

# STRANGE MINDS



## A SOURCEBOOK OF UNUSUAL MENTAL PHENOMENA

Compiled by  
**WILLIAM R. CORLISS**

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VOLUME P-1

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NOTICE

This is volume P1 of a continuing series.  
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# PREFACE

With a medium of trepidation, we begin a sourcebook series on psychology. As the Table of Contents makes apparent, the subject matter includes not only parapsychology but also psychosomatic medicine and the stranger aspects of human behavior. The mind, after all, dominates these phenomena, too. The general thrust of this series is that the mind has powerful, subtle, often bizarre influence on the human body, human behavior, and perhaps even on the so-called objective, external world. Psychologists and psychiatrists will likely agree that this book goes too far and makes too much of a mystery out of the mind-body interface; parapsychologists will doubtless think the treatments of telepathy, out-of-the-body experiences, and the like are too conservative. The occultist, alas, will find nothing at all.

The conservative vein originates in part in the selection of source journals. These are almost exclusively publications in general science, psychology, and psychiatry. True, a few items from the literature of parapsychology have been introduced, particularly some case histories from the vast store accumulated by the English Society for Psychical Research. In general, though, the immense literature of parapsychology has been left for future volumes in this series. Readers will discover that the medical and psychological journals have ample superb material in their own rights.

To those unacquainted with the sourcebooks, a word about categorization is in order, for our criteria are unconventional. Each section is based on a class of observables: medical data, behavior data, personal testimony, etc. This philosophy from classification from the prejudices of theory and makes this sourcebook consistent with those in the other series.

The data included here have been filtered only slightly. Doubtless some biases and honest misinterpretations will be found. This is unavoidable in a project of this scope. Indeed, even the more rigorous sciences have been subject to fraud, but it must be admitted that psychology and parapsychology are more susceptible to charlatans than geology, astronomy, and the "harder" sciences.

Data have been selected according to their "strangeness" and their tendency to contradict prevailing scientific hypotheses or stretch them beyond their present bounds. There has also been a deliberate effort to gather in data from the 19th Century that are becoming less and less accessible amidst the modern information explosion. Anomalous events are too rare to discard because they are old or because money cannot be found to put them into computerized data systems.

This is a sourcebook and I now hasten to acknowledge the many writers of articles, books, letters-to-the-editor, and the many other publications that form the foundation of this book. Where lengthy quotations are taken from publications still protected by copyright, permission has been obtained from the copyright holder.

Special acknowledgments are due Livingston Gearhart, who helped select and provide articles, John C. Holden, who provided illustrations in a field where interesting

## PREFACE

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thanks to scouts, my wife, Virginia, who types all the invoices and tolerates immense piles of notebooks with good humor, and Dolores Palford, who typed this and the preceding seven notebooks.

William R. Cortis

Olea Ann, Maryland 21087

September 18, 1978



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A breakdown of the sections listed above follows. Use the headings at the tops of the pages to locate specific subsections and entries.

## Section Code and Title

## Subsection Code and Title

PI Dissociative Behavior

PIA Automatic writing  
PIB Delusions and hysteria  
PIH Hypnotism  
PIJ Deja vu  
PIK Multiple personality  
PII Possession  
PIM Senses phenomena  
PIN Sleep walking  
PIO Dream phenomena

PH Hidden Knowledge

PHD Dreaming  
PHI Thought transference

PI Information Processing

PIG Calculating prodigies  
PIH Eidetic images  
PII Memory tests  
PIU Unconscious thinking

PL Hallucinations

PLF Faces in the dark  
PLG Apparitions  
PLH Out-of-the-body experiences  
PLS Scrying and crystal balls

## CONTENTS

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**PP**    **Psychic Biology**

**PS**    **Psychic Sounds**

**PSB**    **Body control**  
**PPF**    **Fire walking**  
**PHH**    **Hyperperception**  
**PPM**    **Miracle cures, placebo**  
**PPP**    **Odors of perception**  
**PIB**    **Stigmata and skin writing**

**PSP**    **Poltergeist phenomena**

# ORGANIZATION OF THE SOURCEBOOKS

All sourcebook entries are labelled with three letters and a number; viz., PBA-012. The three letters indicate a category of phenomena. PBA, for example, designates a subsection of the book containing accounts of automatic writing. The number following the letters is simply an acquisition number within that subsection. Thus, entry PBA-012 is the 12th entry in the automatic writing category. The indexes at the back of each sourcebook and all cross references are keyed to the entry number rather than page number.

There is a plan to the assignment of letter codes. The first letter indicates a broad, general field of science, such as psychology, P. The second and third letters are assigned to sections and subsections within this general field, as illustrated below:



The sections denoted by the second letters are based upon the general characters of the phenomena within these sections; the revelation of knowledge to the observer, observed behavior, observations of medical parameters, and so on. Automatic writing, for example, is a type of observable behavior in which subject dissociation is obvious.

The subsections (third letters) are narrower in scope than the sections. Experience, however, has shown that subsections must be broad to encompass the great variety of phenomena in a reasonable number of categories. They cannot be too broad, though, or a structureless hodgepodge results. The subsections have been selected and named with great care to avoid suggesting explanations of the phenomena. A complete list of sections and subsections now in use precedes this page and also functions as a table of contents. Detailed descriptions of the subsections are placed at the beginning of the sections.

When searching for a specific entry, scan the running heads at the tops of the pages; they give the entry numbers as well as the subsection titles. The person who reads for curiosity's sake will find that each subsection is much like a chapter, with many related items grouped together.

Some larger works, especially books, cover so much ground that their contents have been split up into the appropriate subsections.

The loose-leaf format of the sourcebooks makes it possible to combine material subsection by subsection as new volumes are issued.

Each volume is indexed by subject, by author, and by data source. Each volume is self-contained. With the issuance of future volumes, cumulative indexes will be compiled. There will be no necessity to hunt through several indexes to find something. Because some major fields are interrelated, it will doubtless prove useful to cumulate indexes from volumes on biology, anatomy, geology, and so on.

## ORGANIZATION OF THE SOURCEBOOKS

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References, annotations, and Compiler's Summaries are printed full-width, while all direct quotes are indented. When an entry has no formal title, a descriptive title is created and placed in brackets to indicate its artificial nature.

