal manner to redirect the therapist's attention back to the therapist. Biological theories are included here only for completeness. Roll (1975) noted an association between a few (perhaps 4% of poltergeist cases) subjects whose history suggests a seizure disorder and occurrences of PK. However, although the prevalence of epilepsy with recurrent seizures is 0.5 to 1%, when subictal states and seizure-like disorders are included it rises to 2% (Eisner et al, 1959). Thus the apparent association between epilepsy and PK could be due only to sampling error. Sargant's (1975) Pavlovian attempt to link diverse altered states of consciousness to neural excitation in specific brain areas is at least audacious, but allows a clearly stated theoretical perspective from which to examine anomalous experiences.

It is anticipated that with the public's growing awareness of PK and further investigation by psychologists and physicists of anomalous phenomena, new theories and concepts will emerge. What was once considered preposterous may become commonplace and so understood that the psychologists, animated by hindsight, then might wonder what all the fuss was about.

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Book Reviews

INNER SPACES: PARAPSYCHOLOGICAL EXPLORATIONS OF THE MIND. By Howard Eisenberg. Don Mills, Ontario: Musson/General Publishing Co., 1977. 184 pp. \$6.95.

Reviewed by George Adelman

There is a need in parapsychology for a particular kind of book. Ideally, it would be one written by a scientist or a scientifically trained writer, and it would provide a comprehensive, objective review of the proofs and hypotheses, the frauds and authentic phenomena of the field. It would also present a history of the development of parapsychology as a scientific discipline including a discussion of the explanations, theories and controversies that have marked the interaction of parapsychology with other fields of science. It might even discuss such things as why parapsychological research reports seem to have their publication confined almost exclusively to special-interest journals; why, even though the Parapsychological Association was formally admitted into membership in the American Association for the Advancement of Science in 1969, parapsychology articles rarely appear in *Science*, the journal of the AAAS. Perhaps, also, this book would suggest new experimental approaches and attempt a few bridging theories or at least some speculation on where and how the main body of science and of parapsychology might interact.

Such a book would be read by scientists from other fields and thus perhaps encourage the injection of new perspectives and approaches into parapsychology. It would be useful as a general textbook for undergraduate and graduate courses and could be read profitably by the general reader.

This is a big order and, disappoint-

ingly, this book by Howard Eisenberg is not that book, although it promises to be, tries to be and at times even comes close.

Dr. Eisenberg is an M.D., a psychotherapist, who also has a Master's degree in psychology from McGill University in Montreal, Canada. His research for the degree was in parapsychology, and his thesis was entitled "Telepathic Information Transfer in Humans of Emotional Data," about which more later. He teaches a credit course in parapsychology at the University of Toronto.

His approach was to develop a primer of parapsychology consisting of self-contained sections, some aimed at workers in the field, but most intended as introductions to newcomers. He begins, promisingly, with a sophisticated criticism of the materialist-reductionist approach in modern science, useful to both audiences. Cracks in this objective-reductionist approach, he notes, most notably in physics, but also in psychology, give parapsychology a rationale even within the framework of traditional modern science. But the interest in and scientific study of psychic phenomena or "psi" (Eisenberg correctly points out in his review of terminology the importance of precision in the use of terms and recommends psi because it brings with it no semantic connotations) did not of course stem primarily from the inadequacy of psychology to deal with the subjective phenomena of consciousness or from the realization in physics that the fundamental substratum of matter may not be a measurable, or even tangible, particle. Rather, it stems from the observations of psychic phenomena throughout history, culminating in the late 19th century with the establishment of the British Society for Psychical Research and the American Society for Psychical Research. One thus looks forward to Eisenberg's chapter on the history of parapsychology. But when it comes, it is disappointingly brief and sketchy. Of course the material is available elsewhere; but it would have

added greatly to the logical cohesiveness and perspective of the book, especially for the newcomer to the field, if more space had been given to historical background.

At any rate, the book continues with a good (but also brief) section on terminology and then a discussion and description of the various "Spontaneous Manifestations of Psychic-Phenomena." This section contains some of Eisenberg's best, "hard-nosed" appraisal-descriptions, and in it he reviews very critically the objective evidence for and against the reality of various psychic phenomena—apparitions, mediumship, reincarnation, poltergeists, out-of-body experiences, dowsing, animal psi, etc. Among other things, he perceptively discusses the claims that age regression to earlier lives can be attained through hypnosis and explains how those claims are subject both to self-delusion and fraud and also to other possible psi explanations. They are inadequate and misleading as a proof of reincarnation, for which they are often used. Again, arguing for parsimony in explanations, he discusses spirit communication by mediums as being not necessarily an example of communication with "discarnate" spirits. Rather it may be a tuning in by the medium of other data sources including psi—telepathy, clairvoyance, etc. This is an interesting speculation, but no more of an explanation for the mechanism of spirit communication (if it exists) than is mediumship.

"Experimental Investigations of Psychic Phenomena" contains an excellent but very brief summary of and response to various often-voiced criticisms of parapsychology—the accusations of over-interpretation of evidence by investigators, poor experimental design, overemphasis on positive results. This is followed by a discussion of experimental designs in parapsychology, psi paradigms as contrasted with those of mainstream science, and parapsychology as the study of altered states of consciousness (ASC). Eisenberg then includes an excellent literature

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review and brief descriptions of studies from the recent parapsychology literature arranged by subject area—"fixed response," "free response," physiological detectors, automated precognition testing, animal experiments, etc. Here the reader is often exasperatingly left hanging when the description of a particularly interesting experiment is too brief and incomplete to satisfy an aroused interest. The reference is given instead. This technique is common and necessary in comprehensive scientific specialist-literature reviews; but in a book where most readers will conceivably be newcomers to the field, it seems inappropriate. At this stage, very few readers will interrupt their reading to run to the library in order to satisfy their curiosity about how an experiment was done or whether the results were positive. Another more serious complaint concerns the omission of some current, albeit highly controversial, studies. For example, the work of Puthoff and Targ at the Stanford Research Institute is not mentioned, nor is the associated work with Uri Geller. Fraud or not, the Geller story has excited more interest in psi (full-scale reviews in *Nature* and *New Scientist*) than anything else in recent years and might well have been mentioned in a book partly aimed at the general public.

"Philosophical Implications of Psychic Phenomena" discusses various hypothetical explanations of psi, physical (electromagnetic, resonance, particle energy) as well as spiritual-mentalistic. This latter, of course, is not science but possibly has some mind-stretching value for thinking about psi mechanisms. Eisenberg posits and discusses his own interpretation of the concept of "Universal Mind," which encompasses all matter, energy and "spirit." This concept is implicit in most Eastern religions, but the author suggests its explicit place in Western philosophy-religion.

In the section, "Practical Applications of Psychic Phenomena," Eisenberg discusses paranormal medicine. This is an area where many spectacular (and often fraudulent) claims have been made—psychic surgery, healing by laying on of hands, diagnosis at a distance, etc. A rigorous, objective re-

view emphasizing the "normal" physical mechanisms that might be involved in reported phenomena would have made the possible paranormal aspects more acceptable. Eisenberg, unfortunately, emphasizes instead the psi possibilities inherent in mind-brain-body interactive phenomena, such as seemingly non-physical phenomena as intuition in medical diagnosis, stress in physical disease, empathy in physician-patient relations, placebo effects, biofeedback and hypnosis effects on disease, etc. These may well have a psi component. It can't be ruled out. But it would seem counterproductive to the developing course of the scientific study of psi (or to the course of science in general) to imply that psi may be *the* underlying factor. Why use psi as an explanation for phenomena simply because other explanations in the physical, measurable realm may not yet be apparent? This is a turning away from science toward the attraction of mystery.

But let me turn to a special feature of this book and one of its most valuable, an Appendix that is the methodology section of Eisenberg's MSc thesis. This is model scientific research, well planned and executed with careful controls, the kind of research that would do credit to any field. The research involves ingenious variations on the "telepathic" experiment, in which the possibility of transmission of "imagery" information from one person to another is examined in a controlled, objective manner. In the usual version of these experiments, the "sender" concentrates on a picture of some sort (diagram, painting, photograph) or an object and the "receiver," who is physically separated from the sender, attempts to recreate the picture in words or drawing. The associational or even emotional imagery the sender develops through his personal perception of the picture is one aspect of the situation that is thought to influence the success or failure of transmission. Its vividness is another. Eisenberg attempted to enhance these variables by using for his transmission material 6½-minute motion picture sequences with sound track, each of which had been carefully selected for its distinctiveness, evocative imagery and/or emotional impact. For

example, among the seven films were sequences from World War II bombings, a multiple-exposure recording of a ballet and an excerpt from the commercial film, "The Boston Strangler." Fifty-two volunteer subjects divided into 2-person sender-receiver teams were used in the carefully controlled sequence of separate trials. Each team had only one trial a day. Transmission effectiveness was examined in several ways, including detailed subjective reports (both sender and receiver described their actual and "imaged" perception of the movie sequences) and, most important, the selection of photographs after each trial. The receiver was asked to rank-order five photographs, one of which was a still from the film he or she had just "seen," in a sequence that went from most to least like the imagery just "experienced." The 151 completed sessions produced a large amount of data, both qualitative (descriptions of imagery) and quantitative (rank-ordering of photographs). But, after all this descriptive detail about the rationale and procedures of the experiments, Eisenberg severely lets the reader down by adding only a brief summary of the results. He indicates that results were positive but no details, hardly enough to satisfy the many questions the reader has been building up in his mind as he reads about this excellent experiment: How closely did transmission match reception? How highly correlated were the rank-ordered photographs with the actual films? Did particular sender-receiver teams have better "hit" records than others? It is all very well for the author to indicate that the ". . . statistical analysis will be reported in more detail in a subsequent publication." But I am ready now! I have followed the procedures and methods and I want to know what happened.

Exasperation and disappointment sum up some of this reviewer's reaction to this book. I am exasperated with its incompleteness and occasional lack of organization and the frequent impression that many of the sections are merely collections of miscellany, interesting and well-done segments, but disconnected. The author shows that he is a good scientist in much of his presentations and especially in his re-

search. But he spoils it by his annoying lapses into belief and non-objective speculation, and the dropping of his scientific guard to turn toward conjecture—belief statements when only objective proof is acceptable.

It is the essence of science to explain mystery, to make the unknown knowable. It is the method of science to examine phenomena that seem to have no cause or mechanisms underlying them and, by providing demonstrable explanations, bring them into the accumulating mainstream of what is known. Explanation based on reasoning alone or derived from belief systems is the province of philosophy or religion and is not part of science.

PHILOSOPHY AND PARAPSYCHOLOGY. By Jan Ludwig (editor). Buffalo, New York: Prometheus Books. 1978. 420 pp. \$16.95.

Reviewed by Hoyt Edge

This book falls in a line of books published over the last several years dealing with philosophy and parapsychology. French's *Philosophers in Wonderland* contained articles of sound philosophy, but one many times had to read into it the implications for parapsychology. Thakur's *Philosophy and Psychical Research* was a collection of original articles, as was the Parapsychology Foundation's *The Philosophy of Parapsychology*. Wheatley and Edge's anthology, *Philosophical Dimensions of Parapsychology*, contained previously published material which was directly concerned with the interrelationship between philosophy and parapsychology. The present anthology is most like Wheatley and Edge's, but its articles and lay-out complement rather than overlap the previous book.

Following an introductory essay by Jan Ludwig, there are five sections followed by a good bibliography. The sections include an introductory one on Parapsychology and Philosophy, The Argument from the Possibility of Fraud, Conceptual Issues in Parapsy-

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chology, Precognition and Its Problems, and Parapsychology and the Philosophy of Mind. The articles in the section on fraud are particularly welcome, as nothing like it has appeared in the previously cited books. A whole section on precognition is legitimate because, as Bob Brier points out, "Of the three kinds of ESP, precognition . . . seems to raise the more interesting philosophical questions." In addition, devoting a section to the Philosophy of Mind not only shows the intimate connection between this subject and parapsychology, but may point to an area of future contributions. As Brier has supplied us with a book on precognition, so we may expect some philosopher in the near future to make a contribution specifically in this area.

The anthology contains articles published up to 1976 (except for John Beloff's Epilogue of 1977) and two previously unpublished ones—Ludwig's introductory essay and Stephen Braude's contribution. My review will concentrate on these new articles, particularly on Ludwig's, as an examination of it will give us a clue to the construction of the entire book. Ludwig begins his discussion by using William James' distinction between tender-minded and tough-minded thinkers, the former being rationalistic, religious, and free-willist, while the latter are materialistic, irreligious and fatalistic. Both camps react to parapsychology differently, each approaching it from a bias. The tender-minded look to parapsychology to substantiate their claims for religion and free-will, while the tough-minded have typically refused to take an objective look at parapsychology because even they admit that the evidence, if valid, would substantiate the tender-minded, so they argue its impossibility. Both camps, Ludwig asserts, refuse to take parapsychology as an object worthy in itself of philosophical treatment; rather, they simply use parapsychology as a tool to further their own bias. To rectify this unfortunate circumstance, Ludwig recommends a philosophy of parapsychology, analogous to a philosophy of physics, which would investigate the conceptual and methodological foundations of parapsychology. Such an approach naturally excludes some areas philosophers

have dealt with extensively. For instance, the survival question is ignored as not being "central" to parapsychology. Neither survival nor the important questions concerning it are empirical questions and therefore they are "strictly philosophical, not parapsychological." (I must confess that I do not see the dichotomy posed here. Nor do I think that empirical enquiry is valueless in the survival question. For instance, if survival is thought probable for one reason or another, it may be an empirical question as to *how long* persons may survive—one year, two, two hundred or seemingly indefinitely.) As a result of this approach, Ludwig has included no section or article on the survival issue.

On the other hand examples of the task of the philosophy of parapsychology are language analysis, a discussion of statistical questions and the role of spontaneous cases in parapsychology. As an illustration of linguistic and conceptual analysis, Ludwig points out the historical progression in the meaning of the term "parapsychology" and suggests a neutral usage. This approach to the philosophy of parapsychology is mirrored in the section Conceptual Issues in Parapsychology. His concern with statistical questions is brought up mainly in the section The Argument from the Possibility of Fraud (which, ironically, has only one contribution by a philosopher). The sections on Precognition and Philosophy of Mind bring up additional conceptual issues as well as questions of causation. Although I think that Ludwig's conception of the important job of philosophical parapsychology is narrow, it nevertheless has resulted in an excellent collection which emphasizes areas that have not been adequately covered in this type of anthology before.

The first section, which is an introductory one, is begun by C. D. Broad defining parapsychology in terms of Basic Limiting Principles, general assumptions about how the world is constituted. This article is followed by a symposium discussing the relevance of philosophy to parapsychology. Kneale begins the symposium by asserting that the job of philosophy is to do linguistic analysis and, when this attitude is brought to parapsychology, we find

that "psychical research reveals the points where all scientific terminologies break down." She also thinks that the data prove that man has an inner life and thus parapsychology is relevant to the mind-body problem. Richard Robinson spends his time criticizing these conclusions as excessive and unsupported, a result of uncared linguistic analysis. After criticizing both Kneale and Robinson, Mundle argues that the facts of parapsychology should be considered apart from familiar hypotheses and, when this is done, we find two peculiarities: first, psi phenomena contradict the "principle of spatio-temporal continuity of causal chains," and they also display a temporal displacement. These two facts need to be explained and they do not seem to fit easily into contemporary physical explanations. This first section is concluded by two articles, in the first of which J. B. Rhine argues that since psi does not seem to be affected by temporal or spatial restrictions, psi phenomena do not fit into the deterministic physical world and must, therefore, show that there is a non-material personality. Such a spiritual order salvages morality, free-will and responsibility. C. J. Ducasse's reply against these conclusions makes the distinction between (1) what we now take to be physical and (2) what the science of the future may so designate it to be, and asserts that psi phenomena may be physical in the latter sense. He also takes a soft deterministic position and argues that a rejection of determinism does not substantiate free-will and morality, but that these are dependent on determinism.

The second section, entitled *The Argument from the Possibility of Fraud*, contains the arguments initiated by George R. Price's criticism of parapsychology in *Science* in 1955 and the resulting discussion in *Science* in an issue in 1956. Price, arguing in the same way that Hume argued about miracles, asserts that psi phenomena so greatly contradict what we know about the world that the probability of their actually occurring is small. Thus he concludes that all apparent positive results are due to "clerical and statistical errors and unintentional use of sensory cues, and that all extrachance results not so explicable are dependent on de-

liberate fraud or mildly abnormal mental conditions." He criticizes S. G. Soal's experiments and suggests a "fool-proof" experiment employing (ironically) a device that generates targets using radioactivity. Soal responds by rejecting the criticisms of his experiment. Rhine agrees with Price on the extreme conflict of physical science with parapsychology, although rejecting his criticisms. Paul Meehl and Michael Scriven, on the other hand, question whether the results of parapsychology really do conflict with "normal" science. P. W. Bridgman questions the adequacy of the use of statistics in parapsychology, while Price responds by criticizing everyone and making a renewed plea for his ideal experiment. Rhine has the final say (at least as far as pagination is concerned) in this argument by suggesting that Price is trying to force nature into a preconceived mold by his demands. Price's later retraction (1972) is not reprinted here.

The next two sections on conceptual issues and precognition are central to the task of Ludwig's philosophy of parapsychology. The first section begins with a revised version of a chapter from Flew's 1953 *A New Approach to Psychical Research*, in which he is concerned mainly with terminology in parapsychology. He points out, quite rightly, I think, that much of the language is theory-laden and the dualistic assumptions behind the terminology may not be justified by the facts. In an article not previously published, Stephen Braude furthers the discussion of terminology by examining the meaning of "paranormal," contrasting it with "normal" and "abnormal." He examines Ducasse's definition as well as Broad's in terms of *Basic Limiting Principles* and finds both problematic. Then making modifications on Scriven's definition, he comes to a definition that is fairly sound, although, as he admits, a bit relativistic. It is "Phenomenon P is paranormal = if (a) P is inexplicable in terms of current scientific theory; (b) P cannot be explained scientifically without major revisions elsewhere in scientific theory; (c) P thwarts our familiar expectations about what sorts of things can happen to the sorts of objects involved in P."