Being a sourcebook, the core of this volume consists of the direct quotations from eye-witnesses and key investigators. The text herein faithfully retains the old spellings, punctuation, and even a few typos. After all, only the eye-witness' own words convey the facts as he perceived them. Regurgitations and surveys, so common these days, are already once or twice removed from the event. The whole object of these sourcebooks is to give the reader and researcher an organized collection of original writings on the unusual facets of nature. Much of this unique information is being lost as libraries become more highly computerized. Data selected for the data banks must have current relevance and be acceptable to the sciences of the day. Hopefully, these sourcebooks will preserve something of value and help focus the diverse, widely dispersed anomalies on the frontiers of science. They should also be interesting reading.

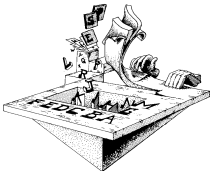
## SECTION PB: DISSOCIATIVE BEHAVIOR

An important method of studying anomalous mental conditions involves analyzing the behavior of the affected subjects. By far the most important class of "psychic behavior" originates in what is termed "dissociation." Dissociative behavior occurs when normal conscious behavior is modified, sometimes overwhelmed, by subsidiary mental activity. This second self controls the hand of an automatic writer. On occasion, the secondary personality will take over all bodily activity and we have multiple personality cases and "possession." Dreams, sleep walking, fugues, and hypnosis are all manifestations of dissociative behavior.

Psychologists and psychiatrists are familiar with all the phenomena described in this section. Generally, the term "dissociation" is frowned upon and many naive crude theories have been formulated to account for the strange actions observed when the normal conscious mind loses control. Beyond the pseudo scientific interpretations are those theories that depend upon *other* minds and forces---human and otherwise---that impose themselves upon the subject at hand. The bizarre, inspired, sometimes alien features of dissociative behavior foster these beliefs.

PBA	Automatic writing, including ouija boards and planchettes
PBD	Delusions and hysteria (individual and collective)
*PBF	Fugues
*PBG	Speaking in tongues (glossalia)
PBH	Behavior under hypnosis
PBI	Deja vu, or "I've been here before"
PBM	Multiple personality
PBP	Possession: religious, diabolic, animal (lycanthropy)
*PBB	Solar, lunar, and planetary effects
PBT	Saouco phenomena
PBW	Sleep walking, including other physical activity while asleep
PBC	Dream phenomena

\*This subcategory not included in Vol. Pt.



Unpredictable quiz board. (Drawing by John C. Holden)

## PBA-001 SOME PECULIARITIES OF THE SECONDARY PERSONALITY

Patrick, G. T. W.: *Psychological Review*, 5: 583-575, 1908.

Of the many unsolved problems in psychology, that of automatism is perhaps the most baffling. Automatic utterances, whether in the form of writing or the speech of the so-called trance-medium, present certain peculiarities which distinguish them so clearly from the utterances of normal subjects as to require some special explanation. Other abnormal mental conditions, such as mania, melancholia, hypnosis, or hallucinations, present peculiarities such of its own kind, but these are by no means so puzzling as those of automatism. If not as yet perfectly explained, we believe that they may be eventually understood as exaggerations or perversions of normal forms of mental life. In automatism, however, we are apparently confronted with phenomena of a different kind. They belong to that class which the scientist of the day would call 'remarkable,' demanding instant attention and careful verification, and requiring if they persist some special explanation. Indeed the extremely striking character of some of the phenomena of automatism may be illustrated by the nature of the hypothesis that have been made to explain them. I have in mind, in particular, one series of automatic utterances which have been under investigation for nearly fourteen years by psychologists trained in scientific methods, and at the end of this time one of these psychologists, who has been most intimately connected with the investigation, reckoned to be a man of sanity and careful logical habits, has proposed as the only hypothesis capable of explaining the facts, that the persons from whom the utterances come is 'controlled' by one or more disembodied 'spirits' of the deceased.

Such a hypothesis violates almost all the conditions to which a legitimate hypothesis should conform. It does not connect the phenomena in question with any other known facts or laws. Proposing as the basis of explanation certain wholly unknown forms of being, it admits of no deductive inference of consequences. It can not, furthermore, be clearly and definitely conceived, and does not, finally, explain all the facts. I mention this merely to illustrate the straits which psychologists are in to explain the phenomena of automatism. The peculiarity of the situation is not greatly lessened when we learn that other psychologists maintain in all seriousness that, without recourse to the 'spirit' hypothesis, the phenomena may all be explained by 'telepathy'---a doctrine itself of questionable antecedents.

.....

About three years ago I undertook, as a contribution to this subject, to make a study of a single case of automatic writing. Owing to the absence of the 'subject' from the city for two years, the study was only recently completed. I present it now rather as an indirect means of furthering my object above mentioned than as a study possessing any intrinsic value in itself. For this reason I add certain details of procedure, which, while familiar to every 'psychic researcher,' may perhaps be useful to the larger body of investigators whom I conceive to be demanded by the importance of the problem. I wish also to use the occasion to call attention to certain peculiarities of the secondary personality appearing in this and in other cases, and incidentally to notice their relation to certain hypotheses that have been made to explain them. I shall, therefore, rather freely quote the account itself with some general remarks and some mention of other experiments that I have made. I use the term 'secondary personality' advisedly, feeling it preferable to secondary consciousness, or subliminal or subconscious personality, or any other phrase, as it is justified by the facts, and is in harmony with arg. even the 'spirit' hypothesis. In automatic writing, for instance, we find ourselves in communication with a source of intelligence that hears and answers

questions, reasons, exhibits pleasure and anger, assumes a name which it retains from day to day and from year to year, and displays an accurate memory extending over long intervals of time. To such a source of intelligence we cannot refuse the name of personality. When in connection with the same physical organism we find a synchronous or alternating intelligence, exhibiting different mental peculiarities, having a different name and displaying a different set of memories, we find it not only consistent but suitable to speak of a primary and a secondary personality. This secondary personality may be an apprehensive unity corresponding to a special grouping of association tracts in the subject's brain, it may be some lower mental stratum belonging to a sort of unindividualized psychic faculty, or it may be the 'spirit' of my deceased grandfather; it may or it may not be subliminal; it is even conceivable that it should not be conscious, but it bears all the common marks of personality.

Thus far the problem presents no very serious difficulty. The mere fact that there should be in connection with the same organism two personalities is not more wonderful than that there should be one. There is nothing in our present knowledge of the ego either from the psychological or physiological standpoint preventing us from admitting that the elements which usually join in a single group may, under certain conditions, so associate themselves as to form two or three or any number of different groups, nor, indeed, that the same elements, as, for instance, memory images, may at once form a part of both or of several systems. Furthermore, there is another circumstance which would seem to make the scientific study of the secondary personality at least possible. It has certain pretty clearly defined marks, traits, or peculiarities capable of logical description. The presence of these traits in all the cases of automatism which have been reported forces upon us the conviction that they all belong to the same general class and that the investigation of the simpler cases may throw much light upon the more complex ones. If we compare a simple case of automatic writing, such as may be found in one of almost any company of schoolgirls, with the wonderful case reported by Dr. Hodgson, the difference is as great as between a kitten and a tiger, but perhaps not greater, for a careful observer will discover 'marks' which indisputably place them in the same genus. What we need now is a more complete description of these marks. Besides the case presented below, I have recently had opportunity of studying two other cases of automatism, both instructive, neither of them very remarkable, and in all of them I have been impressed by the presence of the usual marks, for instance, suggestibility, fluency, absence of reasoning power, excited or heightened memory, excited power of constructive imagination, a tendency to vulgarity or mild profanity, the profession of 'spirits' identity and of supernatural knowledge, and, finally, a certain faculty of lucky or supernatural perception difficult to name without committing oneself to a theory, which, therefore, we may call a kind of brilliant intuition. It seems to me not impossible ultimately to make a complete list of these marks, and then, perhaps, to explain why they are characteristic of the secondary personality. Some time ago I paid a visit to a 'medium' residing in a small western city. She is a married woman with a family, and was made known to me by one of my students whose family was intimately acquainted with the woman, having known her from her girlhood. My investigation left no doubt in my mind that she is an honest woman and passes into a genuine trance, and upon awakening is ignorant of her trance-experiences. These take the form of the personality of a Quaker doctor or of a little girl named Emma, both professing themselves to be 'spirits' of deceased persons, and to have supernatural and supernatural knowledge. I conversed for an hour with 'Emma,' and was throughout struck by the remarkable likeness in the general form of the utterances to those more remarkable ones recorded by Dr. Hodgson and others, so that I cannot doubt that we have to do with phenomena of the same genus and species, and that the explanation of the simpler case, were it at hand, would throw much light upon the more complex

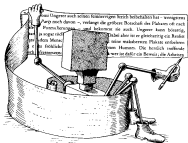


one. The similarity extended even to an accurate and astonishing statement made (as so often happens) at the very beginning of the sitting about my place of residence and my occupation. This was certainly an interesting trait and in need of explanation, although it would not have suggested to me the hypothesis that 'Ernest' was the 'spirit' of a real person, for, however difficult it might be for a woman who had apparently never seen or heard of me before to tell me my home and occupation, it would evidently be more difficult for a young girl to do so who had lived and died prior to the circumstances and relations mentioned. If we have to ascribe to our communications powers of perception transcending time and space, it makes our hypothesis needlessly complex to ascribe them first to a 'spirit' and then locate the 'spirit' in the subject before us. If we ascribe them directly to our subject we avoid the trifling inconceivability of supposing that things are known before they happen, or, if we must violate time and space, we have to violate less of both.

Again, not long ago, I became acquainted with a young girl who was an automatic writer and whom I had several opportunities of studying. She wrote rapidly and legibly, only requiring that some other girl should hold the pencil for her. I convinced myself that the writing was purely automatic. It usually purported to come, and was sincerely believed by the girl to come, from the 'spirit' of her deceased mother. I shall mention one or two characteristic utterances from this case, but what I wish to emphasize is merely that the general form of the utterances was so similar to the others which I have studied and to those referred to above, that I cannot doubt that we have been again to do with closely related if not identical phenomena, and that the full explanation of the one would remove the mystery from the other. In all the writing which I saw from this subject (I shall mention some other examples from it below), there was one utterance and one only of the brilliantly intuitive type, and this again came early in the first sitting. In response to my questions, the correct answer was received that I had three sisters and two brothers, that the brothers were both younger and one of the sisters younger and two older. In response to my inquiry about their names, one of my sisters' names, a common one, was given, and then 'Queenie' was written which was spontaneously changed to 'Bessie,' the latter being correct. Admitting that the chances of correctly guessing such a combination as the above at the first guess are too small to make that a probable explanation, and admitting that the young girl, who was an entire stranger to me at the time, could not have known in any normal way what the most intimate friend that I had in the city could hardly have known, what is the most that can be made out of such an utterance? If found to be a real intuitive utterance, not conforming to the usual laws of perception, memory, or constructive imagination, and if found to be similar to a sufficient number of other automatic utterances, it becomes an interesting mark of the secondary personality, but so far as I can see is not consistent with one more than another of the various hypotheses that have been offered. Probably no thoughtful investigator would apply the 'spirit' hypothesis, for instance, here, but so vitiated have we become in our logical methods when we enter the field of psychical research, that it seems to be generally accepted that if we could adopt this hypothesis it would explain utterances of this class. But, however difficult it might be to understand how the young girl could have known about my family, it would be still more difficult to believe that her deceased mother, who had never even heard of me, could have known, and there was no time to ascertain by inquiries. It is easy for the popular mind to understand all sorts of telepathic, clairvoyant, and time-dilatating powers when attributed to 'spirits' instead of everyday people, and the history of philosophy, despite the warnings of William of Occam, is full of that kind of reasoning. It has become very rare, however, in modern science. The 'spirit' hypothesis accounts for these peculiar phenomena of automatism in the same way

that Descartes' 'neutral spirits' accounted for the interaction of mind and body, or that the mythological vertebrae explained the supporting of the world. From the logical point of view, however, it seems to me that little better can be said of Mr. Myers' theory of a 'spectrum of consciousness indefinitely extended at both ends,' with its 'telepathic and clairvoyant impressions,' 'falling under some system of laws of which supernatural experiences could give us no information' and 'transcending in some sense the limitations of time as well as of space,' 'having powers 'subject, not to the laws of the known molecular world, but to laws of that unknown world in which the specific powers of the subliminal self are assumed to operate.' This is a metaphysical, not a psychological hypothesis.