James Wheatley's article continues the emphasis on conceptual analysis as he discusses the often used word in parapsychology, "guessing," examining how the word is used ordinarily and in parapsychology. Harold Baldwin suggests that the terms "knowledge" and "perception" are inadequate in dealing with clairvoyance and suggests that the term "guessing" is more adequate. The concluding articles in this section deal with the repeatability problem, Antony Flew arguing that it is legitimate for scientists to look with suspicion on parapsychology because its data are not repeatable, although the data should not be dismissed out of hand. Gardner Murphy agrees that repeatability is important and that parapsychology has not progressed much in this area. It is a particular problem because repeatability cannot be replaced by a commonly accepted rational framework in parapsychology, thus making the discipline analogous to physics in about 1600. However, success may come, he suggests, in understanding the factors involved in producing psi, through psychophysiological work.

Broad's classical article, "The Philosophical Implications of Foreknowledge," begins the next section. Broad discusses in turn the epistemological, the causal and the fatalistic objections to precognition and dismisses them all. All are due to an uncared analysis of precognition or of the psychological description of what occurs in precognition. Although Lewis Foster finds problems with Broad's treatment of the causal objection, he agrees in further analysis that the objection has no force. C. W. K. Mundle, on the other hand, cannot make sense of precognition because it assumes knowledge by acquaintance and because it necessitates the cause preceding the effect. Brier meets these objections as well as some offered by Broad and Ducasse.

The final section is on the *Philosophy of Mind* and begins with a John Beloff article in which he argues that the most likely contenders to explain parapsychological phenomena are a materialism and a dualistic interactionism, and in the final analysis, "the whole significance of psychical research lies in what it can tell us about mind as an autonomous principle in nature."

In a 1977 Epilogue, Beloff reaffirms his earlier conclusions. H. H. Price argues to the same conclusions while Scriven, both because of evidence from "normal science" and because of a lack of some hard evidence from parapsychology, questions whether psi phenomena support a dualism. John Godbey, Jr. goes further in claiming that psi phenomena do not necessarily conflict with materialism, and the latter need not be given up even if paranormal events prove to be true.

The book is aptly concluded by William James' "Final Impressions of a Psychical Researcher."

PSYCHOTRONIK 1977. Quarterly. Organ of the International Association for Psychotronic Research. In German. Innsbruck, Austria: Resch Verlag.

Reviewed by Benson Herbert

Psychotronic has now completed its first year of publication, with many interesting articles and illustrations. Passing over material mostly included in the *Proceedings* of the IAPR Tokyo Congress, we find in issue No. 1 the leading article "Who and What is Man?" by Professor Vasili Jefimov (Moscow), who describes how the first Russian university was organized by the poet Michail Vasilievic Lomonosov. But it failed to function as a whole, being divided into the "Babylonian Towers" of specialized faculties. Only latterly have some bridges been formed, such as biophysics and cybernetics. This integrating process should reach its culmination in psychotronics, which seeks to embrace total knowledge of living forms and their environment. Specialists still tend to define Man in their own separate ways, so that a comprehensive knowledge of Man's complex nature is more likely to be gained from novelists and poets rather than from scientists.

The contrast between the scientific and literary-artistic viewpoints of human personality can only be resolved,

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suggests Jefimov, on the basis of the laws of unity and conflict of opposites from which new meanings arise. In this, psychotronics contributes by studying facts which science has hitherto ignored, in regions where disciplines overlap, revealing functions not only of talented individuals but potentially applicable to all. The overlap is not only lateral but multi-leveled; the Russian evolutionist Severcev pointed out that many organs possess both lower and higher functions, and man's personality copies this structure. Through intuition and creative imagination in both science and art, man can achieve the great cosmic mission of rising to the summit from the lowest animal level.

In issue No. 2 appears a lengthy paper by Professor A. S. Novomeyski, "The Basic Laws of Skin Perception," briefly referred to in Dr. Yvonne Duplessis' paper on dermo-optics in the Tokyo Congress. Dr. Duplessis draws a distinction between the more "clairvoyant" types of dermo-optic experiments of Larissa Vilenskaya, and the "infra-red" hypothesis of Novomeyski, who regards the dermo-optic sense as arising from sensitivity to exchange of radiation between the target and the hand.

In Russia, probably the first case of dermo-optics to be reported took place in Kiev in 1898; Dr. A. I. Chovrin found a woman who could distinguish color of paper from color of text, by pressing her finger on a page. Professor A. N. Leontiev (Moscow 1959) found that human skin was sensitive to light rays from which heat rays had been filtered. Leontiev followed the French novelist Jules Romains in supposing that the effect was analogous to normal sight.

The modern era in this research began with Rosa Kuleshova in 1962, since when over 200 publications have dealt with the subject, including Yvonne Duplessis' monograph (Parapsychology Foundation, 1975). Photographs show a blindfolded subject bringing her hand nearer to a target until she can just "feel" the color; on measuring the distance of this "color-threshold," it was found to be 80 cm. from a target consisting of red paper, 60 cm. for dark blue, and 30 cm. for light blue; evidently the skin is more sensitive to the far red end of the spectrum. Novomey-

ski believes that the dermo-optic sense is not sight-like but a function of epidermal tactile and thermal receptors.

In double-issue 3/4, Dr. Eduard Bakalar, C.Sc. (Prague) writes on man's "Primary Psychotronic Abilities," which he suggests are primitive inherent functions, of vital importance for survival in prehistoric times, but now with their keen edge blunted by dwindling use and the ravages of rationalism, "one-dimensionality," and mechanization. He points to the "psychospiel" as a much-needed counterweight to these tendencies. In this respect he cites the book *Mind Games* by R. Masters and J. Houston (New York, Viking Press 1972). The psychospiel deepens self-knowledge and awareness, and develops creative behavior and intuition.

According to Dr. Bakalar, the drawback of card-guessing experiments is that they do not represent practical situations. In primitive times, psychotronic abilities only emerged under conditions of emotion and stress. In typical situations, prehistoric man needed to know the answer to such questions as was an inert animal or human body asleep or dead? Was an approaching man friendly, neutral or enemy? Did unseen danger lurk in a grove? In which direction lay water, food, or home? Would an unborn baby be a son or daughter?

In order to simulate these situations, the author proposes experiments such as that in which a subject standing in a glade has to signal whether or not he senses someone hidden who is staring at him aggressively. Further game situations may arise through exploiting drives important for the survival of the species, such as parental and sexual impulses and the "territorial imperative"—the origin of property and nationality.

The author advocates, in pursuance of psi, a return to living with nature and animals. In the artificial world of cities, our latent primordial abilities have been stifled, and psychotronics should help us to recover them. Our unconscious quest for things forgotten explains the fashionable interest in Western Europe and North America, in the traditions of Latin America and Asia, where civilization has not yet taken its toll.

Dr. G. A. Sergeev's article "Biorhythms and Stress" follows on from his book *Biorhythms and the Biosphere* published in 1976 in Moscow, which showed how closely we are linked with cosmic influences. The Bulgarian scientist A. Tomovin drew attention to the synchronicity between variations of the earth's electromagnetic fields and brain activity. The brain, the heart, the whole body appear to resonate at subsonic frequencies, under 8 hz.

The brain includes a regulatory device which holds the biorhythm in a condition of stability within sharply defined limits. Man's purposeful and directive activity depends upon an individual ability to modify complicated incoming information, through training of the higher nervous system and the sensitivity of nerve receptors. If the inflow of symbolic information to the brain is so arranged that its structural periodicity is close to that of the biorhythm, the processing of the information proceeds at maximal efficiency.

Influences disturbing the biorhythm can induce stress reactions which pervade the whole system. As the regulatory mechanisms strive to preserve stability, the overflow of energy can be registered by changes in what Sergeev calls the "thermodynamic field" surrounding the organism.

From Warsaw comes Zenon Urbanski's "Geophysical Phonon-Energy as the Source of Biophysical Activity," a sequel to his paper on dowsing given at the Tokyo Congress in 1977. The human dowsing reaction, he thinks, arises from a reaction to quasi-Alfven waves created by the influence of geomagnetic fields upon turbulent underground water. He calculates the wavelength to be 40-60 micrometers and suggests the radiation can pass through various media on its way to the surface, without serious attenuation.

Interest in Poland in the study of communication between man and man, and interaction between man and his

environment, led to a Symposium for Electronics and Distant Communication, under the auspices of the Polish Academy of Sciences in December, 1963. In this the work of Professor Manczarski was prominent. In the same year, the Warsaw Section of the Polish Natural Scientific Association commenced the study of bioelectronics, which in 1977 was taken over by the IAPR. Urbanski relates his theories to those of Aleander Dubrov, whose book *Biogravitation* appeared in Moscow in 1973. Research into biogravitation appears to have commenced in 1960 with the work of Bunin on the liquid-crystalline properties of albumin. Dubrov believed that biogravity waves, formed by coherent cellular oscillations, could be detected by photon-phonon coupling, i.e. interaction between light and sound. In 1971, Masolow and Kamienskaja discovered that ultrasound of frequency 10^6 - 10^7 hz. could promote cell division, and in 1976 Dr. F. A. Popp published related work on cancer cell division.

The principal effects of biogravitation are listed as: transmission and reception of information at a distance, unaffected by screens; displacement of objects at a distance; stimulation or hindrance of the sedimentation of colloids; luminescence of certain semi-conducting materials; air ionization by mental action; specific reactions of plants; effect upon sealed photofilm at a distance.

In the last case particularly it is necessary for the researcher to be aware of well-understood "normal," though spectacular effects which can take place, and these are described in three articles by Jan Schlemmer (Prague). Thus, friction on a cinefilm can create electrostatic charges which affect the emulsion. In the "Russell Effect," many organic materials — feathers, butterflies, etc. — and even metals, can produce an image, through the influence of vapor, on a photoplate after exposure of several days.

Dr. Zdenek Martinek (Prague) pro-

vides an informative account of acupuncture applied to dogs, with a detailed diagram of 'canine meridians.' As centers for this research, he mentions the National Association for Veterinary Acupuncture of California, and the Ludwig-Boltzmann Institut für Akupunktur in Vienna, under Dr. J. Bischo. Martinek includes a summary of F. Brunner's paper 'Akupunktur in der Hundeklinik' (Kleint.-Prax. 21, 1976, p. 182-9) which describes how 60 dogs were treated by a combination of acupuncture and orthodox therapies. Successes are claimed for radiculitis, paralysis, paresis, omarthritis, gonitis, gastroenteritis, etc.

Dr. V. Patrovsky, well-known for his work on the bioelectric stimulation of seeds and plant growth, provides convincing photographs of this effect, and also a new article "Methods of Psychotronics." The author points to the slow progress of parapsychology as due to the high proportion of researchers coming from the fields of medicine, psychology, philosophy, and not enough from physics, chemistry, biology. Also too many amateurs with little scientific knowledge make great claims.

As examples he mentions Kilner, who offered goggles containing dicyanin which absorbed all but the extreme ends of the spectrum; this gave a double-image, one of the images supposed to be an aura, due to the different refractive angles for red and violet rays; and Reich, who elevated some simple electrostatic phenomena into his "universal orgone-energy." According to Patrovsky, all paranormal phenomena arise from physical and chemical reactions in living material.

Psychotronic contains detailed circuit diagrams of high-voltage impulse-generators for use in electrography, also a circuit of the lie-detector type and for registering static electricity. Shorter articles include biographical sketches of Dr. Karel Kuchunka, Prof. W. H. C. Tenhaeff, J. E. Purkyne, and the late Dr. Gerda Walther.

SECOND INTERNATIONAL SPR CONFERENCE

By Susan Blackmore

The Second International Conference of the Society for Psychical Research (London) was held this year from March 28-30 in Trinity College, Cambridge, England. Cambridge is not only a delightful setting, especially in such lovely weather, but also a most appropriate place, as we were to learn from a fascinating review of the history of psychical research in Cambridge by Dr. Alan Gauld from the University of Nottingham. Bringing to mind such characters as Dingwall, Stratton, Broad and Thouless, he suggested that within living memory Cambridge was the center for psychical research; that is, until it crossed the Atlantic! He then concentrated on the seventeenth century discussing contemporary accounts of spontaneous phenomena and describing how the first steps towards a scientific and critical study were made. Complementing this talk was an exhibition of psychical research in Cambridge with exhibits ranging from the accordion used by D. D. Home in Crookes' investigation through early automated ESP machines to the apparatus used by the Cambridge SPR in their recent experiments.

As last year, the number of papers was strictly limited to allow for long presentations and plenty of question time, and this time was well used with discussions continuing into the many breaks and meals held in such places as the "Old Combination Room" and Trinity College dining hall, as well as long into the night in the Trinity bar. However, further comparison with last year's conference shows a shift in emphasis. Last year only a third of the 15 papers were experimental. This year nearly two thirds were, and it was perhaps these papers which showed most clearly the direction parapsychology is taking in this country.

As might be expected from this side of the Atlantic, many, though not all, of the reported findings were inconclusive or negative. The first paper, one tackling this problem, was by Richard Broughton from the University of Edinburgh, entitled "The Rise and Fall of Hemispheric Differences in ESP." He surveyed the evidence which originated the hypothesis that processing of paranormal information may be more efficient in the right hemisphere. He then described two series of experiments, one involving selection of three-dimensional shapes with the fingertips, the second a reaction time task. Both provided evidence of hemispheric differences in ESP and both showed similar sex differences. However, attempted replications failed. Significant differences were found but were different from those in the first experiments.

What was to be done now? Broughton described the familiar problem facing many of us. He could not conclude that his earlier experiments had been badly performed because he, for one, knew they had not. He described Rhine's argument, that chance results do not affect previous positive results, as a dangerous half-truth and instead argued that if we claim to be discovering lawful relationships,

failures to replicate must be taken seriously. He suggested that his results were best interpreted in terms of a psi-mediated experimenter effect, arguing that they answer questions not about hemispheric differences but only about the experimenter. Perhaps, in parapsychology, there are no repeatable experiments, but only repeatable experimenters exerting their own psi on their subjects. This was a challenging paper with which to begin the conference and it raised three recurring issues, that is, the question of repeatability, the search for order and meaning in results and the psi-mediated experimenter effect.

It was appropriately followed by Carl Sargent, of Cambridge University, who described his as "a second Broughton paper in some respects." He described experiments on response bias and response manipulation using a Schmidt-type machine in precognitive mode. Selected subjects completed control runs in which they responded freely and manipulated runs in which they were instructed to increase or decrease by at least 20 percent each of the four responses in turn. Subjects received trial-by-trial feedback and the experiment was fully automated and carefully designed. The results not only confirmed Stanford's negative response bias hypothesis but also showed that, when responses are manipulated, scoring on those responses is lower than on others regardless of the nature of the manipulation. Also in the data was evidence of Sargent's "paw print" low variance. Following Broughton, he described the subject's role as that of a random number generator (RNG) and added that perhaps experimenters have subjects just as Uri has his UFOs or mediums have spirits. But he disagreed with Broughton in one important respect. He does ignore insignificant results, maintaining that we should only look for order when there is independent evidence of psi.

Not everyone finds this order though, and I seem to be among those, all too prevalent in this country, who do not. In my own paper I described three types of experiment investigating whether the ESP process is more like remembering or perceiving. Studies of the types of error made in various ESP tests provided some support for the perceptual hypothesis. Experiments varying imagability and frequency of target words provided no evidence for ESP and no consistent effect of target type and finally correlations between ESP scores on several types of memory test gave conflicting results.

Faced with this apparent disorder I asked whether in fact we should be searching for order at all. There seems to me a paradox in parapsychology. Psi is defined negatively, by excluding known processes, rather than as a process in its own right. The consequence is that psi is not disprovable and this hampers research in such areas as OBEs

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and survival. However, in our own research we do not seem to take this definition seriously, often assuming that there is a single psi process to investigate. Perhaps there is no single psi process and perhaps our search for order is futile. Maybe the only finding in parapsychology so far is just this, that there is no order in our results. I was thereafter labeled as an incorrigible pessimist and psi-blocking experimenter, but this is only one approach to a problem faced by many of us. What do we do when faced with incomprehensible results?

Another contributor in a similar position was T. Harley from the University of Cambridge, who described experiments on the effects of neuroticism, belief and feedback on ESP performance. As one questioner put it, the results were "depressing," but the paper provoked much discussion on the problems of overanalysis, post hoc findings and the question of repeatability. Isaacs suggested that it is a terrible mistake to expect repeatability, especially if you are aware of the psi-mediated experimenter effect, because you cannot repeat your own expectations. They are inevitably altered by the first experiment. But it was also pointed out by Friedman that the psi-mediated experimenter effect was in danger of becoming a scapegoat for all failed experiments.

A notable exception to the tendency to unrepeatable results was a contribution from Erlendur Haraldsson of Iceland. He reviewed several experiments showing that ESP performance can be rather well predicted from the results of the Defence Mechanism Test (DMT). In his own experiment he found a highly significant relationship ($r = .53$, $p = .0004$) between preconscious defense organization and ESP, defensive subjects psi-missing and non-defensive subjects psi-hitting. But the experimenter effect appeared even here, because, although different experimenters were involved, Martin Johnson administered the DMT in every experiment and so Haraldsson suggested that it could be simply that Martin Johnson is a good predictor of ESP!

Among the other experimental papers were some refreshing new approaches to old problems. Dr. B. Carr, from Trinity College, Cambridge, presented a fascinating new approach to the problem of distinguishing telepathy and clairvoyance. The principle of his experiments is to use color-blind agents who look at Ishihara cards, that is, cards on which different numbers appear for normal and for color-blind subjects. The aim was to see whether the percipient would score better on the target as it appeared to the color-blind agent (telepathy) or as it would appear to himself (clairvoyance). The results showed both effects, but no clear predominance of either telepathy or clairvoyance.