The subject of the experiments which I wish to mention in more detail is a young man, 22 years of age at the time the experiments began. I shall speak of him in the following account as Henry W. He is now a graduate of the University of Iowa, a young man of unquestioned integrity, a quiet and intelligent student, standing high in his class and respected by all who know him. His parents are honest farming people, both native Americans. He has never exhibited any signs of abnormality of any kind, excepting the automatism to be described. He has good physical health and mental balance. Neither he nor his parents are spiritists. He has an aunt, however, who is a spiritist, and about four years before these experiments were begun he had some conversation with her upon the subject and probably opened some books relating to it. This, however, he says, made no impression upon him, and if he actually heard or read at that time any spiritistic phrases, such as 'pass out' for 'die,' he has no conscious recollection of them. He has no interest in the subject and has regarded it, so far as it has entered his thoughts at all, as a curious superstition. About the time of the be-



Der automatische Schreiber-Mechanismus. (Drawing by John C. Holden)

giving of the experiments, he became interested in hypnosis, and attended two or three times the performances of a travelling hypnotist, offered himself as a 'subject,' and proved to be an excellent one. He had never previously been hypnotized.

Shortly after this, having read of post-hypnotic suggestion, he inquired of me about it, and at his request I made a trial of it with him. Hypnosis was readily induced by a few suggestions, and I told him that exactly five minutes after he awakened he would go to the next room, secure a book from a desk and bring it to me. A few other simple tests were made which, though commonplace in themselves, should be mentioned here for reference later. Hallucinations, both positive and negative, were readily induced. I suggested that a small barbed-wire fence was stretched across the floor, over which it would be necessary for him to step carefully. This hallucinatory fence he saw and stepped over with great care. Upon awakening he remembered nothing of what he had heard or done. Exactly five minutes after awakening he carried out in detail the suggestion about the book. A few days after this, the subject of automatic writing having come to his attention, Henry W. incidentally mentioned to me that when he held a pencil tely in his hand, his hand moved continuously, making scribbles but never writing anything. I therefore made an appointment with him for the study of automatic writing. Three sittings were held and then a period of two years intervened. Then followed three more sittings. All were held on Saturday mornings. The procedure at each morning's sitting was as follows: I provided a quiet room and one assistant. At the second sitting only, others were present. A plentiful supply of very large sheets of smooth brown paper was provided. The subject was so seated with his right side toward the table, that his body was slightly turned away. His right hand held an ordinary pencil in an easy position on the paper.\* His head was turned slightly to the left, and he held in his left hand an interesting storybook or sometimes the morning paper, which he read and to which he was instructed to give his whole attention. No screen was used, as the subject could not see the writing without turning his head. The sittings lasted two or three hours with intervals of rest. The writing was usually quite clear, but occasionally illegible. If illegible, the concentration was asked to

\*I have never found the ordinary planchette of any use in automatic writing. When it is discovered that two persons succeed better in writing than one, both may grasp a common lead pencil, one hand above the other. The instrument used by Professor Jastrow, consisting of a glass plate upon glass-marble rollers, whether used for automatic writing or any involuntary movements, has the disadvantage of moving by its own momentum when once started. When it is necessary to 'educate' from the beginning an automatic writer, a delicate planchette mentioned by Miss Stein may be used. It consists merely of a board swung from the ceiling by a small wire. The one used in our laboratory consists of a light board six inches square, upon which the fingers rest as upon the common planchette. Through the board is a hole fitted with a glass tube in which a pencil is placed so that it will move up and down. A weight attached to the top of the pencil keeps it pressing lightly and evenly upon the paper below. Such a planchette swung from the ceiling over the table, will glide around upon a large sheet of paper with the slightest effort, the pencil point always leaving its tracings.

write the answer again. At one time I suggested to the communicator that he was a good penman, his orthography being round, clear and rapid. Instantly it became so and gave us no more trouble at the time. Henry W. never knew what he had written without reading it, except in a few instances when, his attention being allowed to wander from his book or newspaper, by following the movements of his hand he could tell something of the communication. He was much interested in the writing and was occasionally allowed to look at it. When it was nearly illegible he was never able to decipher it better than the others. The questions were either prepared beforehand and numbered or else taken down and numbered by the assistant, who also numbered the answers as written. My space will not permit me to give more than a portion of the questions and answers, nor would it be profitable to do so. They may be classed in three groups: Those of the first group were intended to bring out all the information possible about the communicator himself, his past history, his present mode of existence, his mental habits and his emotional peculiarities. The second group was intended to test his professed supernatural knowledge. The third group was directed to possible remarkable powers, such as telepathic knowledge, mathematical ability, hypercrista and prophecy. The questions of the first group were connected more directly with the object of my inquiry. No remarkable telepathic or intuitive powers were discovered. If such powers had been found, they would have been of interest, but hardly more important for gaining a thorough knowledge of the secondary personality than more simple if less striking traits.

The first sitting opened as follows:

Q. Who are you?

A. Laton.

This was illegible, and Henry W. was allowed to look at the writing. He read it as "Milton" and laughed. A further series of questions revealed the name as 'Laton.'

Q. What is your first name?

A. Bart.

Q. What is your business?

A. Teacher.

Q. Are you man or woman?

A. Woman.

No explanation of this answer was found. Laton assumed throughout the character of a man.

Q. Are you alive or dead?

A. Dead.

Q. Where did you live?

A. Illinois.

Q. In what town?

A. Chicago.

Q. When did you die?

A. 1880.

Then followed many questions, first relating to the bill of fare of Henry W.'s dinners for one, two, and three weeks back. Laton could give the names *correctly* for two weeks back, but beyond that he said 'I don't know.' His memory of them seemed somewhat but not greatly superior to Henry W.'s. Various problems in mental arithmetic were given, the simplest being 18 x 3. The answers were always promptly written and were uniformly wrong. Tested upon the dates of well-known historical events, his answers were all incorrect. Asked about my mother's name he wrote 'Mary Deane,' but afterward changed it to 'Lucy Williams' both wholly wrong. My sisters' names were given as 'Winifred,' 'Jennie,' and 'Carrie'—all wrong.

- Q. Have you supernatural knowledge, or do you just guess?  
 A. Sometimes guess, but often spirit knows. Sometimes he will lie.  
 The next sitting was held two days later.
- Q. Who is writing?  
 A. Bart Laton.
- Q. Who was mayor of Chicago when you died?  
 A. Harrison. [Carier Harrison was mayor of Chicago from 1879 to 1887.]
- Q. How long did you live in Chicago?  
 A. Twenty years.
- Q. You must be well acquainted with the city.  
 A. Yes.
- Q. Begin with Michigan avenue and name the streets west.  
 A. Michigan, Wabash, State, Clark. [hesitates]—forget.  
 Henry W. is then asked to name the streets, and can name only Michigan, Clark and State.
- Q. Now your name is not Bart Laton at all. Your name is Frank Sabine, and you lived in St. Louis, and you died November 18, 1843. Now, who are you?  
 A. Frank Sabine.
- Q. Where did you live?  
 A. St. Louis.
- Q. When did you die?  
 A. September 14, 1847.
- Q. What was your business in St. Louis?  
 A. Banker.
- Q. How many thousand dollars were you worth?  
 A. 250,000.
- Q. Can you tell us something which Henry W. doesn't know?  
 A. Perhaps. I'm not a fraud.
- Q. Who was mayor of St. Louis when you died?  
 A. John William.
- At the next sitting, a week later, Henry W.'s father and mother, who were visiting him, were present, and a young lady named Miss J.
- Q. Who is it that is writing?  
 A. Bart Laton.
- Q. Where did you live?  
 A. Chicago.
- Q. When were you born?  
 A. 1841.
- Q. How old are you?  
 A. 56. [This sitting was held in 1895.]
- In this and other answers where easy computations are correctly made, there is a slight hesitation accompanied by measurable indication of effort in the arm.
- Q. Where are you now?  
 A. Here.
- Q. But I don't see you.  
 A. Spirit.
- Q. Well, where are you as a spirit?  
 A. In me, the writer.
- Q. Multiply 23 by 23.  
 A. 529.
- Q. That was wrong; how do you explain your answer?  
 A. Guess.
- Q. Now, the other day you represented that you were some one else. Who was it?

- A. Stephen Langdon.  
 Q. Where from?  
 A. St. Louis.  
 Q. When did you die?  
 A. 1848.

My question was in the form of a suggestion that he, the writer, is Stephen Langdon, which is naively accepted.

- Q. What was your occupation?  
 A. Banker.  
 Q. But who was Frank Fabius?  
 A. I had the name wrong. His name was Frank Fabius.  
 Q. Now I want to know how you happened to take the name Laton?  
 A. My father's name.  
 Q. But where did the name Laton come from? Where did Henry W. ever hear it?

- A. Not Henry W. but my father.  
 Q. (By Miss J.) Have you any message for any of us?  
 A. I don't know you well enough, but Prof. P\_\_\_\_\_ should not be so incredulous about spiritism.

According to Laton's later account of himself he was a tutor in a family in Chicago before the Civil War, where Henry W.'s father was a chess boy in the same family. Altogether inconsistent with this is his present statement that he doesn't know any of the company well enough to give them a message.

- Q. But tell me how you came to assume the name Laton?

A. I am a spirit. (Written with great energy as heavily as the pencil would write.)

- Q. What is your relation to Henry W.?  
 A. I am a spirit, and control Henry W.  
 Q. Of all the spirits why did you come to control Henry W.?  
 A. I was near when he began to develop.  
 Q. Now look here, this is nonsense. You are not a spirit, and you know you are not, and I must know how you came to pick up the name Laton.

A. Darn you, I am Laton.

Henry W. is allowed to read this, and, his father and mother being present, is greatly vexed and asks, "Did I write that?"

After this sitting Henry W. was absent for two years. During this time he never tried automatic writing, was never hypnotized, and apparently gave no thought to the previous experiments. The sittings were renewed in the spring of 1887.

- Q. Who are you?  
 A. Hart Layton. (Note change of spelling from this on.)  
 Q. What have you to say to us?  
 A. Glad to see you.  
 Q. When did you write for us before? Give year, month and day.  
 A. I don't know.  
 Q. In what year was it?  
 A. 1886.  
 Q. In what month?  
 A. Don't know. April, I remember. [It was June, 1886.]  
 Q. Tell us more about yourself.  
 A. I lived in Chicago.  
 Q. Do you live there still?  
 A. I am here now.  
 Q. How long did you live in Chicago?

- A. Twenty years.  
 Q. Why did you leave there?  
 A. None of your business.  
 Q. In what year did you leave?  
 A. 1872.  
 Q. What was your occupation?  
 A. Doctor and carpenter.  
 Q. In what year were you born?  
 A. 1848.  
 Q. In what year did you die?  
 A. Did who die?  
 Q. In what year did you pass out?  
 A. 1875.  
 Q. Who was Stephen Langdon?  
 A. Chicago friend.  
 Q. Did you write Chicago friend?  
 A. Yes, can't you read?  
 Q. How many minutes was it before you brought the book?  
 A. Five. (After hesitation.)

This question relates to the post-hypnotic experiment tried upon Henry W. two years before and related above. It was sprung upon the commentator to test his relationship with Henry W.'s hypnotic personality. The answers to the questions following about the fence are still more striking, for Henry W. never knew anything at all about the fence episode, having been tested after the experiment two years before.

- Q. Where did you get the book?  
 A. Table.  
 Q. What did you do with it?  
 A. Gave it to you.  
 Q. Who else was with us?  
 A. Mr. Girman. [Correct]  
 Q. What was it you had to step over?  
 A. Fence.  
 Q. What kind?  
 A. Barb wire.  
 Q. Who was it who stepped over the fence?  
 A. I did, you fool.  
 Q. What was your name?  
 A. Bart Layton.

The following questions and answers were from the last two sittings held two and three weeks later. At the beginning, an attempt, not very successful, was made to cultivate a good humor in the commentator. At the end, a second successful attempt was made to anger him.

- Q. Who is writing?  
 A. Bart Layton.  
 Q. Good morning, Mr. Layton. Glad to see you. Would like to get better acquainted with you.  
 A. I don't care.  
 Q. Now, Mr. Layton, will you give us some message if you will be so kind?  
 A. From whom?  
 Q. Well, from yourself.  
 A. I am all right.  
 Q. From whom could you bring us a message?  
 A. Whom do you know?  
 Q. Well, I have many friends. Are you in communication with my friends?  
 A. George White.

In all Laton's writings this was the one single instance of the brilliantly intuitive type, though not a very striking one. I had an uncle named George White for whom I was named and who was killed in the Civil War. Henry W. knew nothing of this, but he had had opportunities of seeing my own name written in full, containing these two names with a third name, however, Thomas, between them. In answer to further questions, Laton said that George White was my father or grandfather and "passed out naturally" fifteen years ago. Upon a request for a message from George White, he wrote, He is glad to see you so well.