There were many questions concerning the auditory separation of the agent and percipient and the effectiveness of the randomizing machine, also seen in the exhibition. But also an interesting question was raised about the assumptions behind the experiment. It is certain physical properties of the cards which determine how they are seen by normal or color-blind people, but can we assume that clairvoyance detects these properties in the same way as normal vision?

On an entirely different topic, G. Rein, from London University, discussed previous work on "life fields" and described his own experiments in which a healer tried to affect adrenal activity in a group of mice. The mice were killed and the adrenal gland removed for assay. Levels of nor-adrenalin were predominantly raised and of dopamine either higher or lower than levels in an untreated control group. There was much discussion of the controls used and several contributors questioned Rein's use of the term "healing energy" and his implication that it might be electromagnetic in nature. Isaacs also expressed concern at the healer being expected to work with animals which were shortly to be killed.

Another new approach was presented by M. Thalbourne, from the University of Edinburgh, who described an improved method for analyzing free response material. Using drawing reproduction as an example, he discussed the problems of determining degree of resemblance and resemblance expected by chance. These can be solved by using Stuart's method of preferential matching, but the statistical tests usually used need a large sample and assume normality. This is not the case with a computer randomization test in which computer generated random data are used to obtain an expected distribution instead of using a theoretical distribution. The advantages of this test are its power, that it yields smaller probabilities than conventional methods, avoids the assumptions of other tests and can also be used when there is no known distribution. Thalbourne described the use of the test for analyzing drawings and its possible application in other areas, such as remote viewing. I found this contribution most useful and I, for one, hope to use this technique for future experiments.

Another contributor from the University of Edinburgh was Y. Tchen, who discussed the suggestion, originated by Targ and Puthoff, that natural targets are preferable to conventional targets such as cards or pictures. He compared the use of natural targets and pictures, obtaining overall significance but no appreciable difference between the two conditions. Since the remote viewing technique is laborious and time consuming he concluded that there is no practical reason for preferring it.

Compared with the many papers reporting ESP experiments, it was perhaps surprising to find only one on PK, by Professor J. Hasted of London University. Hasted described his latest experiments in paranormal metal bending. Previously he has embedded resistive strain gauges into pieces of metal which are then bent without touching. One problem has been distinguishing between the effects of PK on the metal, as measured by the gauge, and possible paranormal electrical effects on the gauge itself. Dummy gauges and an optical lever device are now used to check this possibility. In one experiment several strain gauges at different angles were embedded in the same sample. This showed not a simple diametric extension but something more like a mini-explosion taking place. Strain gauges were also arranged across the width of a specimen allowing a profile to be obtained. Instead of simple profiles attributable to bending or pure extension, Hasted

found complex profiles on the basis of which he renamed the phenomenon paranormal "churning up."

Although the only experimental PK paper, this was by no means the only one concerned with physical phenomena and in particular with poltergeists. A. Cornell, of Cambridge University, discussed Lambert's geophysical theory of poltergeists and referred to earlier theoretical arguments which suggested that geophysical forces would have to be large enough to destroy a house before they would produce a poltergeist. Here he reported the results of practical experiments in house-shaking to back up the argument. A row of houses was subjected to jolt, shock and various vibrations. The houses shook and rattled and apparently "sung" and cracks even appeared, but there were no poltergeist-type effects and objects strategically placed on the edge of shelves did not fall off. Cornell concluded that he was at least grateful to Lambert for making it possible to rule out some explanations for poltergeist effects!

Finally, on this topic, I must mention one of the more controversial contributions to the conference, an evening symposium on the Enfield Poltergeist. Two of its investigators, M. Grosse and G. Playfair, described in detail the council house in North London, the family, a mother and three children and the phenomena occurring there since last August. These included raps, movement of objects, bed-shaking and pinching and finally an extraordinary voice which emanated, apparently not normally, from the throat of one of the girls. We heard tapes of the noises and saw a videotape of the girl "speaking" with mouth tightly closed. In discussion, the main concern was with fraud, but, understandably, the investigators wanted to discuss other questions and made it clear that they were satisfied that any fraud involved was infrequent and easily detected. Gregory pointed out the danger of too rigid a distinction between fraud and genuine phenomena. Play-acting by children is neither fraud nor morally reprehensible. Nonetheless, many people remained skeptical of the phenomena and concerned at the apparent credulity of the investigators, but, although many have visited the house, few are prepared to give up enough time for investigation as Grosse and Playfair have done. More positive discussion concerned the tests performed on the girl's throat, the "voice" and other phenomena. Hans Bender mentioned the weakness of the discarnate entity hypothesis and asked whether there was a "focus" in this case, but apparently all the family was involved. Finally there was discussion of the moral issues involved in the effect of such a prolonged investigation on the family concerned.

The major theoretical contribution was a paper by John Beloff from Edinburgh University, on teleological causation. Last year, Beloff compared causal and acausal theories of psi. This year, he assumed both a causal interpretation and a dualist position and discussed two types of causation, the familiar mechanical causation and teleological causation, or TC. He outlined the history of this concept and its demise with the advent of mechanistic science, Darwinism and more recently behaviorism. But he suggested that some processes can only be understood in

terms of TC, that is by reference to their end state. Volition appears to be such a process, but orthodox science assumes it is in fact reducible to mechanical causation. However, in the case of PK this is far harder to argue. It appears that here matter is constrained by an end state imposed by mind. Some recent experiments bear on this interpretation, in particular Schmidt's finding that increasing the complexity of the means of producing an effect does not affect its magnitude, as would be expected by mechanical causation. Finally Beloff suggested that recent "observer" theories of psi proposed by Schmidt, Walker and Mattuck are both teleological and retroactive and are just one way of conceptualizing the operation of TC. This well argued and clearly presented paper provoked many questions. Is the model falsifiable? And what is the relationship between volition and brain processes? Beloff had suggested that volition is a case of TC with the brain acting as a PK target. Does then the volition precede the brain change or vice versa?

Another theoretical paper came from Dr. Robert Thouless, a founder figure of psychical research in Cambridge. He analyzed types of theories of survival and listed eight possible theories we may have to consider. He discussed the nature of the stream of consciousness and the discussion raised such questions as multiple consciousness, the effect of bodily change on consciousness and experience of timelessness before death.

Two papers linked psi with physics. Dr. H. Pincott discussed the definition of psi in terms of anomalies in scientific laws. He discussed such principles as entropy, conservation and the uncertainty principle in easily understood terms and in particular he noted the association between strange occurrences and high organizations and between psi and the highly organized human mind.

Dr. Edward Bastin, from Cambridge, suggested that we have been obsessed with the search for a loophole in physics, for example, the role of the mind in the collapse of the wave function or in hidden variables or advanced potentials. He suggested that quantum theory does not provide for the intrusion of the human mind into the physical world. Instead, he argued that prescriptive or deductive theory is needed and outlined an approach based on the idea of matching similarly atomically specified structures. He discussed this in relation to various psi phenomena and to previous theories of psi.

There were also two historical papers. Hans Bender from Freiburg, Germany, discussed the problems of unravelling political prophecies. He described a case of two letters sent home by a Bavarian soldier in 1914, describing the prophecies of an unknown Frenchman. These included predictions which came true concerning both world wars, German hyperinflation, German partition and England becoming the poorest country in Europe! Others did not come true and some have yet to happen. Apparent patterns and consistencies appear in many such prophecies, but Bender argued that these may often be due to knowledge of other prophecies and reasonable deduction.

L. Price discussed the evidence for ESP in the life of Joan of Arc, suggesting that the voices she heard may have

been of psychical, not pathological, origin. They could have come from the dead, or, alternatively, from the living. What, he asked, would happen today if such a figure were to appear, not as a showman like Uri Geller, but in the political arena? This provoked questions on the misuse of psychic ability and the responsibilities of parapsychologists.

Finally, we may return to that ubiquitous topic, the psi-mediated experimenter effect. As we have seen, it was described in this Conference both as an important new area for research and as a scapegoat for all our failures. But there was also a new approach to this topic presented in J. Friedman's paper on phenomenology and psi. He summed up the many reasons for seeing the experimenter effect as a fundamental challenge to present methods. He described an approach to the problem of human experience based on the phenomenology of Husserl and concluded that for psi to occur one should not be in the position of an objective observer, but of one who can experience psi. To this end, he runs classes committing people to experiencing these phenomena and he described how his groups overcome their assumptions and fears, learn to use a different logic and enter into an ASC within which the expectation of psi is high. Friedman suggested that should experimenters approach psi in this way, attending to their

own state rather than treating their subjects as objects, they might actually be able to experience psi. This was just one of the many new approaches presented at this Conference and I think if comparisons can be made with a year ago they show signs not only of rapid growth but of significant changes in the study of parapsychology in this country and the rest of Europe. More people attended the conference and there were more experimental papers, but perhaps the most significant change was in the types of question being asked. Experimenters here are now asking fundamental questions about the aims of their research, the assumptions behind it and their role in the phenomena they are studying. In spite of my avowed skepticism, and many disappointing results, I cannot help feeling that progress is being made.

In his final summing up, Professor Arthur Ellison, President of the SPR, was also optimistic. He explained that now, for the first time, we have several parapsychology students engaged in research for Ph.Ds., and this is the first step towards recognition for parapsychology in our universities. He also proclaimed that there was clearly enough support for an annual conference and so we may hope that next year a third SPR conference will continue the tradition started by two excellent conferences so far.

Psychotronics Conference

June 30-July 7, 1979, the International Association for Psychotronic Research is presenting its IV International Conference in São Paulo, Brazil. The central theme of this conference will be "Psychotronics—Our Inner Cosmos." Papers will be presented in English, Spanish or Portuguese, with simultaneous translation. For further information, write to: Dr. Z. Rejdak, V Chaloupkach 59, 194 01 Praha, 9-Hloubetin, Czechoslovakia.

Death Notice

Dr. Semyon D. Kirlian, inventor of the photography that bears his name, died on August 1, 1978, in Krasnodar, USSR. He was 79 years old. His wife Valentina had died on December 29, 1971.

Anthropological Psi

November 17, 1978, at the annual meeting of the American Anthropological Association in Los Angeles, California, there was a symposium on Ex-

trasensory Phenomena and Medical Anthropology. This interdisciplinary symposium concerned extrasensory phenomena in their relationship to medical anthropology, including culture change, adaptation and social evolution. Among the speakers were Charles T. Tart, who delivered the keynote address "Can Extrasensory Perception be used Reliably?"; Jule Eisenbud, "Differing Adaptive Roles of Psi in Primitive and Non-primitive Societies"; Robert Morris, "Strategies for Inferring Psi Information"; Jan Ehrenwald, "The Metamorphosis of Witches; Psi and Mother-Child Symbiosis"; Richard Reichbart, "Invoking Psi: A Look at the Core of Religious Development"; Cynthia Shambaugh, "Spirit Possession and Hyperaroused Trance: The relationship between States of Consciousness and Culture"; Dean Sheils, "The Concept of the Psychic in Iceland"; William Tedder, "Production and Inhibition of Malevolent Psi: Some Cultural Similarities" and Dan Keith Alford, "The Origin of Speech in a Deep Structure of Psi."

OBEs Wanted

Dr. Robert Crookall, who has made a specialty of Out-of-the-Body experiences, thinks that survival is indicated, but feels that such an important conclusion cannot be too widely based. He would, therefore, like to hear the details from readers who have had such experiences. The material might be published, but a pen-name can be assigned if desired. Write to: Dr. R. Crookall, 9 Lansdown Road Mansions, Bath, B.A.T., 5ST England.

Research Aid Coming

A new research tool due in 1979 is the quarterly *Index to Social Sciences and Humanities Proceedings*. The *Index* will provide indepth coverage of individual proceedings papers, presented in a contents page format. It will provide access to thousands of individual papers from a wide range of disciplines in the arts and humanities. For further information, write to: Institute for Scientific Information, 325 Chestnut St., Philadelphia, Pennsylvania 19106.

RECENT ACQUISITIONS BY THE EILEEN J. GARRETT LIBRARY

- CATHIE, BRUCE L. AND PETER TEMM. *UFOs and Anti-Gravity*. San Francisco, Strawberry Hill Press, 1977. 201 p., illus., index. Pap. \$6.95. Discusses contact with UFOs and extraterrestrial beings as well as related phenomena.
- DONNELLY, KATHERINE FAIR. *The Guidebook to ESP and Psychic Wonders*. New York, David McKay, 1978. 176 p., bibl., index. \$9.95. A question-and-answer book dealing with various aspects of psychic experiences.
- ELLIS, D. J. *The Mediumship of the Tape Recorder*. Pulborough, West Sussex, England, David J. Ellis, 1978. 161 p., illus., bibl., gloss., index. \$5.00. A comprehensive survey of the phenomena of Raudive voices, including experimentation.
- GRIS, HENRY AND WILLIAM DICK. *The New Soviet Psychic Discoveries*. Englewood Cliffs, NJ, Prentice-Hall, 1978. 304 p., illus., index. \$10.95. Based on 46 interviews with Soviet scientists, deals with research in parapsychology, UFOs, and hypnotherapy among other topics.
- GUIRDHAM, ARTHUR. *Cathars and Reincarnation*. Wheaton, IL, Theosophical Publishing House, 1978. 208 p., illus., bibl. Pap. \$3.75. "The factual record of a man, and of a woman who remembers their 13th century lives together. . . ."
- HASKINS, JIM. *Voodoo and Hoodoo; Their Tradition and Craft as Revealed by Actual Practitioners*. Briarcliff Manor, NY, Stein and Day, 1978. 226 p., illus., bibl., index. \$10.00. A description of voodoo and hoodoo practice, including "recipes" for tricks and charms.
- HITCHING, FRANCIS. *Dowsing, the Psi Connection*. Garden City, NY, Anchor Press/Doubleday, 1978. 306 p., bibl., index. Pap. \$3.95. Discusses the history and tradition of dowsing, as well as scientific and practical aspects.
- HUBBARD, L. RON. *Have You Lived Before this Life? A Scientific Survey; A Study of Death and Evidence of Past Lives*. Los Angeles, Publications Organization, Church of Scientology, 1977. 324 p., bibl., gloss. No price given. Case studies of people recalling details of past lives, using techniques of scientology.
- IEEE SYSTEM, MAN AND CYBERNETICS SOCIETY. *Technical Session on Research in Psychoenergetics; 1977 International Conference on Cybernetics and Society*. Washington, 1977. var. p. No price given. Includes articles by Targ, Puthoff, Schmidt and Swann.
- LEADBEATER, CHARLES W. *The Inner Life*. Wheaton, IL, Theosophical Publishing House, 1978. 389 p., index. Pap. \$5.75. An abridgement of the author's theosophical world view.
- LONG, JOSEPH K., ED. *Extrasensory Ecology; Parapsychology and Anthropology*. Metuchen, NJ, Scarecrow Press, 1977. 427 p., illus., refs., index. \$16.00. A collection of writings about parapsychology and anthropology, intended mostly for anthropologists.
- LUDWIG, JAN, ED. *Philosophy and Parapsychology*. Buffalo, NY, Prometheus Books, 1978, 454 p., bibl. \$16.95. Balanced work containing twenty-two articles by leading philosophers, psychologists, and parapsychologists, including skeptics of parapsychology.
- MATTOON, MARY ANN. *Applied Dream Analysis; A Jungian Approach*. Washington, V. H. Winston, 1978. Dist. by Wiley. 253 p., append., bibl., indexes. \$12.50. A comprehensive presentation of Jung's theory of dream interpretation; includes a small section on extrasensory dreams.
- ORNSTEIN, ROBERT E. *The Psychology of Consciousness*. 2d ed. New York, Harcourt Brace Jovanovich, 1977. 255 p., illus., refs., index. Pap. \$6.50. A general introduction to consciousness, using research from many different sources.
- OSIS, KARLIS AND ERLENDUR HARALDSSON. *At the Hour of Death*. New York, Avon Books, 1977. 244 p., notes, bibl., index. Pap. \$3.95. Study based on interviews with one thousand physicians and nurses in the United States and India who have worked with terminally ill patients.
- ROBERTS, JANE. *The Afterdeath Journal of an American Philosopher; The World View of William James*. Englewood Cliffs, NJ, Prentice-Hall, 1978. 241 p., index. \$8.95. A reconstruction of the attitudes and opinions of James, from an "afterdeath point of view."
- SHEPARD, LESLIE, ED. *Occultism Update; An Inter-Edition Supplement to Encyclopedia of Occultism and Parapsychology*. Issue One. Detroit, Gale Research Company, 1978. 62 p., index. \$30.00 for four issues.
- SWANN, INGO. *Star Fire*. New York, Dell, 1978. 314 p. Pap. \$1.95. A novel by the noted psychic which portrays the "world's first Psychic War."
- WEAVER, HERBERT. *Divining the Primary Sense; Unfamiliar Radiation in Nature, Art and Science*. With an introduction by Mike Weaver. Boston, Routledge and Kegan Paul, 1978. 140 p., illus., notes, index. \$11.00. Details the author's theory that modern man needs to detect radiations emitted by "people, animals, plants and objects."

DERMO-OPTIC PERCEPTION

By Yvonne Duplessis

What is dermo-optic perception? It may be described adequately in terms of its results. It is being conscious of every color of the spectrum by means of the impressions they induce in the subject's hands whilst remaining invisible. Generally speaking, these impressions are sensory in nature, but have nothing to do with sight. They may be described as thermal, tactile, affective and weight-related.

In testing dermo-optic perception, both blind subjects and subjects with normal sight who were blindfolded were used. How is this phenomenon explained? Here opinions differ. Some people, the majority, believe it is a phenomenon of clairvoyance, in other words, an extrasensory phenomenon. Others, among them the author, disagree.

In the United States, Dr. Carroll B. Nash¹ found in the course of an experiment performed in 1968 relating to clairvoyance of two colors that subjects were 80 percent successful, whereas randomly they would have been 50 percent successful and the usual results of clairvoyance tests were in the vicinity of 60 percent. According to Dr. Nash, this unusual result was attributable not to extrasensory perception but to what he termed "cutaneous" perception. The characteristics of each are easily distinguished. Dermo-optic perception results from stimuli in the vicinity of the subject's hand, whereas telepathy and clairvoyance occur over long distances.