Q. Tell us, Mr. Laton, something we don't know, won't you?

A. Think you're smart, don't you?

Q. When did you write for us before?

A. Five weeks ago.

Q. Where have you been in the meantime?

A. Everywhere.

Q. Tell us something of your own life. How do you pass your time every day?

A. I never entirely leave Henry W., but partly so.

Q. When you leave him where do you go?

A. Anywhere or nowhere.

Q. What were you doing yesterday at this time?

A. With Henry W.

Q. What did you have for supper Thursday of this week?

A. None of your business.

Then followed questions in mental arithmetic in which my assistant and I both thought attentively of a certain incorrect answer. Wrong answers were given in each case, but not the ones we thought of. Laton was also asked to give the time of day, which in each case he gave incorrectly, even when we were looking intently at our watches.

Q. What was Mr. Laton's occupation in Chicago?

A. Carpenter.

Q. Two years ago you said he was a teacher.

A. Well, he---I used to be a teacher.

Q. Do you dance?

A. We don't dance who have passed out.

Q. Why don't you who have passed out dance?

A. You can't understand; we are only as you would say partly material.

Q. When you get through writing to-day, where is the part that is not material going?

A. It goes nowhere or anywhere as you choose to know space.

Q. Do you ride a bicycle?

A. Only through Henry W.

Q. Two years ago you spelled your name 'Laton.' How do you account for that?

A. Too many Latons; like the other better.

Q. I think you are an unmitigated fraud. What have you to say to that?

A. Shut up, you poor old idiot. Think I must always answer your damned old questions right? I can lie to you whenever I damned please.

This answer was accompanied by great muscular excitement of the hand and arm. There being one or two illegible words, I had the communicator repeat parts of the answer several times. The word 'damned,' evidently intended for 'darned,' was so spelled each time. Henry W., meanwhile, was calmly reading and never knew what had been written.

The automatic writing was now discontinued, as evidently there was little more to be gained from Laton. But the familiarity of the communicator with



the hypnotic notions of Henry W. suggested one further experiment. If Henry W. were hypnotized, would the hypnotic personality assume the name Laton, and give the same account of himself orally? Henry W. consenting, hypnosis was induced by a few suggestions and was tested by a simple experiment in hallucination. I suggested that there was a five-dollar gold piece on the edge of the table. The subject saw it and asked whose it was. My assistant jokingly said that it must be Laton's, whereupon the subject went through the motions of grabbing it and putting it in his pocket with great glee, remarking, "It is Laton's, it is mine, for he is a part of me." Evidently, then, the hypnotic personality did not necessarily consider itself as Laton, but my assistant's remark was perhaps a suggestion that Laton was not present. I therefore changed the subject's name, bade him close his eyes for a moment and suggested that he was Laton. This was instantly successful, and a free conversation was then carried on with Laton as long as I wished. The subject's eyes were wide open and his manner easy and unconstrained, though not quite that of Henry W. There was no sign of Laton's recent anger, but the account that he gave of himself was the same as given in writing, with some added details. He said that he "died" in 1875 at the age of sixty, that he lived on North Clark Street, that he was before the war a tutor in the family of Mr. Pullman, whose Henry W.'s father was then a chore-boy, that he was a tutor of Mr. Pullman's little girl, but failing in the capacity of a teacher, and Chicago building up rapidly, he went to carpentering. He said further that he had been with Henry W. since '15 ('87?), that he had chosen him because he was the right kind. "He developed," he said, "and I got a chance to show myself." A few other questions were asked testing the power of thought-transference, but without result. The subject was then awakened and found to have no knowledge of what had happened. A striking feature of the experiment was the instantaneous and naive assumption of the personality of Laton after the suggestion was made. As soon as the word was spoken, there was no confusion of 'he' and 'I' as relating respectively to Henry W. and to Laton.

Before commenting upon any peculiarities of the secondary personality indicated by the above conversations, I may mention some other details of the investigation. As may be seen, my attempts to trace from internal evidence the origin of the name, Bart Laton, were not successful. The external evidence yielded no better results. I could not learn that Henry W. or any member of his family had ever known any one bearing the name Bart Laton, or even Laton. The hypothesis that there was a real Bart Laton whose 'spirit' was communicating through Henry W. will hardly appeal to any one who has read the questions and answers, even if we grant, with Dr. Hodgson, that communicating 'spirits' must *a priori* be suffering from a certain amount of 'confusion,' or even 'aphasia' and 'agraphia.' The frequent contradictions as to the time of his birth and death, his uncertainty as to whether he was a teacher, carpenter or doctor, his willingness to resign his personality in favor of Frank Sabine or Stephen Langdon, together with the unmistakable evidence that the whole 'history' was progressively constructed in answer to my questions, make such a view as improbable as if it were unnecessary. I did not, however, omit to make diligent inquiries in Chicago. The experiments were completed before Mr. Pullman's death, and through the kindness of Hon. Frank Lowden, his son-in-law, I learned that none of Mr. Pullman's family had known any one bearing the name Bart Laton, that Mr. Pullman's daughter had never had a tutor by that name or any other male tutor. The chronology given by the communicator would in any case make such a relation impossible. The communicator's statement that Henry W.'s father was at one time a chore-boy in Mr. Pullman's family was correct, but this was known by Henry W. and may indeed have served as a basis for the communicator's romance. I concluded, therefore, that the origin of the name is to be traced directly to the constructive imagination of the secondary personality.

In attempting any description of the marks of the secondary personality, either from a study of this or of other cases of automatism, we are struck perhaps first of all by the remarkable activity of the constructive imagination. Quite independent of all theories, the presence of this particular form of mental activity is characteristic. It is shown in this case throughout the whole conversation, for instance, in the fictitious answers to the rethoristical problems, in the construction of the Chicago 'history,' and in the invention of the names. Mary Peters, Lucy Williams, Stephen Langdon, John Williams, etc. Frank Sabine differs from the others only in this, that I invented it myself and suggested it to the automatist. By way of experiment, my number of such names, some commonplace like John Williams, others more unique like Bart Laton, may be collected by any one who will ask a number of his friends to assume or invent a name on the spur of the moment. If, for the sake of the argument, we omit the comparatively few instances of the brilliantly intuitive type, the great mass of automatic utterances in this and in all other reported cases reveals the activity of the constructive imagination and shows further the most rigid adherence to the law of limitation to the store of memory images possessed by the subject. This limitation is painfully apparent in the utterances of my subject. The automatist has a vivid imagination, but the materials are all drawn from the experience of Henry W. The hypernesia exhibited by many subjects and shown in a very trifling degree by mine—as, for instance, when Laton mentions one more of the Chicago streets than Henry W. can—in no way, of course, violates this law.