Jules Romaines² was the first to call attention to this "normal," "extra-retinal" perception of colors as well as of letters, but he attributed it to "ocelles" or miniature eyes located in our skin. Though this explanation was not acceptable, at least it rejected any paranormal one.

There are many other distinctions between dermo-optic (DOP) and extrasensory perception (ESP). We will discuss only a few of them here.³

Dermo-optic perception develops with training and at least one out of six subjects can differentiate impressions induced by colors in the palm of the hand, whereas only exceptional subjects, such as mediums and "sensitives," have allowed us to study the phenomena of clairvoyance, telepathy and premonition.

Extrasensory perception is actually a kind of highly individual intuition of the stimuli, while dermo-optic perception is based on the subject's *analytical reasoning* with respect to different impressions induced by comparison of two or more colors. The subject in dermo-optic perception tests is conscious of his impressions and he describes them to the experimenter and informs him as they disappear after about a quarter of an hour. Most often, the subject in ESP tests is unaware of his success or failure, which is recorded by the experimenter or an apparatus, which then informs him. Graphics signs are more difficult to identify by dermo-optic perception, whereas they are easier

to identify by extrasensory perception (e.g., Zener cards). Screens can modify dermo-optic perception by eliminating or reinforcing it. Screens do not interfere with extrasensory perception. Furthermore, results obtained by dermo-optic perception are stable, whereas those obtained by extrasensory perception are not easily repeatable with the same subjects.

Evaluation of reactions to colors according to our methods is done by the prism, so that a physical hypothesis is involved, whereas the evaluation of the results of extrasensory perception is merely statistical.

If we bear in mind that dermo-optic perception consists, above all, of *differential and not visual* impressions, progressively analyzed by the subject, what physical explanation accounts for this phenomenon?

Physical Hypothesis

In 1964, in the USSR, Professor Constantinov explained dermo-optic sensitivity on the basis of a thermal hypothesis,⁴ also developed by a university physicist, Professor Tchetine, a colleague of Professor A. S. Novomeysky,⁵ psychologist of the Sverdlovsk Pedagogical Institute. They believe it to be the result of interaction between the infra-red emitted by the colors and that emitted by the subject's hand.

In 1966, in the USA, Dr. W. Makous⁶ restated the same hypothesis. According to him, cutaneous perception of colors is due to infra-red radiation of the different colors inducing different temperatures in the palm of the subject's hand, even when the stimuli are covered with transparent screens.

This thermal hypothesis seems plausible. On the one hand, thermal sensitivity is part of the sense of touch, on the other, the differences of temperature involved can be easily shown by means of heat detectors, such as the pyroelectric device used in Professor Novomeysky's thermoscopic method. The results as a whole are explainable within the framework of the thermodynamic theory of heat exchange.

I am convinced that dermo-optic perception is explainable by physical laws and is based on a specific sensitivity that is perfectly normal, but unconscious, in most individuals. My research is based on this hypothesis.

The Methods

We have found five objective methods—three active and two passive—confirming this explanation.

Dr. Duplessis is associated with the Centre d'Information de la Couleur, in Paris, France. Her book *Surrealisme et Pouvoirs Paranormal* (*Surrealism and Paranormal Powers*) was published in France in May of this year.

A. Active Methods

1) *Dynamoelectric*. This method I developed is an active one. It consists of recording the muscular effort exerted by the subject as he squeezes a dynamometer in one hand while holding a piece of colored paper 16 x 12 cm in the other.

Through repeated experiments, the French physiologist Charles Fere⁷ had already shown that excitation of the sense organs determines not only subjective effects but physiological reactions as well. Excitation modifies circulation, muscle tone and organ function generally. The dynamometer, as well as the plethysmograph, detects these variations.

In 1971, I started to use the dynamometric method for measuring muscular pressure induced by colors not visually perceived. At that time I knew nothing of Professor Novomeysky's work. Two subjects who had been blind for many years were used, as well as another one who was almost blind. The experiments were repeated from 1974 to 1977 with one of the previous blind subjects and two additional blind subjects. In 1975, similar tests were also performed on three subjects with normal vision, using sheets of colored paper and an experimental box.⁸ The colors used were light blue, green, yellow, orange, red, black and white. Since we carried out our first dynamometric measurements before knowing of Professor Novomeysky's work, the amount of pressure was not correlated with the order of the colors of the spectrum. Hence violet and dark blue were not used, but black may be substituted for these colors.

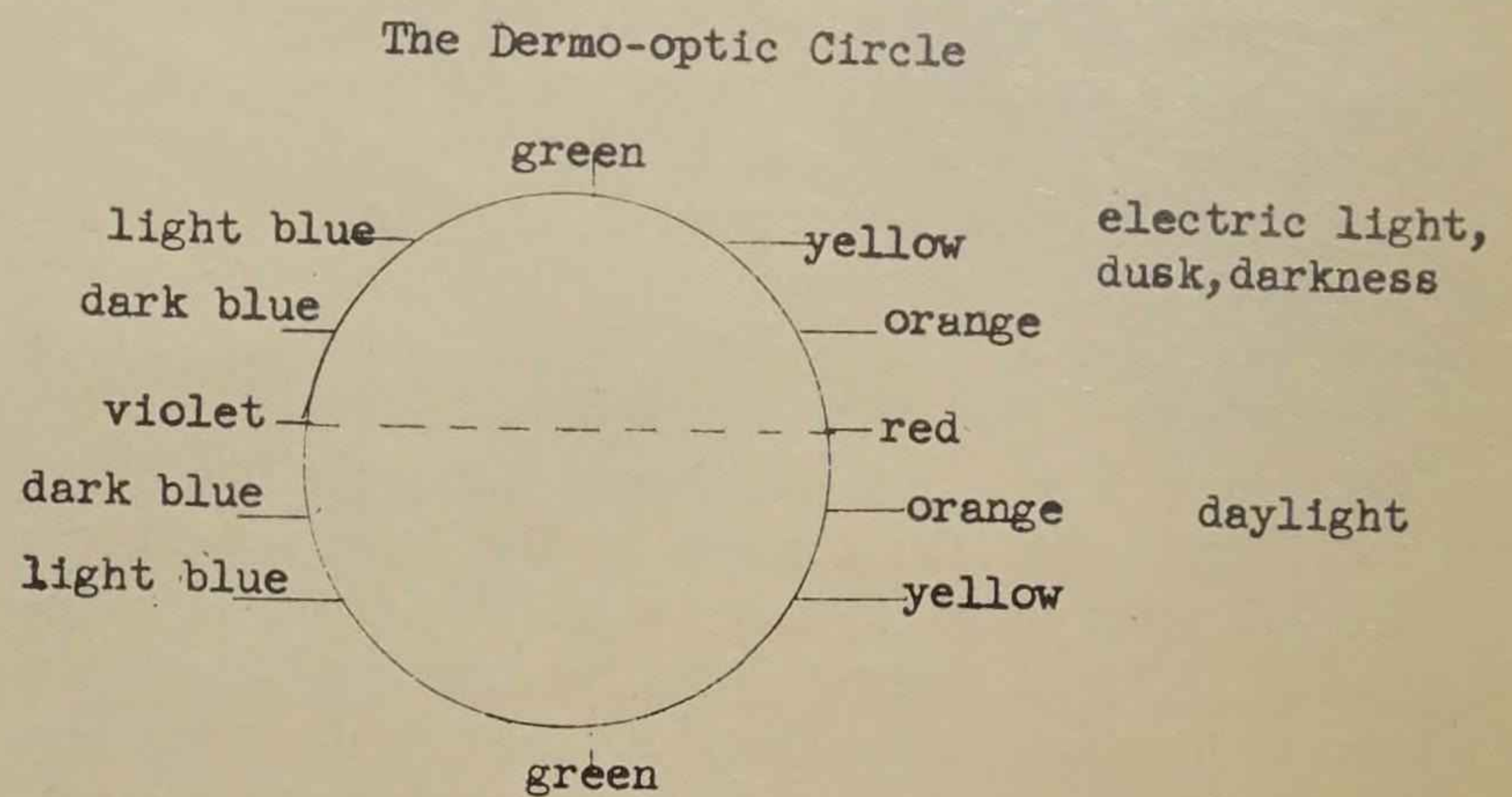
All these tests were carried out in double blind. A hand dynamometer was connected to a galvanometer placed in front of me. I limited myself to writing down the figures showing differences in pressure induced by different colors, as the subject picked up pieces of paper from a randomly constituted pile placed in the test box and which he could not see. He pressed the dynamometer with his right hand if he picked up the papers with his left or with his left hand if he picked up papers with his right. The subject then replaced the papers in a pile in the same order in which he had tested them. When the experiment was completed, I merely picked up the pile of colored papers and compared the order of the measurements with the corresponding order of the colors. The subjects were unaware of exerting different degrees of pressure on the dynamometer, but just as Charles Fere observed, the results proved that there were variations in pressure as shown by degrees on the dynamometer. As the hand rapidly becomes fatigued, only four or five trials per color could be done at most, so that results could only be collected slowly.

Professor Novomeysky analyzed all of my results and computed the statistical results. Only some aspects of the results are indicated here.

It should be noted that results obtained in daylight were different from those obtained in electric light, even to the point of inverting the figures in the cases of specific subjects. The distribution of pressure according to colors

confirms the results obtained by Professor Novomeysky, using the color barrier method to be discussed below.

Variation in dermo-optic reactions can most conveniently be represented according to the lighting of what we will call the dermo-optic circle.



The curve of dynamometric pressure for the other three blind subjects varied exactly according to the diagram of the dermo-optic circle under electric light. Pressure was lower in the direction of blue, yellow and red, as compared to green at the very top of the circle.

In the case of the two subjects with normal vision the pressure distributions obtained were likewise in agreement with the variations noted on the dermo-optic circle according to what lighting was used. However, in the case of the third curve, pressures induced by colors under electric light were the same as those obtained by daylight. It appears that in certain subjects, dermo-optic sensitivity remains constant, which fact explains the stability of the curve.

Generally speaking, the dynamometric method confirmed the fact that the subjects reacted to "degrees of blackness" (in the physical sense of the term) from the colors. Dynamometric pressure expresses the subject's reactions to the degree of infra-red radiation from various colors which he cannot see. These reactions are distributed in an analagous manner to the colors of the dermo-optic circle.

The process employed here, where the subject held the color in one hand and squeezed the dynamometer with the other, expressed in physiological terms the synchronicity of the brain's two hemispheres, as originally demonstrated by Pavlov. The dynamometric method also shows the relationship between intensity of stimulation and physiological reaction. The stronger the excitation, the stronger the reaction of the nervous system and vice versa.

2) *The regrouping method*. This method was discovered and recently written up by Professor Novomeysky.⁹ It consists of asking children to regroup squares or rectangles of paper on an aluminum sheet under which black or yellow sheets of paper have been randomly placed. The experimenter records on a chronometer the greater or lesser speed with which the children perform the regrouping. The method clearly demonstrates the influence of non-visible colors, since the children do not know that colored papers are under the sheet of aluminum.

Professor Novomeysky describes the conditions under which he first carried out experiments using this method. Results showed that it took 13 to 18 percent longer to regroup squares and rectangles when there was black paper under the aluminum sheet than when there was yellow. Black exercises a slowing-up effect.

The conditions of the experiment may be modified with respect to the time when the experiments are carried out with various classes of pupils in the form of games, the dimension and color of the shapes used, contact or lack of contact of the fingers with the aluminum, glass screen placed over the aluminum or not, etc., and the effects of these changes studied.¹⁰

These results were also tabulated. Among other things it was found that the contact of the fingers with the aluminum induced in all cases a positive effect of retardation of 11 to 23 percent when the fingers displaced the shapes in touching them, the aluminum or the glass. But when the fingers touched only the paper shapes (or larger size) or inversely, touched only the aluminum (pushing only the edge of the shapes), this coefficient was reduced to 6 and 9 percent.

Psychologically, the children have the impression of sorting the shapes with equal speed in the various trials, but, when told before a series of trials that some shapes are heavier than others, they then notice the difference and their fingers seem to have more difficulty moving in some cases than in others, these cases being those in which black paper is used under aluminum. The slowing up effect of black was 23 percent as compared to yellow. In general, from the tabulated results, the average speed of regrouping in each series was slower with black paper than with yellow paper placed under the aluminum sheets.

These different effects of the black and yellow paper would also seem to confirm the thermal hypothesis to explain dermo-optic sensitivity. According to Novomeysky, this method is the most important, insofar as it demonstrates the influence not only of non-visually perceived colors but also of invisible colors on the subject's activity.

The study of the effect of screened colors on dermo-optic sensitivity has shown that they also act upon the retina, producing consecutive images of variable duration and stability depending upon the effects of colors under opaque screens of black rubber, lead or aluminum.¹¹ Therefore, the retina would seem to play its part in the individual's auto-regulation. Moreover, all these experiments, which objectively demonstrate the influence of stimuli placed under metal screen, may even explain certain aspects of clairvoyance. Thus, "guessing" which stimuli are contained in opaque envelopes is probably the more or less interpreted result of exchange reactions—especially thermal exchange—between subject and stimuli.

3) *The method of writing and reading texts in Braille.* Pursuing the regrouping method even further, Professor Novomeysky asked me to find out whether blind subjects read or wrote Braille at different speed depending upon the color of the paper used.

I had to make my own material, since Braille texts are, of course, not printed on colored paper. I dictated words

selected at random in dictionaries to a subject who had been blind for 40 years. The subject wrote the words in dots with his punch on various colors of paper—blue, yellow, orange, red, green, black and white. In all, the subject wrote 12 lines on 150 different sheets of randomly presented colored paper 15 x 10 cm. These were then given randomly to other blind subjects to read while the experimenter timed their reading. When the trial was completed, the color of the sheets was noted next to the time, in the order in which they had been read.

Reading experiments were also carried out with a subject who had only recently become blind, then with two blind subjects trained in Braille since childhood. The results were statistically presented in the form of graphs by Professor Novomeysky.

"Extrasensory perception is actually a kind of highly individual intuition of the stimuli, while dermo-optic perception is based on the subject's analytical reasoning with respect to different impressions induced by comparison of two or more colors."

A negative effect was obtained with respect to the speed of writing Braille by daylight. The speed of the writing diminished according to the diagram of the dermo-optic circle by daylight and the slowing up of writing on black paper as compared to yellow corresponded to the results obtained by Professor Novomeysky's regrouping method in daylight. Conversely, the results obtained by reading under electric light or in semi-light, showed that the process is accelerated maximally on red paper. It is slowest on yellow paper. Starting with blue paper, it diminishes with green. Slowing up begins with the yellow and green which are in the center of the upper portion of the dermo-optic circle. Thus it was found that differences in the speed of the reading and writing were due to differences in lighting.

B. Passive Methods

Two other methods known as "passive" complete the study. Muscular activity of the hand plays no part in these.

1) *The thermoscopic method.* This method was discovered by Professor Novomeysky. The apparatus used was described in 1973.¹² It consists of thermal batteries connected to a mirror galvanometer. The stimuli are cylinders wrapped in either red or green paper, 9 cm high with a diameter of 7 cm. The colored paper is covered with a sheet of aluminum and the experiment is carried out in a booth where the subject is isolated from the experimenter. The subject passes his hand through an opening and places it on top of the cylinder for 30 to 60 seconds. The amount of heat change is recorded by the position of the galvanometer needle. Participation of the subject is thus reduced to simply placing his hand over the upper opening of the cylinder. These closed system experiments can also be carried out in the dark. As a precaution, the cylinders are changed in the course of the experiment.

They are presented randomly, the experiment being carried out in double blind.

According to Novomeysky, this method not only permits objective heat measurements of dermo-optic sensitivity, but also demonstrates the sensitivity of the hands to non-visible colors, since the colors are placed under metallic screens, as in the regrouping method. This is an entirely different situation than in classic studies of dermo-optic perception. Up to the present time, most studies have been based on the dermo-optic perception of colors hidden from sight by various means (box, blindfold, etc.), whereas now totally invisible colors are being used. They are hidden behind opaque screens. The screens actually, and paradoxically, strengthen the intensity of the heat exchange.

Psychological factors are taken into account. In an article published in 1975,¹³ Novomeysky showed the influence of fatigue and of emotion at exam time, when the experiments were carried out on students. The effects also differed according to what the student was studying—mathematics or music, for instance.

To summarize: in the morning, green provoked thermal reactions more intense than red and the contrary was true in the evening. The same differences in reaction were found in cases of emotional tension before and after examinations. The type of school activity played a mitigating role. Music students showed a greater change in sensitivity with respect to green and red than mathematics students.

These results have the advantage, among others, of explaining what we have observed in certain trained subjects who, at the end of a session or on certain days or at certain hours—after work, for example—systematically reverse their color classifications. Thus, the red which appeared light became heavy and the heavy-appearing green became light.

2) *Electrographic techniques.* Up to the present, in order to limit objectively the effects of dermo-optic sensitivity on the organism, Professor Novomeysky and I had recourse to four methods: the dynamometric, the regrouping method, reading and writing in Braille on colored paper and the thermoscopic method. Now, another method is in the process of being developed. This is the electrographic method.

Recently, Professor Dumitrescu in Roumania discovered a new technique for obtaining photographs of functional characteristics of living organisms quite different from those obtainable before. "Electrography" he wrote, "represents a wide field of electrical investigation of physical bodies with the aid of an electric current. Unlike the electrical measurements which supply the investigated characteristics in numerical values at a given moment, the electrographic technique transposes in significant and reproducible images the electrical or non-electrical mediated characteristics through an electrical value that stands for them (transduction).