The suggestibility of the secondary personality is also apparent from this case. The automatist is willing, in response to my suggestion, to change his whole personality, and become Frank Sabine of St. Louis, and then proceeds to construct a 'history' consistent with the suggestion. In response to my suggestion again, he accepts the name Stephen Langdon, at another time becomes a good person, admits that he 'guessed' the answers, etc. His suggestibility is limited only by a sort of instinctive idea that he is a 'spirit,' which determines the answers in the form of a 'spirit' personality limited to the scant knowledge of what such a personality should be, possessed by Henry W. The very opposition which he shows in the later sittings is apparently the result of my indirect suggestion of hostility shown by the skeptical and disrespectful attitude which I assumed. In this connection, it is worthy of notice that in any conversation with a secondary personality, the questions themselves form a series of suggestions, and that properly prepared questions are of first importance. In the present instance, my questions may have determined the whole 'history' of Laton, and a different set of questions would have resulted perhaps in a totally different account. My first question, Who are you? really suggests a doubting of the personality. My question, Are you alive or dead? suggests perhaps the 'spirit' idea. The questions were well adapted to the study of the birth and development of a 'spirit' personality, but it would be interesting to know what a wholly different set of questions would have produced. For instance, the first question might have been, not, Who are you? but, Write your name in vertical script. If then the automatist had given the name, Bart Laton, I might scarcely have expressed surprise that his name was not Henry W., thus avoiding any even remote suggestion of a 'spirit' presence.

Another peculiarity of the secondary personality which has been noticed in other cases is its rather low or 'coarse' moral and intellectual tone. This was conspicuous with Laton as well as with the other automatists mentioned in this paper. In the case of Laton, my skeptical attitude was assumed for the purpose of allowing this trait to develop and to see what kind of language the automatist would use when angered. Stupid profanity was the result. The answers

throughout were commonplace. When asked for a message from the 'spirit' of my uncle, he can only say "He is glad to see you so well." This peculiar trait is strikingly illustrated in one of my other subjects, the young girl mentioned above. To test her alleged clairvoyant powers, I had prepared a name written upon a sheet of paper and sealed in an opaque envelope. The communication, the 'spirit' of the girl's deceased mother, professed to be able to read it and said that it was 'Minnie Nolds.' This was wholly incorrect, and I so stated. The communication, however, insisted and insisted again that the name was 'Minnie Nolds.' I therefore opened the envelope, held up the writing, and triumphantly asked, "Now what have you to say?" To which this interesting and characteristic answer was written, "I think you are farrecht in the kapt," misapprehended school-girl slang of rather a low order, such as I think the subject herself would not have used even with her associates. The utterances are sometimes of a flippant tone. One of the 'controls' of the girl just mentioned, professing to be the 'spirit' of 'Ben Adams,' who passed away in 1872, always wrote flippant answers. For instance, his veracity being questioned, he wrote, "I am not a fraud or a frog either." Asked the day and month of his death, he said, "I don't know. I got hit on the head."

Among the peculiarities of the secondary personality we may, perhaps, regard as fourth in order the brilliantly imitative character of a very limited number of these utterances. In the case described by Dr. Hodgson these are very striking. With my subjects I have mentioned two instances of such utterances. Even with Bart Lazen there is, as it were, a trace of the presence of such a trait in his mention of George White. Considering the sluggish character of Lazen's mind and his very slight ability to use the latent memories of Henry W., it does not seem very probable to me that Lazen was obviously using a latent memory of a part of my name, hoping that it might happen to coincide with the name of some deceased relative. Such an explanation is possible, or it may have been a chance guess, but, considering the large number of such cases which the history of automatics affords, it seems to me better to note this power of happy imitation as one of the marks of the secondary personality. The explanation of it is not within the purpose of the present paper. It seems like the flickering survival of some ancient faculty. One thing only is sure in this case, the origin of the utterance was with the immediate participants in the experiment. For, let us suppose that it was not a guess nor the revival of a latent memory of Henry W., but that it was communicated from some outside source. We should have to choose then between its being communicated unconsciously by me and its being communicated by the 'spirit' of the deceased George White. Put in this form, the 'spirit' hypothesis immediately becomes absurd, for, even if we have to assume, as is not indeed really necessary, that the name was communicated 'telepathically' by me, we must assume that and a great deal more if it was communicated by George White. Furthermore, if I may risk tiring the patience of the reader by further reasons where none are necessary, it would be more probable that the suggestion came from me from the fact that I have always had a romantic interest in the memory of this uncle, while George White, himself, hardly knew me at all. To my mind, however, rejecting the 'spirit' hypothesis does not mean accepting that of 'telepathy.' When the characteristics of the secondary personality become subject to accurate scientific description, some other hypothesis may be found quite apart from either.

**PBA-002      AUTOMATIC WRITING: ITS USES AND VERIFICATION**

Monteth, Mary E.; Eleventh Century, 80: 779-789, 1918.

It is considered that Automatic Writing has played a large part in converting people to belief in an after-life, and, naturally, it was the guarantor of severe criticisms from the sceptics, some of whom do not hesitate to denounce its practice as being hysterical and morbid owing to the fact that a similar form of writing is demonstrated in hysterical cases in the great nerve hospitals of Europe.

There are two sides to every question.

A distinguished French investigator classifies such writing under the heading of intellectual phenomena in both its manifestations, i. e., the strictly automatic, where the hand or forearm is temporarily paralyzed and devoid of any feeling while the power of writing is retained; and the inspirational or intentional, when the automatist becomes mentally aware of the substance of the communication before the hand moves at all.

Automatic writing is certainly a faculty to be exploited, and many will agree that further investigation is necessary before it can be confined entirely to hospital cases or relegated unconditionally to the rubbish heap.