"The electrographic images supply qualitative data that can be quantified by taking into account the parameters of the exploring current as well as the exploring circumstances." Electrography utilizes not only high voltage cur-

rents, but also low and can with "the aid of very sensitive sensors reproduce the changes generated by the interposed bodies."¹⁴

Professor Novomeysky and I asked Professor Dumitrescu to use his method to carry out tests to objectify the dermo-optic sensitivity of the hand by photograph. In 1977, Professor Dumitrescu sent us photographs in black and white of a hand placed upon radiology filters (red-blue-yellow) and upon a thin sheet of white paper, as well as of the hand without any filter. They led him to conclude that "the image given by the proximal electric medium was structured differently with homogeneities depending upon the filter used." He thinks that this may constitute proof of the mechanism he terms "chromotactile sensitiveness."

We ourselves decided to use an apparatus quite like Kirlian's, the verograph, to study whether or not filters placed between the hand and the glass plaque covering the apparatus would give differential results.

In order to carry out these experiments we used a subject who had been blind for thirty years and who had been previously trained in dermo-optic perception. The results were more than encouraging. The photographs

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obtained were so easily differentiated that a complete stranger to the experiment would classify them in order analogous to a prism's. Basing himself on the clarity of the finger contours, this person, who was presented with eight pictures—seven taken with filters of prism colors and one without filters—arranged them in the order of the daylight dermo-optic circle. The clearest contours were those of the photographs taken with filters the color of the extremities of the spectrum: violet and dark blue on the one hand and red on the other. The contours of fingers photographed through green and yellow filters were hazy. Classification of the photographs sent us by Professor Dumitrescu gave analogous results: the photo taken with a yellow filter was placed between those taken with blue and red filters.

We will not go into Novomeysky's analysis of all the photographs (in black and white) obtained by Professor Dumitrescu and some of my own, but conclude with him that psychophysiological analysis of Kirlian photographs points to an evident and definitive regularity. For one thing, colors far removed from each other are strongly distinguished from each other, such as photographs with red and violet filters from photographs with yellow and green filters. For another, contrast colors near each other on the dermo-optic circle are similar to each other, such as photographs with red and violet filters and with yellow and green filters. Thus Kirlian photographs confirm the

regularity of color contrast sensitivity discovered in dermo-optic research.¹⁵

C. Subjective Methods

Subjective methods complement these objective methods with a real awareness and perception of non-visible colors. I am currently carrying out some experiments with volunteers who come at regular intervals. Enormous patience is required on the part of both the experimenter and the subjects and early tests were discouraging. The subjects must actually learn to direct their attention to unusual and fugitive sensations in the tips of their fingers or the palms of their hands. After a quarter of an hour, the sensations tend to fuse with each other and the impressions fade away, doubtless because the hands cool off and the heat induced by the various colors disappears.

Preliminary Steps in Training

In the beginning, the experimenter or a tape recorder records the impressions induced by the colored stimuli as they are described verbally. These stimuli are placed in a box before the tests begin and covered with a transparent screen (plastic or glass) to prevent recognition due to difference in texture. The tests may be carried out in daylight or in electric light.

Some preliminary tests permit the experimenter to find out if the subject distinguishes stimuli more readily by impressions of weight or thickness or by heat; then, whether he has the same impressions with various colors and different colored materials such as paper, fabric, plastic. Some prefer cylindrical forms, others flat surfaces and when the stimuli are placed under transparent screens, some prefer them to be of glass, others of plastic.

Thus, in the beginning, the experimenter must establish a kind of code for each individual, permitting a comparison between colors and the impressions they elicit. For one subject blue will be hot, for others red; green may be heavy, yellow smooth.

Two frequent errors must be avoided: that of believing, as most people do, that we are dealing with an effect of the sense of touch, i.e. a kind of hyperesthesia of the sense of touch, and secondly, that of believing that the blind are especially capable of this type of recognition. This, of course, brings us back to the first error, since it presupposes that the blind have a specially developed cutaneous sense. These errors are due to the fact that the subjects are obliged to employ a tactile language in their descriptions, whereas we are dealing with a contact which is not necessarily direct, a plaque of glass intervening or the hands being held at some distance. Further, it has been found that the blind have neither more nor less tactile sensitivity than people with normal sight. One of the best subjects, as a matter of fact, had the tips of his fingers desensitized following a partial anesthesia. Everything is a matter of attention and concentration and it is true the blind can go down "into their hands," as it were, with greater facility than subjects with normal sight. This is, in fact, an active method in which the muscular activity of the hand and the analytical faculties of the subject come into play.

Following Steps

Once the preliminaries have been established, a progressive study of the subject's capacity is undertaken on three levels. Firstly, the subjects now take *handsful* of colored materials to evaluate their respective weights. Blue may appear heavier than red, yellow lighter than green, etc. If the subject is asked to classify four to six colors, he often divides them up on the order of the prism, for example, from red to blue, their thicknesses ranging from very thick to very thin. Secondly, the subjects attempt to differentiate the colors by merely running their hands across the surfaces, in other words, by simple contact. For

"Dermo-optic perception results from stimuli in the vicinity of the subject's hand, whereas telepathy and clairvoyance occur over long distances."

example, a subject will recognize the color red each time he has the impression of placing his hand on a thick layer, such as a portion of a book. Another subject compared the impression of heat and roughness from the color red to that which is felt when one rubs fur the wrong way. We then come to exercises for recognizing a specific color different from the two others randomly presented. Naturally variations in presenting the stimuli permit detection of the degree of sensitivity, for example, when the size of the stimuli is reduced from 21 x 14 cm to 5 x 5 cm. Thirdly, the subject no longer touches the stimuli, but differentiates them at a distance, holding his hand at least 5 cm above them.

As mentioned previously, Professor Novomeysky tabulated indices of recognition of colors whose thresholds vary quantifiably when the subjects place their hands over the color stimuli. He then used the "color barrier" method which is both subjective and objective, since the subjects must be conscious of the impressions they feel and the heights at which these impressions are perceived are carefully measured. The highest barriers were those of dark colors (in daylight) occupying the extremities of the spectrum, as compared to the neutral barrier of green from which extend the barriers of all the other colors ascending the sides of the dermo-optic circle. These measurements are reversed when the lighting is modified.¹⁶

There are other peculiarities of the experimental conditions that are psychologically interesting. For instance, the subjects sometimes prefer not to know their results, as they feel that it disturbs their ability to concentrate. Some subjects require extreme quiet and ask to detect stimuli alone in a room, even the presence of the experimenter bothering them.

Conclusions

After the foregoing it is difficult to attribute this perception, which clearly is not extrasensory, to clairvoyance. It is even likely that some of the so-called clairvoyance

tests are simply reducible to dermo-optic perception. In any case, dermo-optic perception is rich in possibilities in everyday life. Though visible objects capture our attention by their form, we should not forget that our activity is, nevertheless regulated by thermal exchange between colors (even when not visually perceived) in the environment and our bodies. The applications of this unconscious auto-regulation of our behavior by colors are many: greater productivity, teaching facilitated, rehabilitation of the blind, etc.

But much research remains to be done on these interactions between infra-red emitted by colors and the body and the exact physiological processes which result from them.

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SPR Conference

April 2-3, 1979, the Third International Conference of the (British) Society for Psychical Research will be held at the University of Edinburgh, Scotland. Any person may submit a paper for possible presentation at the Conference. Papers may be on any aspect of psychical research and they should, if possible, be presented in not more than 30 minutes in order to allow 15 minutes for discussion. Speakers should aim to make their papers readily understandable by the audience rather than just reading aloud an article intended for publication. There will be no research briefs and no simultaneous sessions during the Conference. Lots of opportunity will be provided for informal interchange of views. Summaries of proposed papers must reach the Program Committee by December 15, 1978. These summaries should be double-spaced, not exceeding 300 words and adequately typed so that xeroxed copies may be circulated at the Conference. Authors of papers

which are accepted will be informed by the end of January, 1979. Summaries of proposed papers should be sent to Ms. K. Wilson (ref. SPR Conference), Department of Psychology, 60 Pleasance, University of Edinburgh EH8 9TJ, Scotland.

ASPR Course List

The American Society for Psychical Research has published an up-dated list of courses and other study opportunities in parapsychology. The listings are by category of academic level and by state within each category. The list is non-evaluative and inclusion does not constitute endorsement by the ASPR. Since the educational picture is constantly changing, it is advisable to check with a college or an instructor for the most up-to-date information. To order the course list, send \$2.00 with a self-addressed stamped (40¢) #10 envelope to: Education Department, American Society for Psychical Research, 5 West 73rd Street, New York, N.Y. 10023.

Course in Spain

In October, 1978, the Laboratory of Parapsychology of the City University of Madrid, Spain, presented a 20-hour course in parapsychology. The course included study of the history of parapsychology, ESP and PK, the use of psi faculties, the various hypotheses of psi, psi in animals and plants and the general conditions necessary for the investigation of parapsychology.

Editor Resigns

Leslie Price has resigned as the editor of *The Christian Parapsychologist*, quarterly publication of the British Churches' Fellowship for Psychical and Spiritual Studies. He plans to concentrate on his Transpersonal Bookshop in Hove, East Sussex, England and on publishing ventures. Michael Perry, formerly Book Review Editor of *The Christian Parapsychologist*, will take over as editor.

PROCEEDINGS OF CONFERENCES OF THE
PARAPSYCHOLOGY FOUNDATION, INC.

PSI AND ALTERED STATES OF CONSCIOUSNESS

Proceedings of an International Conference on Hypnosis, Drugs, Dreams, and Psi, held at St. Paul de Vence, France (June 9 to 12, 1967). Edited by Roberto Cavanna, Ph.D., and Montague Ullman, M.D. A detailed discussion by experts in their fields, of the many ways of inducing altered states of consciousness for the experimental induction of psi phenomena. 208 pp. \$6.00.

PSI FAVORABLE STATES OF CONSCIOUSNESS

Proceedings of an International Conference on Methodology in Psi Research held at St. Paul de Vence, France (September 2 to 6, 1968). Edited by Roberto Cavanna, Ph.D. A critical evaluation of objectives, methods and motivations in psi research, including neurophysiological monitoring techniques as well as psychological factors. 264 pp. \$6.50.

PSI FACTORS IN CREATIVITY

Proceedings of an International Conference held at St. Paul de Vence, France (June 16 to 18, 1969). Edited by Allan Angoff and Betty Shapin. A consideration of the role of parapsychological phenomena in that most baffling of all endowments—creativity. Includes a discussion of creativity as it manifests itself in science, art, music, literature, mathematics, and many other areas. 220 pp. \$6.00.

A CENTURY OF PSYCHICAL RESEARCH: THE CONTINUING DOUBTS AND AFFIRMATIONS

Proceedings of an International Conference held at St. Paul de Vence, France (September 2 to 4, 1970). Edited by Allan Angoff and Betty Shapin. Both a close look and a long view summarizing the successes and failures of the first one hundred years of parapsychology. 212 pp. \$6.00.

PARAPSYCHOLOGY TODAY: A GEOGRAPHIC VIEW

Proceedings of an International Conference held at St. Paul de Vence, France (August 25 to 27, 1971). Edited by Allan Angoff and Betty Shapin. Scholars from many lands present the world of parapsychology in Japan, India, Turkey, Argentina, and others. 258 pp. \$6.50.

PARAPSYCHOLOGY AND THE SCIENCES

Proceedings of an International Conference held in Amsterdam, the Netherlands (August 23 to 25, 1972). Edited by Allan Angoff and Betty Shapin. A critical discussion of the relationships between parapsychology and such branches of science as psychiatry, biology, meteorology, genetics, and the philosophy of science, by experts in each field. 289 pp. \$7.00.

PARAPSYCHOLOGY AND ANTHROPOLOGY

Proceedings of an International Conference held in London, England (August 29 to 31, 1973). Edited by Allan Angoff and Diana Barth. ESP in the customs and tribal ways of primitive peoples throughout the world, from the witchdoctors of Africa to hex death in the United States. 328 pp. \$9.00.

QUANTUM PHYSICS AND PARAPSYCHOLOGY

Proceedings of an International Conference held in Geneva, Switzerland (August 26 to 27, 1974). Edited by Laura Oteri. Famous physicists discuss the riddles of wave mechanics, the paradoxes of quantum physics and how they relate to parapsychology. 295 pp. \$12.00.

EDUCATION IN PARAPSYCHOLOGY

Proceedings of an International Conference held in San Francisco, California (August 14 to 16, 1975). Edited by Betty Shapin and Lisette Coly. Sixteen educators discuss the present status and the future needs of education in parapsychology in U.S.A. and abroad. 313 pp. \$12.50.

THE PHILOSOPHY OF PARAPSYCHOLOGY

Proceedings of an International Conference held in Copenhagen, Denmark (August 25 to 27, 1976). Edited by Betty Shapin and Lisette Coly. Philosophers describe the belief systems, the models and the paradigms that underlie parapsychological phenomena. 295 pp. \$13.50.

PSI AND STATES OF AWARENESS

Proceedings of an International Conference held in Paris, France (August 24 to 26, 1977). Edited by Betty Shapin and Lisette Coly. Thirteen scientists discuss altered states of consciousness and psi functioning, and research into various states of mind that may be psi-conducive. 278 pp. \$13.50.

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29 West 57th St. New York, N.Y. 10019

Parapsychology Review

INDEX TO VOLUME 9

FEB 7 1979
January-December 1978

- Abbot, C. G., 2:9,13
Abelson, R., 2:20,4
acupuncture, 3:27
 Russian studies, 4:15
 Czech studies, 6:16
ADEPT, 1:32
Adorno, T., 2:22,24
Advances in Parapsychological Research.
 1. *Psychokinesis*, review, 4:10-2
Agawam High School (Mass.), 5:27
Aharonov, Prof., 2:25
Albee, W. G., 1:10
Alford, Dan K., 6:20
Allgemeine Zeitschrift für Parapsychologie,
 1:29
"allo psi," 6:5
Alpert, Richard (Baba Ram Das) 5:9
altered states of consciousness, 4:28;
 6:5,11,20
 in Bible, 1:4-6
 Experiential Learning Laboratory, 1:31
 "A Holistic Methodology in Psi
 Research," 2:1-6
 "Minus Versus Plus Awareness and
 Psi," 4:1-5
 Mode-of-function studies, 1:31
 New books 2:26,27,28
 "Psi and Altered States of Conscious-
 ness: Necessary Methods in
 Physics and Parapsychology,"
 3:13-7
 "Sensory Deprivation and Research
 on Telepathy," 4:24-6
Althouse, Lawrence W., 2:26
American Anthropological Association,
 6:20
 report on parapsychological anthro-
 pology symposium, 2:18-9; 5:14
American Association for the Advancement
 of Science, 6:11
PA symposia, 1:15
"Two Symposia at the 144th National
 Meeting of the AAAS," 3:23-8
psi exhibit, 3:27-8
recognition of parapsychology, 5:15
American Psychological Association, 5:23
American Society for Psychical Research,
 3:27; 5:13,15; 6:11
 "Courses and other Study Opportuni-
 ties in Parapsychology," 6:27
 lectures, 4:8
 workshop, 4:26
"Amityville Horror," investigation of, 5:27
Andhra University—FRNM Ph.D. program,
 2:28
 Institute for Parapsychology affiliation,
 3:11
Andrade, Hernani, G.
 psi theory, 1:17-8
Andrew, F., 1:9,10
Angelergues, R., 1:11
animals
 Clever Hans case, 3:24
Annenberg School of Communication, 3:28
ANOVA, 5:5
anthropology and psi
 courses, 2:19
 folklore and paranormal phenomena,
 meeting, 2:17
 medical application, 6:20
 review of *Extrasensory Ecology:*
 Parapsychology and Anthropology,
 5:14-17
 new books, 2:26,27
 "Parapsychological Anthropology:
 Growth Toward Interdisciplinary
 Study," (report on American
 Anthropological Association
 symposium), 2:18-9
apparitions
 in deathbed experiences, 1:21-22,
 25-26
Gli Arcani, 1:29
archaeology, psychometry in, 2:18; 5:15
Argumosa, G. de, 4:8
Aron (psychic), 5:16
Arons, Myron, 5:4,8
Artley, John, 1:31
Asch, S., 2:21,22,24
Associazione Italiana Scientifica de
 Metapsichica, 3:22
Austin, M.D., 1:9,10
"auto psi," 6:5
automatic writing by Margo Williams, 4:20
Bakalar, Eduard, 6:15
Bakirov, A. G., 4:15
balance theory, 2:22
Balint, M., 6:9
Balm cult in Jamaica, 2:19
Barber, Theodore X., 3:20
Barker, David Read
 "Parapsychological Anthropology:
 Growth Toward Interdisciplinary
 Study," 2:18-9
 American Anthropological Association,
 5:16
Barrett, Sir William, on deathbed experi-
 ences, 1:22-3,24,26,27
Barry, Jean, 3:22
Basic Technique (BT), 5:10
Basmajian, John, 6:3
Bastin, Edward, 4:10-20; 6:19
Bateson, Gregory, 3:6
Batzler, L. Richard, 4:8
Bauer, Eberhard, 2:7,8; 4:17
Beal, James, 5:16
Beard, Paul, 2:26
Beaumont, J. G., 1:10
Beeler, G. W., 1:11
belief and disbelief survey among students,
 4:22-3
"Belief Systems and Parapsychology,"
 2:20-5
Beloff, J., 1:10,15,30; 2:2,4,6; 3:22;
 4:8,18,26; 5:27; 6:3,4,13,14,15,
 19
 University of Edinburgh program, 3:12
Bender, Hans, 1:15; 2:7,8; 6:19
Bennett, Boyce, M., Jr.
 "Vision and Audition in Biblical
 Prophecy," 1:1-12
Berendt, Dr., 2:25
Berger, Melvin, 2:26
Bergson, Henri, 3:21,22; 5:2
Bergsonian filter, 5:1
Berlucchi, G., 1:9,10
Bersani, Ferdinando, 3:22
Bertalanffy, Ludwig von, 3:24
Bertini, M., 2:2,6
Betz, Hans, 2:8; 4:17
Bharati, Agehananda, 5:15
Bible
 psi in biblical prophecies, 1:6-8
Biblical prophecies
 "Vision and Audition in Biblical
 Prophecy," 1:1-12
bibliographies
 *Chicorel Index to Parapsychology and
 Occult Books*, 4:27
Bicknell, P. J., 3:28
Bierman, D. J., 5:4,6
Bigu, J., 4:26; 6:3
biofeedback, 6:2,3,4
 Biofeedback Institute of Denver, 6:4
biogravitation, 6:16
biophysics and psi, 6:3
biorhythms and the biosphere, 6:16
Bird, J. M., 2:14,15
Bisaha, John
 Mundelein College, program, 3:8
Bischko, J., 6:16
Black, David, 1:26,27
Blackmore, Susan
 "Second International SPR Confer-
 ence," 6:17-20

- blind and extraocular vision, 1:30
blind psychokinesis, 5:11
Bobroff, Alvin
 Judaism and parapsychology, 5:27
body concept, 5:19
Bogen, J. E., 1:9,10,11; 5:3
Bohm, David, 6:4
Bolton, Frances P., death, 1:29
Boshier, Adrian, 5:14
Bourguignon, Erika, 2:26
Bowers, John Z., 3:26,27
Bowles, Norma, 1:12; 3:28; 4:26,27
Bozzano, Ernesto
 on deathbed experiences, 1:22,23,27
Bradford, Wesley, 5:10
braille methodology, 6:24
brain lateralization, 6:4
 in Biblical prophecy 1:3-4
"Brain/Mind and Parapsychology 27th International Conference of the Parapsychology Foundation," report, 6:1-7
brain-mind problem, 3:24-5
Brandon, Jim, 4:27
Braud, W. G., 1:9,10; 2:4; 4:18; 5:3,27; 6:3
Braude, Stephen, 6:13,14
Brazilian Institute for Psychobiophysical Research, 1:17
Bridgman, P. W., 6:14
Brier, Bob, 6:13,14
 Long Island University, C. W. Post College program 3:9,10
 New School for Social Research program 3:10
Brink, T. L.
 "Personality Factors Related to Disbelief in Psychic Phenomena," 4:22-3
Bro, Harmon, 4:8
Broad, C. D., 3:16; 6:13,14,17
Broome, E. C., 1:9
Broughton, Richard S., 1:10; 5:3,27; 6:17
Bruell, J. H., 1:10
Brunner, F., 6:16
Budzynski, Thomas, 4:26; 6:4
Büchel, Prof., 2:8
Bugental, James, 3:6
Burdick, Donald S., 2:11,13
Burt, Sir Cyril 2:26; 6:8
Byrne, Richard, 3:28; 4:26
C. W. Post College program, 3:9-10
Cade, G. Maxwell, 4:17
California Museum of Science and Industry, 3:28
Cambridge University
 Society for Psychical Research, 1:12
Campbell, Susan, 3:6
Cardeña del Rio, Jaime, 4:2,5
careers in parapsychology, 3:1-6
Carington, Whately, 1:10
Carlson, M., 2:4,6
Carlson, Rick J., 4:27
Carmon, A., 1:10
Carpenter, James C., 2:11,12
Carr, B. J., 1:12; 6:18
Carrington, Hereward, 1:24
Cartwright, D., 2:20,24
Casper, G. W., 4:22,23
Castaneda, C., 5:3,14
Cathie, Bruce L., 6:21
Cattell, R. B. and HSPQ, 5:12
Cavanna, R., 4:2
cell and psi theory, 1:17-8
cell therapy
 Russian experiments, 4:15
Center for Parapsychological Research, 1:31; 3:27
Centro Studi Parapsicologici, 3:22
Chari, C. T. K., 1:32
Chauvin, Remy, 2:9,13
Chen, Connie, 5:10
Chginsky, Valeri, 4:15
Chicorel Index to Parapsychology and Occult, 4:27
Child, Irvin, 3:23; 4:8; 5:8
 "Some Educational Uses of the Maimonides Slides," 5:24-25
Chotas, Harrell, 5:10
Christian Parapsychologist
 International Conference on Christian Parapsychology, 1:12
 new editor, 6:27
Christopher, Milbourne, 3:20
City University of New York college program, 3:9
 new graduate program, 4:8
Clark, E., 1:11
Clarke, Edward H., 1:22,27
"clever men" of Australia, 5:14
Cluff, Charles E., 2:26
Cobbe, Francis Power, 1:20-1,27
Cohen, A., 2:23,24
Cohen, Allan, 3:7
Cohen, Daniel
 review of *Psychic Experiences*, 4:12-3
College of Psychic Studies, London
 Psychic experiences wanted, 3:20
Collins, Harry, 3:23
 replicability in science, a social study, paper at 1978 AAAS symposium, 3:25-6
Committee for the Scientific Investigation of Claims of the Paranormal
 Buffalo laboratory, 5:27
 Truzzi resignation, 1:12
Zetetic, 1:29
computerized ESP task, 5:5
Condey, Andrew, 3:7
Congressional Office of Technology Assessment, 5:22
Congressional Research Service, Library of Congress, 5:22
consciousness, 5:7,17,23; 6:4
Constantinov, B., 6:22
constitution committee, SERPA, 5:13
Cooper, Darryl, 5:10
Cornell, A., 6:18
counseling and paranormal experiences, 5:12
courses
 Andhra University, 3:11
 C. W. Post College, 3:9-10
 City University of New York, 3:9
 City University of Madrid, 6:27
 "Courses and Other Study Opportunities in Parapsychology," 6:27
 Franklin Pierce College, 3:8-9
 Heed University, 3:7,11
 Humanistic Psychology Institute, 3:6
 Institute for Parapsychology, 2:19; 3:10,11
 John F. Kennedy University, 1:15,31; 4:7
 Mundelein College, 3:8
 New School for Social Research, 3:10
 Plymouth State College, 2:19; 3:9
 Rollins College, 3:8
 St. Joseph's College, 3:10
 Tel Aviv University, 1:31; 2:25
 University of Alaska, 4:26
 University of California, Santa Barbara, 1:31; 3:6-7
 University of Edinburgh, 3:12
 University of Lowell, 1:31; 3:8
 University of Nottingham, 3:12
 University of Pittsburgh, 3:10-1
 University of Utrecht, 3:11-2
Cox, John, 4:20
Cox, W. E., 5:7,11,12
Cozzi, Giorgio, 3:22
Crain, William, 4:8
creativity and psi, 6:6
criminology and psi in Russia, 4:14-5
criticisms
 "Belief Systems and Parapsychology," 2:20-5
 ESP, 5:26
 Russian, 4:14-5
Crookall, Robert, 1:24-5,26,27; 6:20
Crookes, W., 6:17
Crossley, J., 3:28
Crosson, James Cope
 review of *Try the Spirits*, 2:16-7
cryogenic magnetometer PK studies, 1:30
"Current Parapsychology in Germany," 2:7-8
cutaneous perception, 6:22
Czechoslovakia
 theory of "mentions," 4:15-6
Dal Corso, 5:12
Dale, Laura, 2:3,4,5,6,13,28
Dallas, H. A., 1:21
Davis, James W., 1:12
 & Weiner, D. H., "Report of the 1978 SERPA Convention," 5:4-13
Dean, E. Douglas, 4:17; 5:27
deathbed experiences, 5:21
 "Research on Deathbed Experiences," 1:20-7
 University of Virginia research, 2:17
visions of hell, 4:26
Defence Mechanism Test (DMT), 6:18
Deglin, Vadim Lvovitch, 4:16
degree programs, 3:6-12
Deikman, Arthur, 1:9,10
déjà-vu, 5:12
Denniston, Robin, 1:20
Department of Health, Education and Welfare
 transpersonal education project, 3:28
"Derma-Optic Perception," 6:22-7
dermo-optic vision
 See: extraocular vision
Deutsch, H., 6:8
Deutsche Gesellschaft für Parapsychologie, 1:29
Devereux, George, 3:18
Dewitt, L. W., 1:9,10
Diaconis, Persi, 3:20
Dick, William, 6:21
Dierkens, Jean, 1:15
differential effect, 5:4

- Dimond, S. J., 1:9,10
Dingwall, E. J., 6:8,17
directories, 2:26
dissonance theory, 2:20-2
Division of Parapsychology, University of Virginia
 near-death experiences research, 2:17
divination, 5:15
Dixon, Norman F., 4:26; 6:5,6
Domhoff, G. William, 1:10
Donahoe, James J., 2:26
Donnelly, Katherine F., 6:21
Douglas, Alfred, 2:26; 3:20
 Extra-Sensory Powers, review, 1:18; 2:26
drawing, analysis, 6:18
dreams
 EEG & EOG studies, 1:4-5
 Biblical, 1:4-5
dreams, hypnagogic, 1:4-5
dreams, paranormal
 group dream test, 2:18
 new books, 2:26
 research & replication, 2:2; 5:7
dreams, precognitive, 5:15
 German study, 2:7
 survey, 4:5
Driesch, Hans, 2:8
Dryden, S. H., 1:20
dualism, 6:1
Dubrov, Alexander, *Biogravitation*, 6:16
Ducasse, C. J., 6:14
Duke University
 Experiential Learning Laboratory, 1:31
Dumitrescu, I., 6:25
Duplessis, Yvonne, 1:30; 4:8; 6:15
 resigns, 4:5
 "Derma-Optic Perception," 6:22-7
Durinyan, Ruben, 4:15
Durnford, M., 1:9,10
Duval, Pierre, pseud.
 See: Chauvin, R.
Earle, Elizabeth, 2:19
"East European Press Report (1977)," 4:14-6
East/West Center for Holistic Health
 lectures, 1:15
Ebon, Martin, 2:26; 4:8
Eccles, Sir John, 3:23,25; 4:28; 6:1,2,4,7
Edge, Hoyt L., 4:8
 Rollins College, program, 3:8
Edinburgh University
 Ph.D. for psi, 1:15
EEG
 clairvoyance study, 5:6,10
 stroboscope study, 1:31
Efron, R., 1:10
ego, 6:6
Ehrenwald, Jan, 1:10; 4:2,11,12,26,27; 5:19; 6:6,8,9,20
 "Psi Phenomena, Hemispheric Dominance and the Existential Shift," 5:1-3
 The ESP Experience, review, 3:18-20
Ehrlich, E. L., 1:10
eidetics, Russian studies, 4:15
Eisenberg, Howard, 2:26
 Inner Spaces: Parapsychological Explorations of the Mind, review, 6:11-3
Eisenbud, Jule, 3:18; 5:14,15; 6:20
Eisner, V., 6:9
Ejvegard, Rolf, 4:27
electrographic technique, 6:25
electromagnetism and psi basis, 4:20; 5:16; 6:16
ELF waves, 5:17
Elliot Lake Laboratory, Canada Center for Mineral and Energy Technology, 6:3
Ellis, D. J., 6:21
Ellis, R., 1:9,10
Ellison, Arthur, 6:20
"emergent interactionism," 5:23
Emerson, J. N., 5:15
EMG, 5:10
emotional data, telepathic transfer, 6:11
energy concepts, new book, 2:27
Enfield Poltergeist, 6:19
epilepsy and poltergeist studies, 4:17-8
Ermakov, N., 4:14
The ESP Experience, review, 3:18-20
Evans, C., 2:5,6
evidence for psi phenomena, 2:9-11
evolution and psi, 3:21-2
exhibit on psi at 1978 AAAS meeting, 3:27-8
Experiential Learning Laboratory, 1:31
experimenter effect, 5:4,6
 "A Holistic Methodology in Psi Research," 2:1-6
 & altered states of consciousness, 2:1-6
 in behavioral research, 3:24
 quantum mechanics, observer effects, 3:23-4
 "Replicability and Experimenter Influence," report of a symposium at 1978 AAAS meeting, 3:23-6
 in retrocausal PK studies, 4:18
 psi-mediated, 6:18-20
Explorando lo Paranormal, 1:29
extraocular vision, 6:15, 22-7
 & blind, 1:30
Extra-Sensory Powers, review, 1:18
Extrasensory Ecology: Parapsychology and Anthropology, review, 5:14
extraterrestrial communications via psi, 4:16
fainting, 5:20
Farrelly, Francis, 2:19
Farson, Richard, 3:6
Fechner, Gustav, 3:25
feedback in PK experiments, 4:18
Feher, L., 1:10
Fender, D. H., 1:11
Fere, Charles, 6:23
Festinger, L., 2:20,21,22,24
Feuer, L., 2:23,25
Filbey, R. A., 1:9,10
Fiore, Edith, 4:27
Fisk, G. W., 2:4,5,6
flaw determined neural centers, 5:2
Flew, A. G. N., *A New Approach to Psychical Research*, 6:14
Florida Society for Psychical Research
 1978 congress, 2:19
Flournoy, Theodore, 3:21,22
Fodor, Nandor, 1:29; 6:9
folklore and the paranormal, meeting, 6:17
forced choice tasks, 5:6
Forman, Paul, 3:26,27
Forschungsinstitut für Parapsychologie, 1:31
 EEG & stroboscope study, 1:31
Fort Worth Museum of Science and History, Texas, 5:27
Foster, Lewis, 6:14
Foulkes, David, 1:9,10; 2:2
Foundation for Research on the Nature of Man, 3:27; 5:6,7
Fowler, H., 2:24,25
Frankel, Henry R., 3:26,27
Franklin, W., 6:8
Franklin Pierce College
 New England Journal of Parapsychology, 1:29
 program, 3:8-9
fraud, 6:13
Frazier, Kendrick, 1:12; 6:8
free response tasks, 5:6
French, P. A., 6:13
Freud, S., 3:22; 6:8
 on telepathy, 3:21
Friedman, J., 6:18,20
Fry, Peter, 2:26
Fyssas, Mr., 1:14
Galín, David, 1:9,10
Gallimore, J. G., 4:27
ganzfeld studies, 4:25; 5:24
 & remote viewing, 1:30
ganzfeld technique, 2:2,4
Gardner Murphy Research Institute, 3:27, 5:22
Garfield, Charles, 1:20
Garrett, Eileen J., 4:4-5,9; 5:13
 "On a Rewarding Journey," 1:19
 "Poltergeists, Old and New," 4:21
 "The World's Dynamism," 5:23
Gauger, Wilhelm, 2:7
Gauld, Alan O., 2:11; 6:17
 University of Nottingham, program, 3:12
Gazzaniga, Michael, 1:9,10,11,12; 5:3
Geller, Uri, 2:8,28; 6:12,17,20
genetic basis for psi, 5:15
Geschwind, N., 1:9,11
GESP testing, 5:15
Gibson, James, 6:4
Girard, Jean-Pierre, 1:15; 4:17
goal-relevance and psi, 5:11
Godbey, John, Jr., 6:15
Goldfarb, Russell M. & Clare R., 4:27
Goodman, Jeffrey, 5:16
Gottman, N., 6:8
governmental studies
 HEW project of transpersonal education, 3:28
 U.S. Defense Intelligence Agency publications, 4:28
Graham, W. C., 1:11
grants, Parapsychology Foundation 1977, 1:30-2
Green, C., 5:20
Green, D., 3:28
Green, Elmer, 6:3
 & Alyce, 2:26
Greenbaum, Steven E., 2:17
Greenberg, Moshe, 1:10
Gregory, Anita, 5:27; 6:19
Greville, T. N. E., 5:12

- Griest, Walter, 5:14
 Gris, Henry, 6:21
 Grof, Stanislav, 2:26
 Grosse, M., 6:19
 Grosso, M., 5:19
 Gruber, Elmar R.
 "Current Parapsychology in Germany,"
 2:7-8
 Guirdham, Arthur, 6:21
 Haeussermann, F., 1:11
 Haight, JoMarie, 5:5,12,27
 Halifax, Joan, 2:26; 5:14
 hallucinogenics
 & psi studies, 4:2-3
 use in Mozambique, 2:19
 Hammers, A. J., 2:8
Handbook of Parapsychology, review,
 2:9-13
 Hankey, Muriel, obituary, 4:9
 Haraldsson, Erlendur, 1:26,27; 6:18,21
 Harary, F., 2:20,24
 Hardesty, Francis, 4:8
 Hardy, Sir Alister, 3:21,22; 4:3,5
 Harley, T., 6:18
 Harper, Sharon, 4:25
 Harribance, Lalsingh, 5:6
 Haskins, Jim, 6:21
 Hasted, J., 4:8,17; 6:8,18
 Hastings, Arthur, 3:7,28
 haunted house, 5:11
 hauntings in London, 4:20
 Haynes, Renée, 1:12
 healing
 diagnosis, psychic & unknown radiation,
 1:30
 psychic, 5:9,15
 Hécaen, H., 1:11
 Heed University, program, 3:7,11
 Heider, F., 2:20,25
 Hein, Albert, 1:24
 Hell, Maximilian, 1:12
 Hellström, Helga, 4:27
 hemispheres of brain, 5:5,6
 & extraocular vision, 6:23
 & ESP, 6:17
 Herbert, Benson, 1:10,30
 "East European Press Report (1977),"
 4:14-6
 Heuvelmans, Bernard, 3:20
 Hick, John, 2:26
 Hill, J. Arthur, 1:24,27
 Hills, P. J., 3:20
 Hinton, John, 1:20,27
 history of parapsychology
 In Search of White Crows, review,
 2:14-6
 Hitching, Francis, 6:21
 Hitschmann, E., 6:8
 Hodgson, Richard, 1:21
 "A Holistic Methodology in Psi Research,"
 2:1-6
 hologram, 6:4
 "holomonic" model of brain, 6:4
 Holroyd, Stuart, 2:26
 Home, D. D., 6:17
 Honorton, Charles, 1:11,15; 2:2,3,5,6,10,
 11,12; 3:23,26; 4:24-5,26; 5:21,
 24,27; 6:2,3
 "Replicability and Experimenter
 Effects," paper at AAAS sym-
 posium, 3:24-5
 Horney, Karen, 2:24,25
 horse race, simulation of, 5:11
 Hovland, C., 2:20,25
 Houston, Jean, 2:2; 5:23
 Houtkooper, Joop M., 5:7
 Hubbard, L. Ron, 6:21
Human Behavior, 5:27
 humanistic psychology, 5:8
 Humanistic Psychology Institute, program,
 3:6
 Hume, D., 6:14
 Humphrey, B. M., 4:22,23
 Humphrey, M. E., 1:9,11
 Hunter, R. C., 1:27
 Husserl, E., 6:20
 Huxley, Aldous, 2:26
 Hynds, Fran, 3:28; 4:26,27
 Hynek, J. Allen, 3:20
 hypnosis and psi, 5:6,10
 research and repeatability, 2:2-3
 Hyslop, J. H., 2:14,15
 on death bed experiences, 1:20,21,22,
 23,24,26,27
 identity theory, 6:1,2
 IEEE System, Man, and Cybernetics
 Society, 6:21
 Ilyekov, Evald, 4:14
In Search of White Crows, review, 2:14-6
The Indefinite Boundary, review, 1:16-18
*Index to Social Sciences and Humanities
 Proceedings*, 6:20
 indexing of literature, 1:31; 6:20
 India, Andhra University, 2:28; 3:11
 information processing of brain, 5:3; 6:4
 Iniushin, Victor, 4:15
 Inner Space Exploration Fair, 3:28
*Inner Spaces: Parapsychological Explora-
 tions of the Mind*, review, 6:11-3
 Institute for Border Areas of Psychology
 and Mental Hygiene, Freiburg,
 2:7
 Institute for Parapsychology, 1:12
 Andhra University Ph.D. Program,
 2:28; 3:11
 Summer Study Program, 2:19; 3:10
 Institute for Scientific Information, 6:20
 Institute of Parascience
 1977 Conference report, 4:17-20
 notice of 1978 conference, 5:27
 Institutet för Psykologisk och Para-
 psykologisk Forskning, 2:28
 instrumentation
 ADEPT, 1:32
 computers at University of Utrecht,
 1:32
 International Academy of Manternach,
 Luxemburg, 4:8
 International Association for Psychotronic
 Research
 Psychotronik, 1:29; 6:15,16,20
 International Institute of Integral Human
 Sciences, 3:7,11
 Ishihara cards, 6:18
 Iverson, Jeffrey, 2:27
 Isaacs, Julian, 6:18
 Jack, W. H.
 Franklin Pierce College program, 3:8-9
 Jackson, D., 2:22,25
 Jaffe, Russ, 5:22
 Jahn, Robert, 3:26
 Jamaica
 psi in anthropological study, 2:18-9
 James, William, 2:14,15; 5:8; 6:13,15
 Janin, Pierre, 1:15,28,30
 Janis, Joseph, 4:26
 Jefimov, Vasili, 6:15
 Jersey Society of Parapsychology
 seminar, 3:20
 Joan of Arc, 6:19
 Johannesson, C., 2:3,6
 John F. Kennedy University courses,
 1:15,31; 3:7
 Johnson, Martin, 1:32; 2:3,4,6; 3:11-2;
 3:22; 6:18
 Johnston, Thomas, 2:19
 Johnston, William, 1:11
 Jones, Richard M., 1:11
 Jordan, Peter, 3:20
 Jorgensen, Joseph, 3:20
 Josephson, Brian
 universal mind link with physics, 4:19
Journal of Occult Studies, 1:29
Journal of Research in Psi Phenomena,
 1:29
 journals, new, list 1:29
 PSI, 1:15
 Psi News, 3:20
 PSI Realité, 1:15
 The Zetetic Scholar, 3:20
 Judaism and Parapsychology, 5:27
 Jung, Carl G., 6:8,9
 Kahuda, F., theory of "mentions," 4:15-6
 Kant, Immanuel, 3:21
 Kanthamani, H., 5:4,5,12
 Kaplan, Pascal, 3:7
 Keane, Patrice, 4:26
 Keen, Sam, 3:6
 Kelly, Edward F., 1:12,32; 2:11,13; 4:26;
 5:6; 6:1,2
 Kelly, H., 2:20,25
 Kelly, Michael Thorne
 "Replicability and Experimenter
 Influence" report of a sym-
 posium at 1978 AAAS conference,
 3:23-6
 "Report on Parapsychology Founda-
 tion's Conference (1978), 6:1-7
 "Sensory Deprivation and Research on
 Telepathy," 4:24-6
 Kelsey, Morton Trippe, 1:11; 2:27
 Kennedy, J., 2:4-6; 5:5,7,12
 Kilner, W. J., 6:16
 Kimura, D., 1:10
 King, Francis, 4:27
 Kingston Association for Research in
 Parasciences, 1:29
 Kinsbourne, M., 1:11
 Kirlian, Semyon D., 6:20
 Kirlian photography
 and extraocular vision, 6:25
 in Greece, 1:14
 Kitaev, N., 4:14
 Klass, P. J., 6:8
 Klee, James, 5:8,9
 Klein, Judith, 1:11
 Klein, W. C., 1:11
 Kneale, M. H., 6:13
 Knight, H., 1:11
 Koestler, Arthur, 2:13; 4:27

- Kornwachs, Klaus, 2:7; 4:19
 Krechevsky, I., 2:22, 25
 Kreitler, Hans, 1:31; 2:25
 Krieger, Joan, 4:26; 5:5,6
 Krippner, Stanley, 1:12; 2:2,6,25,28;
 3:28; 4:3,5,8,27; 5:22
*Advances in Parapsychological
 Research, 1. Psychokinesis*, review,
 4:10-2
 Humanistic Psychology Institute
 Program, 3:6
 Kübler-Ross, Elisabeth, 1:20, 25,26; 5:9,23
 Kuchunka, Karel, 6:16
 Kudrin, V., 4:16
 Kugel, Wilfried, 1:31
 Kuleshova, Rosa, 6:15
- Landau, L., 5:21
 Langan, Laura, 2:19
 language analysis, 6:13
 Larcher, H., 4:8
 laser reflex therapy, Russian studies, 4:15
 Laudan, Laurens, 3:27
 learning, 5:18
 Learoyd, C. G., 6:8
 Lavrov, V., 4:14
 Leadbeater, Charles W., 6:21
 Lee, Cyrus, 1:12
 Lehmann, D., 1:11
 Leibniz, G. W., 5:9
 Leonard, Gladys Osborne, 4:9
 Leontiev, A. N., 4:15
 Lepp, Ignace, 1:20,27
 LeShan, Lawrence, 1:11; 2:27
 "Psi and Altered States of Conscious-
 ness," 3:13-7
 Levi-Agresti, J., 1:11
 levitation, 5:15
 levitations by saints, 4:3-4
 Levy, J., 1:11
 Libet, Benjamin, 1:16
 libraries
 Metaphysical Society of Athens, 1:13
 Universidad Catolica de Cordoba, 1:31
 University of Witwatersrand, 1:31
 see also Parapsychology Foundation,
 Eileen J. Garrett Library
 Lidz, T., 2:23,25
 Life Energies Research, 5:13
 Lindblom, J., 1:11
 literature indexing, 1:31
 Litkei, Andrea Fodor, 1:29
 Littleton, C. Scott, 2:17
 Locke, John, 5:8
 Lodge, Sir Oliver, 1:24
 Long, Joseph, 2:18-9
Extrasensory Ecology, review, 5:14-7;
 6:21
 Plymouth State College program, 3:9
 Long Island University, C. W. Post College
 program, 3:9-10
 Lourdes, 5:9
 Lovin, C., 1:12
 Loye, David, 4:27
 LSD, 4:2-3
 Lucadou, Walter von, 2:7; 4:19
 Ludwig, Jan, *Philosophy and Parapsy-
 chology*, 6:13-15,21
 Ludwig-Boltzmann Institut für Akupunktur,
 6:16
- "Luiz, Andre," 1:17
 Luria, A. M., 4:15
 Lyon, William, 5:16
- MacGregor, Geddes, 4:27
 McAlister, Jack, 5:22
 McGuire, W., 2:23,24,25
 McConnell, R. A., 3:10,11
 McDougall, William, 3:21
 McElveen, Idris, 5:10
 McKenzie, J. Hewat, 4:9
 McMullen, George, 5:15
 MACL, psychological test, 5:4,5
 Maddock, Peter, 5:27
 "Report of Institute of Parascience
 Conference 1977," 4:17-20
 Maimonides Medical Center, 3:27
 majority vote analyses, 5:27
 "Making Sense of Statistics Without a
 Ph.D.," 4:6-8
 Makous, W., 6:22
 Maloney, Clarence, 2:27
 Maltese Society for Psychical Research,
 1:29
 Manczarski, S., 6:16
 Mann, Gary, 4:5
 Manning, Matthew, 6:8
 MANOVA, 5:6
 Margenau, Henry, 3:14,17,23-4
 Martelli, Aldo, 3:22
 Martinek, Zdenek, 6:16
 Masters, R. E. L., 2:2
 & J. Houston, *Mind Games*, 6:15
 Mattoon, Mary Ann, 6:21
 Mattuck, Richard, 4:19; 5:27; 6:19
 Mauskopf, Seymour, 1:15
 "The Reception of Unconventional
 Science by the Scientific Com-
 munity," report of a symposium
 at 1978 AAAS meeting, 3:26-7
- May, Rollo, 3:6
 Maxwell, Joan, 4:27
 Mead, Margaret, 5:15
 Meader, John, 1:24
 medicine, paranormal, 6:12
 meditation, 5:6
 mediumship
 communicators & OBE similarities,
 1:25
 Psychical Research Foundation studies,
 1:32
- Meehl, Paul, 6:14
 Meek, George W., 2:27
 Meerloo, Joost A. M., 3:18
 mentally retarded, 5:22
 "mentions" theory, 4:15-6
 Metaphysical Society of Athens, 1:13-4
 Mitchell, John F., 2:27
 Michelson, Albert A., 2:23
 Migdail, L., 4:14
 Milgrim, Stanley, 2:22,25
 Millar, Brian, 2:4,5,6
 Milner, Brenda, 1:9,11
Mind Games, 6:15
 "mind-mirror" device, 4:17
 Mind Science Foundation, 3:27; 5:27
 "Minus Versus Plus Awareness and Psi,"
 4:1-5
 Mischo, John, 2:7,8
 Mishlove, Jeffrey, 1:32
 mode-of-function model, 1:31
- Monnet, Mary, 4:5
 Monroe, Robert A., 1:11; 5:20
 Moody, Raymond, 1:20,24-7
 Moore, E. Garth, 2:27
Try the Spirits, review, 2:16-7
 Moore, Robert Laurence, 2:27
In Search of White Crows, review,
 2:14-6
 Morales-Dorta, Jose, 4:27
 Moores, Russell, R., 5:4,9
 Moran, Rick, 5:27
 Morris, Robert, 1:31; 2:11; 3:28; 4:8;
 4:26; 5:22,27; 6:20
 University of California, Santa
 Barbara, program, 3:6
 Morrison, Melissa, 5:4,10
 mother-child ESP, 3:18
 Muldoon, S. & H. Carrington 5:20
 Müller, Lutz, 2:8
 multiple consciousness, 6:19
 Mundelein College, program, 3:8
 Educators' Workshop, 4:27
 Mundle, C. W. K., 6:14
 Murphy, Gardner, 2:2,5,6,13,15; 6:14
 Musés, Charles, 2:18
 music in deathbed cases, 1:23
 Myers, F. W. H., 1:11,21,27; 6:9
 Mylius, Christine, 2:7
- Nachshon, I., 1:10
 Naegeli, H., 4:8
 Nagafuchi, M., 1:9,11
 Nagel, Hella, 2:7
 Nagler, William, 3:20
 Naranjo, Claudio, 1:9,11
 Nash, Carroll B., 1:15; 6:22
 St. Joseph's College program, 3:10
 "Psi and Evolution," 3:21-2
 National Science Foundation, 5:22
 Nebes, R. D., 1:9,11
 need-determined factors, 5:2
 Neher, A., 2:5,6
 Neppe, Vernon, 5:27
 neurophysiology and psi, 3:19
 neuroses
 & ESP performance, 6:18
 & poltergeist phenomena, 6:8
New England Journal of Parapsychology,
 1:29
 New School for Social Research program,
 3:10
 New York Academy of Sciences, 5:22
 Neylon, A., 2:2,6
 Nicol, J. Fraser, 1:27
 Nielsen, Greg, 2:27
 Nikolaev, G., 4:14
 Novillo Pauli, Enrique, 1:31
 Novinski, Michael, 5:10
 Novomeyski, A. S., 6:15,22-27
 Noyes, Russell, 1:25,26,27; 5:19
- obituaries
 Hankey, Muriel, 4:9
 Laidlaw, Robert W., 5:13
 Pienaar, Domenick C., 2:27
 O'Brien, Judith T., 1:31
 University of Lowell, program, 3:8
 observer effect, 5:6
 Occhipinti, S., 3:22; 4:1
 Occidental College, California Academy of
 Sciences meeting, 2:17

- Occult Studies Foundation, 1:29
 "ocelles," 6:22
 Oesterreich, T., 1:11; 2:8
 Office of Technology Assessment
 transpersonal education project, 3:28
Okkult, 1:29
 omniscience, 5:9
 "On a Rewarding Journey," 1:19
 "On the Status of Parapsychology in
 Greece," 1:13-5
 Orechovich, P., 4:14
 Organization Congressi Psi, 1:15
 Ornstein, Robert E., 1:9,10,11; 2:27; 6:21
 Osgood, C., 2:20,25
 Osis, Karlis, 1:20,23-7; 2:4,6; 4:26; 6:21
 Ossowiecki, Stefan, 5:15
 Ostrander, Sheila & Schroeder, Lynn,
Psychic Experiences, review,
 4:12-3
 Oswald, Ian, 1:9,11
 Otto, Rudolf, 4:3
 "The Out-of-Body Experience: A Psycho-
 logical Theory," 5:19-22
 out-of-body experiences, 3:19; 4:28; 5:17;
 6:17,20
 in deathbed experiences, 1:24-5
 & mediumistic communicators, 1:25
 as a psychic phenomenon, 5:19
 Owen A. R. G., 6:8,9
 Padfield, Suzanne, 4:17
 Palmer, John, 1:15,30; 2:2,6,11,12; 4:8
 John F. Kennedy University, program,
 3:7
 "The Out-of-Body Experience: A
 Psychological Theory," 5:19-22
 Panati, Charles, 1:11
 Pantas, L., 1:11
 Paraphysical Research, 4:5
 "Parapsychological Anthropology: Growth
 Toward Interdisciplinary Study,"
 2:18-9
 Parapsychological Association, 3:3
 AAAS symposia, 1:15
 membership, 2:9
 1978 convention announcement, 2:17
Psi News, 3:20
 1978 AAAS symposium reports, 3:23-8
 new officers, 4:8
 proceedings, 1976, 4:27
 psi exhibit at 1978 AAAS meeting,
 3:27-8
Parapsychologie, Psychotronique, 1:29
 parapsychology, definitions, 2:9,10
Parapsychology (Taiwan), 1:29
 "Parapsychology: Facts and Experiences,
 An International Conference at
 Campione, Italy," 3:22
 Parapsychology Foundation, 3:27; 5:24;
 6:13
 annual report, 1977, 1:28-32
 1973 conference, 5:14
 1978 Conference announcement, 3:20
 1978 Conference, 4:26; 6:1-7
 Eileen J. Garrett Library
 annual report 1977, 1:29-30
 recent acquisitions, 2:26-8;
 4:27-8; 6:21
 grants, 1977, 1:30-2
 proceedings of conferences, 1977, 4:28
 publications, 1:30
 "Parapsychology in Higher Education,"
 3:1-12
 Parapsychology Research Group in Palo
 Alto, California, 1:30
 Parker, Adrian, 1:11; 2:28
 "A Holistic Methodology in Psi
 Research," 2:1-6
 Ph.D. for psi, 1:15; 5:27
 Patrovsky, V., 6:16
 Pavlov, I. P., 4:16; 6:23
 Peak-in-Darrien cases, 1:21,24,26
 Pearson, Harriet, 1:21
 Penfield, Wilder, 2:24,25; 3:25; 6:1
 Perkins, James S., 2:27
 Perry, Michael, 6:27
 "Personality Factors Related to Disbelief in
 Psychic Phenomena," 4:22-3
 personality variables, 5:5
 Petrovsky, Boris, 4:15
 Petzold, Prof., 2:8
 Pfungst, Oskar, 3:24
 phenomenology, 6:20
 Ph.D. degrees, 3:3-5
Philosophers in Wonderland, 6:13
Philosophical Dimensions of Parapsychology,
 6:13
Philosophy and Parapsychology, review,
 6:13-15
Philosophy and Psychical Research, 6:13
The Philosophy of Parapsychology, 6:13
 physics, 6:19
 observer effects in quantum mechanics,
 3:23-4
 1977 Institute of Parascience confer-
 ence report, 4:17-20
 physiological studies
 in PK experiments, 4:17
 poltergeist, 4:17-8
 Pienaar, Domenick C., obituary, 2:17; 5:27
 Pincott, H., 6:19
 Pius of Pietrelcine, Padre, 4:3
 Playfair, Guy Lyon, 4:28; 6:19
The Indefinite Boundary, review,
 1:16-8
 Plymouth State College, courses, 2:19; 3:9
 Podmore, Frank, 1:21
 Polackova, J., 4:16
 Polansky, Joseph, 2:27
 Polish Academy of Sciences, 6:16
 Polish Natural Scientific Association, 6:16
 poltergeist
 & epilepsy, 4:17-8
 & psychology, 6:8
 studies, 6:19
 "Poltergeists, Old and New," 4:21
 Poniatowski, Stanislas, 5:15
 Popp, F. A., 6:16
 Popper, Karl L., 4:28
 position effects, 5:12
 Povah, J. W., 1:11
 Prasad, Jamuna, 4:4,5
 Pratt, J. Gaither, 1:11; 2:3,5,6,13; 4:26,
 28; 6:8
 precognition, 4:27; 6:13
 in remote viewing studies, 1:32
 preferential matching, 6:18
 Pressing, J., 3:28
 Pribram, Karl H., 4:26; 5:23; 6:4
 Price, Alan D., 2:4,6
 Price, E. Alan, 5:27
 Price, George R., 6:14
 Price, H. H., 6:15
 Price, L., 6:19,27
 Prince, Walter Franklin, 2:15
 prophecy
 "Vision and Audition in Biblical
 Prophecy," 1:1-12
 political, 6:19
 pseudo-sensory experience, 5:7,8
 "Psi and Altered States of Consciousness:
 Necessary Methods in Physics and
 Parapsychology," 3:13-7
 "Psi and Evolution," 3:21-2
 "Psi Exhibit at AAAS Conclave," 3:27-8
 psi-gamma phenomena, 4:1
psi-interactive biomolecules, 4:20
 psi-missing, 4:7; 5:5,25
PSI, la Grande Revue, new French journal,
 1:15,29
 "Psi Phenomena, Hemispheric Dominance
 and the Existential Shift," 5:1-3
Psi Realité, new French journal, 1:15,29
Psi: Scientific Studies of the Psychic Realm,
 review, 5:17-8
 Psi Search
 Exhibit, 1:31
Psychic Phenomena on Trial, national
 lecture series, 3:28
 psilocybin, 4:2,3
Psychic Experiences: ESP Investigated,
 review, 4:12-3
Psychic Phenomena on Trial, national
 lecture series, 3:28
 Psychical Research Association of
 Melbourne, 2:17
 Psychical Research Foundation, 3:27; 5:27
 lectures, 1:12; 4:26
 mediumship studies, 1:32
 Theta Association formed, 3:28
 psychoanalysis, 3:19; 4:27
 "Minus Versus Plus Awareness and
 Psi," 4:1-5
 psychokinesis, 6:18
 negative PK studies, 1:30
 tyroscope studies by P. Janin, 1:30
 cryogenic magnetometer studies by
 Targ, 1:31
 experimenter effect in retrocausal PK
 study, 4:18
 feedback in PK experiments, 4:18
 & methodology for brain/mind studies,
 6:2
 physiological studies, 4:17-8
 on prerecorded target studies, 4:18,19
Psychokinesis, v.1 of *Advances in
 Parapsychological Research*,
 review, 4:10-2
 subject's feelings, 4:17
 psychological processes in skepticism and
 acceptance of psi, 2:20-5
 psychology, relationship to psi, 5:18
 "Psychology and the Poltergeist: A
 Review," 6:8-10
 psychometry in archeology, test, 2:18
 psychotronics, 6:20
Psychotronik, 1:29
 review, 6:15,16
 Purkyne, J. E., 6:16
 Puthoff, H. E., 1:11; 6:12,18,21
 Pymalion effect, 3:24

- quantum mechanics, 6:19
 observer effects, 3:23-4, 5:23
 in PK, 4:18,19
- questionnaire surveys
 precognitive dreams, 4:5
 academic opinions on ESP, 4:5
 "Personality Factors Related to
 Disbelief in Psychic Phenomena,"
 4:22-3
 Russian beliefs, 4:14
- Radhakrishnan, S., 3:16
 radiation, unknown, in psi, 1:30
 Rama, Herbert, 2:17
 Ramsey, M., 2:3,6
 Randall, Alexander, 2:18; 5:16
 Randi, James, 2:8
 random number generators, simple
 description, 3:25
 use in brain/mind experimental studies,
 6:2
 use in nonintentional PK, 5:5,6
- Rao, K. Ramakrishna, 2:3,6,17,28; 4:8;
 5:4,5,8,13
 Institute for Parapsychology Summer
 Study Program, 3:10
 Andhra University program, 3:11
- Rauscher, Elizabeth, 1:32
 Rauscher, William V., 4:8
 reality concept and psi, 2:20-5
 reality theories, 3:13-7
 "Recent Acquisitions by the Eileen J.
 Garrett Library," 2:26-8; 4:27-8;
 6:21
- Rebeck, Richard C., 2:19
 "The Reception of Unconventional Science
 by the Scientific Community,"
 report of a symposium at 1978
 AAAS meeting, 3:26-7
- Redington, Dana, 1:32
 Reed, Henry, 5:16
 regrouping method, 6:23
 Regush, Nicholas, 2:27
 Reich, W., 6:16
 Reichbart, Richard, 2:18; 6:20
 Rein, G., 6:18
 reinforcement theory, 2:20
 Rejdak, Zdenek, 1:15; 6:20
- religion
 & medicine, 5:9
 & parapsychology, 2:26-7
Try the Spirits, review, 2:16-7
- REM sleep, 5:20
 remote viewing studies, 1:30,32; 5:10,24;
 6:18
 & ganzfeld studies, 1:30
- replicability
 attempted, in psi tasks, 5:5,6,7
 experimenter effect & ASC, 2:1,2,3
 "Replicability and Experimenter
 Influence," symposium at 1978
 AAAS meeting, 3:23-6
 in science, a sociological study, 3:25-6
 "Research on Deathbed Experiences,"
 1:20-7
- researchers' qualifications, 3:2,3
 Rhine, J. B., 1:24; 2:2,3,5,6,7-11,13,15;
 3:21,22,27; 5:12,21; 6:14,17
 Rhine, Louisa, 2:9; 3:18; 5:7,12
 Rhine-Swanton Interdisciplinary Sym-
 posium on Parapsychology and
 Anthropology, 2:18; 5:14
- Ribot, T., 1:24
 Richet, Charles, on deathbed experiences,
 1:22,24,27
- Rickard, Robert J., 2:27
 Riecken, H., 2:22,24
 Rigato, Mario, 3:22
 Ringle, John, 4:25
 Risse, G. L., 1:11
 Roberts, Jane, 2:27; 6:21
 Robinson, Diana
 "Making Sense of Statistics Without
 a Ph.D.," 4:6-8
- Robinson, Richard, 6:14
 Rockwell, Ted, 5:22
 Rogo, D. Scott, 2:27; 4:28; 5:27; 6:8
 "Research on Deathbed Experiences,"
 1:20-7
- Rokeach, M., 2:22,25
 Roll, William G., 2:11,17; 3:19,28;
 4:8,17-8,26; 5:4,6,8,9,11; 6:8,9
- Rollins College, program, 3:8
 Romain, Jules, 6:22
 Rose, Ronald and Lyndon, 5:14
 Rosenthal, Robert, 3:23
 "Experimenter Effects in Behavioral
 Research," paper at 1978 AAAS
 symposium, 3:24
- Rosin, U., 2:8
 Rosito, Angelo, 3:22
 Roth, Nathan, 1:11
 Rubsov, Vladimir, 4:16
 Rush, Joseph, 4:10-1
 Rushton, W. A. H., 1:11
 "Russell Effect," 6:16
 Ryback, David, 4:5
 Ryzl, Milan, 3:7; 4:26
- Sailaja, P.
 Andhra University, program, 3:11
- St. Clair, David, 2:27; 4:28
 St. Joseph's College, program, 3:10
 saints and psi, 4:3-4
 Sakavala of Madagascar, 5:16
 salience effects, 5:12
 Salvadori, Giorgio, 3:22
 Samuels, Mike & Nancy, 1:11
 Sandford, Joseph, 5:6
 Sargent, W., 6:9
 Sargent, Carl, 6:17
 Saul, L. J., 6:8
 Savage, Minot, 1:21
 Schacter, D. L., 5:20
 Schachter, S., 2:21,25
 schizophrenia and psi, 3:19
 Schlemmer, Jan, 6:16
 Schmeidler, Gertrude R., 2:11,28;
 4:8,11,22,23; 5:11
 City University of New York, program,
 3:9
- Schmidt, Helmut, 1:11; 2:4,6; 3:25; 4:8;
 5:27; 6:2,3,8,19,21
- scholarships
 Eileen J. Garrett, 3:10
- Schneider, A., 4:8
 Schouten, Sybo A.
 University of Utrecht, program, 3:11-2
- Schrenck-Notzing, Albert von, 2:8
 Schul, Bill, 2:27
 Schwarz, Berthold E., 3:18; 5:14,16
 Schwarz, Jack, 4:28
- Scriven, Michael, 1:32; 6:14,15
 "Second International SPR Conference,"
 6:17-20
- self-concept
 & clairvoyance, 5:10,11
 & out-of-body experience, 5:19
 "self-conscious mind," 6:2
- Selnes, O. A., 1:9,11
 Semmes, J., 1:9,11
- sensitives
 new books, 2:26
 "Sensory Deprivation and Research on
 Telepathy," 4:24-6
- Sergeyev, G. A., 6:16
 Servadio, Emilio, 4:26; 6:6
 "Minus Versus Plus Awareness and
 Psi," 4:1-5
 "Parapsychology: Facts and Experi-
 ences," an International Con-
 ference at Campione, Italy, 3:22
- Setchenov, I. M., 4:15
 shamanism, 5:15
 Shambaugh, Cynthia, 6:20
 Sheils, Dean, 6:20
 Shepard, Leslie, 4:27; 6:21
 Sherrington, C. S., 6:1
 Shklovsky, Iosif, 4:16
 Sillman, L. R., 1:11
 Silva, Jose, 2:27
 "Silvio" metal bender studies, 4:17
- Sister, Moses, 1:11
 Smith, A., 1:11
 Smith, B. M., 4:22,23
 Smith, G., 1:9,10
 Smith, Susy, 2:27
 Smythies, J. R., 1:11
 Snyder, Roger, 3:6
 Soal, S. G., 6:14
 social psychology of parapsychology, 2:20-5
 Società Italiana di Parapsicologia, 3:22
 Society for Parapsychological Studies,
 Republic of China, 1:12,29
 convention, 4:5
 Society for Psychical Research, 6:11
 deathbed phenomena interest, 1:21
 2d International Conference, 1:12;
 6:17-20
 3d International Conference, 6:27
- Solfvin, Gerald, 4:26; 5:4,6,11,13
 "Some Educational Uses of the Maimonides
 Slides," 5:24-5
- Somogyi, Stefano, 3:22
 South African Parapsychology Institute,
 2:17
- Southeastern Regional Parapsychological
 Association (SERPA) convention,
 1:12
 1978 report, 5:4-13
- Southern California Academy of Sciences
 "Folklore and the Paranormal" meet-
 ing, 2:17
- SPACE Program, (Dent Junior H.S., S.C.),
 5:10
- Sperry, Roger, 1:9,11,12,16; 5:3; 6:6
 spiritism in Brazil, 1:16-8
 spiritualism and psychical research, history,
 2:14-6
- spontaneous experiences
 occurrence, 4:1-5; 5:1,7,8,12
- Springer, S. P., 1:9,11,12
 stacking effect, 5:12

- Stanford, Rex G., 1:12,31; 2:2,4,5,6,11,13;
5:22,27
"Education in Parapsychology: An
Overview," 3:1-6
Stanford Research Institute studies, 4:28;
5:10; 6:12
statistics
"Making Sense of Statistics Without
a Ph.D.," 4:6-8
significance, 5:24
Stevenson, Ian, 1:17; 2:11,17; 4:8,28
Stokes, Douglas M.
"Belief Systems and Parapsychology,"
2:20-5
stroboscope & EEG, 1:31
Stuart, C. E., 6:18
subliminal perception, 6:3,5
Sudakov, Konstantin, 4:16
survival of death
deathbed experiences, 1:22
unsolvable question, 2:11
psychological processes in belief, 2:24
Theta Association, new group, 3:28
research, 5:4; 6:18
& time, 5:8
& consciousness, 6:7
theories, 6:19
Sussman, Robert & Linda, 5:16
Suzuki, J., 1:11
Sverdlovsk Pedagogical Institute, 6:22
Swann, Ingo, 4:8; 6:21
Symposium for Electronics and Distant
Communication, 6:16

Taddonio, J., 2:4
Taff, B. E., 6:8
Tanagras, Angelos, 1:13
Tannenbaum, P., 2:20,25
Targ, R., 1:11,30
& Puthoff, H., 5:10,18; 6:12,18,21
Tart, Charles T., 1:9,12,32; 2:2,6,10,28;
3:20,28; 4:8,26; 5:2,21,23;
6:5,20
*Psi: Scientific Studies of the Psychic
Realm*, review, 5:17-8
University of California at Davis,
program, 3:6
task complexity in psi tests, 5:7
Tchen, Y., 6:18
Tchetine, F. E., 6:22
Tedder, William, 6:20
Tel Aviv University, courses, 1:31; 2:25
teleological causation, 6:19
Telepsiquia, 1:29
television, Italian, presentation of ESP, 5:26
Temm, Peter, 6:21
Teng, E. L., 1:9,12
Tenhaeff, W. H. C., 4:8; 6:16
Terry, J., 2:5,6
test design, 5:17
textbook, psi-oriented, 3:10; 5:17
Thakur, S., 6:13
Thalbourne, M., 6:18
thermoscopic method, 6:24
theses
Ph.D. on magicians and parapsy-
chologists, 2:8
Ph.D., ESP studies, 2:17
M.A. on RSPK, 2:8
M.A. on GESP research structure, 2:8
Theta Association, new group, 3:28; 5:27

Thomas, J. F., 4:9
thoughtography, 5:15
Thouless, Robert, 3:21,22; 4:11; 6:3,17,19
Thurston, Herbert, 4:3,5
Tocquet, Robert, 1:15
Tolman, E., 2:22,25
Tomaras, Alexander
"On the Status of Parapsychology in
Greece," 1:13-5
Tomorrow Magazine, 5:13
Toynbee, Arnold, 1:20,27
Traina, Carlo, 3:22
"transformation process," 5:18
Transpersonal Bookshop, 6:27
transpersonal psychology, 5:8
transtemporal inhibition and ESP, 5:23
Trevarthen, C., 1:9,12
Tribbe, Frank, 5:13
La Trobe University
1st Australian National Conference of
Parapsychology, 3:28
Truzzi, Marcello, 1:12; 3:26-7
editor of *Zetetic Scholar*, 3:20
Try the Spirits, review, 2:16-7
Turing, A. M., 6:2
twin studies, 5:15
Tyrrell, G. N. M., 5:7

Ullman, Montague, 1:9,12; 2:2,6,28;
4:8,26; 5:22; 6:9
Umbanda in Brazil, 1:18
U.S. Defense Intelligence Agency, 4:28
"universal mind," 6:12
Universidad Catolica de Cordoba, Institute
de Parapsicologia library, 1:31
University of Alaska, course, 4:26
University of Amsterdam, 5:6
University of California, Berkeley
remote viewing studies, 1:32
University of California, Davis
ADEPT apparatus studies, 1:32
educational opportunities, 3:6
University of California, Irvine, lecture,
2:25
University of California, Santa Barbara
courses, 1:31; 3:6,7
University of Edinburgh, program, 3:12
University of Lowell, course, 1:31; 3:8
University of New Hampshire, Plymouth
State College, program, 3:9
University of Nottingham, program, 3:12
University of Pittsburgh, program, 3:10-1
University of Southern California
lecture series, 3:28
conference, 4:26
University of Utrecht
Division of Parapsychology, guest
researchers, 2:28
Parapsychology Laboratory, computer
facilities, 1:32
program, 3:11-2
University of Virginia, Division of Para-
psychology, 3:27
near-death experiences research, 2:17
University of Witwatersrand
parapsychology library, 1:31
Uphoff, Walter & Mary Jo, 2:28
Urbanski, Zenon, 6:16

Van de Castle, Robert L., 1:9,12; 2:2,18;
4:22,23; 5:14

Van Nuys, Kelvin, 1:9
Van Over, Raymond, 3:18
Vaughan, A., 1:12; 2:2,6
verograph, 6:25
Vesic, Aleksadar S., 4:26
Vessey, D. W., 6:8
Vick, O., 2:22,25
Vilenskaya, Larissa, 6:15
Vinokurova, J., 4:16
"Vision and Audition in Biblical Prophecy,"
1:1-12
Vonnegut, Kurt, 3:25
voodoo death, 5:15

Wagner, Mahlon, 4:5
Wainwright House, 5:13
Walker, E. H., 4:19; 5:16; 6:19
Walther, Gerda, 6:16
Wälti, Beinhart, 2:8
Wang, S. C., 1:12
Warcollier, R., 5:3
Watabe, Sachiko, 5:10
water bubbles, psychokinetic placement,
5:11
Watson, Lyall, 5:23
weather control, 5:15
Weaver, Herbert, 6:21
Wedgewood, Hensleigh, 1:21
Wegener, Alfred, 3:27
Weiner, Debra H., 5:4,12
Weiss, Ethel, 4:8
Wells, J. J., 1:12
Wescott, Roger, 5:16
West, D. J., 2:4,5,6
Wheatley, James, 4:12
& Edge, Hoyt, *Philosophical Dimen-
sions of Parapsychology*, 6:13
White, John, 2:28; 6:6
White, Rhea A., 1:31; 2:3-6,11-13;
4:11,22,23,24,27
Whitson, Thomas W., 1:30
Whitton, Joel L., "Psychology and the
Poltergeist: A Review," 6:8-10
Widengren, G., 1:12
Wigner, Eugene, 3:26; 5:23
Wiesner, B. P., 3:21,22; 6:3
Wilcox, Robert K., 2:28
Wilhelm, John L., 4:28
Williams, Mary, 6:9
Williams, Walter, 4:20
Willis, S., 1:9,10
Wilson, D. H., 1:11
Wineman, Joseph, 5:10
Wolkowski, Zbigniew, 5:15
Wolman, Benjamin B., 2:28
Handbook of Parapsychology, review,
2:9-13
Woodruff, J. L., 2:3,4,6
World Almanac Book of the Strange, 4:28
The World of Souls, Greek publication,
1:13,14

Xavier, Francisco Candido, psi theory, 1:17

Yarkovlev, F., 4:14
Yates, Frances A., 4:28
yoga and psi, 4:4,24
Zaehner, R. C., 1:12
Zaidel, D., 1:9,12
Zangwill, O. L., 1:9,11,12