In my case, the writing comes to me when in a strictly normal condition, and unless I am in good health it does not assert itself. I have never felt that the movements of my hand were out of entirely from my conscious intelligence, but the sensation is that of another hand over mine, guiding it (as a child is taught to write), varied by a mental perception which appears in some inexplicable way to control the physical action.

A common criticism of this automatic writing is, that, considering so much of it is supposed to come through the agency of departed spirits, information concerning the conditions of a future existence is vague, and the evidence often conflicting. Whether second-hand experiences of a state that, logically speaking, may vary individually as much in one life as another, apart from the fact that it applies only to the future, would benefit us to any extent during our present life is a debatable question. But we must also take into consideration the fact that there is still a great deal of honest doubt as to the survival of personality and the conscious existence of the individual after bodily death.

Automatic writing is not always supernatural—that is to say, does not always originate from accurate individuals. It has been proved that sensible and accurate messages have been received through the means of automatic writing from the living, irrespective of space, and this system of human telegraphy may be carried to a very fine point when it is pre-arranged by two suitable people who are mentally attuned. This has the advantage of testimony by word of mouth from the experimenters on both sides, without the disadvantages of disbelief on the part of the sceptics as to the existence of one or the possibility of a striking proof of identity placed to the credit of another's subconscious self. But the opening up of the resources of the mental powers claims inquiry, especially as almost daily events show they are far from being exhausted, and automatic writing should be judged by its results (exclusive of its origin), whether it be ghostly or human. Anything proven has a certain value, and if mental anguish be relieved in the smallest degree in these times of almost universal suffering, the media through which this has been achieved are worthy of consideration.

It is some years ago since I became interested in the subject, and my interest was aroused entirely by imperative messages given for me to a perfect stranger by one who had passed over, and whom I had known during his lifetime. These messages were unolicited, and, if he had not spontaneously given very decided

proofs of his personality, some of which were unknown to me then, but since proved to be correct. I doubt if I should have carried out his wish to be allowed to develop my latent faculty in order to enable him to write directly through my hand. My personal knowledge of psychic experiments was then nil, and those I had heard of were limited to a few primitive and extremely silly attempts to find out future events of no importance. The writing developed and as it became coherent I found this 'personality,' Dr. Neill, was very particular that I should take a critical attitude and be careful to sift all matter given to me, as well as to substantiate everything, so far as possible, looking for practical results to justify his object.

Before very long I was able to verify a message. The story is trivial, but the fact of my information being correct enabled me to give practical help in a very deserving case, and decided me once for all to continue the study of a subject which has led me on to other and more interesting developments, under the same guidance.

The first part of the message was written through the hand of a friend, whose sister and I were present at the time. The message was as follows: 'There are people in distress at 3 Smith Street in this town. Tell Miss Vaile to go and see what she can do for them.' We could get no name and no more particulars were forthcoming until the evening, when I was alone, and then I was told, in writing of course, that the people at 3 Smith Street had recently lost their parents and were in need of work. I was asked, in the event of not finding them at the address given, to make inquiries as to their whereabouts. The next morning I went on my mission in a dubious frame of mind, to discover, after a little difficulty, that 3 Smith Street was in a poor part of the town, and that No. 3 was standing empty, with 'To Let' in the window. A woman next door told me the name of the people who had lived there, and where they had gone, substantiating the information that two deaths had occurred in the family in the last three months, and that she had heard they were lost in very poor circumstances. On my calling at the new address, a neat-looking young woman opened the door. I explained that a friend had told me they were in trouble, and I had come to help them. She invited me in without question, and I had no difficulty in gaining her confidence. It was a sad case. Both she and her sister were very delicate and unable to get work. One had been trained for a profession but she had lost her posts successively through ill-health, which prevented her going out regularly, and she was not in a position to make a private connection, which was their only hope of earning a living. Poor as they were, they were obviously not the class to beg, and their natural reticence had brought them to a very low pass; as a matter of fact I know now that a great deal of the ill-health was due to lack of sufficient food. There was no difficulty in helping them; new circumstances are changed, they are well, happy and prosperous.

Concentration necessary for the practice of automatic writing will sometimes lead to the development of a keener sense of the intuitive faculty. In the course of time the actual writing becomes unnecessary in order to convey information unknown to the sensitive, which can be distinctly impressed on the mind. But it is wise not to reject such a simple method as the use of a pencil, for writing is visible evidence; also, when a prediction so gives time to work out completely, the investigator will find it more satisfactory to turn to a page where the details are inscribed than to trust entirely to memory.

The following is one which was fulfilled so many years after it was first given that I regret the original writing was destroyed in mistake. Happily I had taken the precaution of confiding the paper to several 'righteous souls,' making sure of adequate testimony in the event of a correct prediction.

Dr. Neill takes a great interest in my circle of friends, and asked me to make a point of knowing a certain Mrs. Burton. He wished me especially to interest her

in the subject of spirit communication and to give her the benefit of all I had been able to prove, a course of action which was then contrary to my rule of keeping these matters strictly to myself.

We had interests in common and I came to know her and her husband, Major Burton, very well, and many were the discussions we had on all branches of psychology. It was an advantage to me, for Mrs. Burton had joined in scientific society and had the subject at her finger-tips; moreover, she was profoundly sceptical regarding all psychic matters, critical to a degree, and openly acknowledged that only proofs of memory surviving death from a personal friend could convince her of any sort of existence beyond the grave. So far, she had never come across anybody with practical experiences of this kind, and she became much interested in the various messages I received, for like many other sceptical souls she dreaded the apparent finality of death.

Later, I received further messages by the medium of automatic writing from Dr. Hill, showing the need for giving her reasons for a happier belief. It was an emphatic statement that Major Burton would die suddenly, abroad, in a hot, unhealthy climate at no very distant date. They were starting for India almost immediately, and I begged for permission to tell them, hoping it might prevent him from taking a possible appointment in an unhealthy district and so avoid the danger. This was refused, on the grounds that nothing could alter his fate.

When the War with Germany broke out they were again in India, and at first it seemed unlikely that Major Burton would be involved in it, as his regiment was not amongst those sent to Flanders; but later he received orders for Mesopotamia, where he was hit by a bullet in a vital part and killed instantaneously.

The sequel to this will be best explained in a letter I have just received from Mrs. Burton in answer to one I wrote asking for her approval and corroboration of the above.

Dear E.---I have read your account.... One important point you do not mention, the fact that Jack gave such good proofs of his identity so soon after his death, so quickly putting an end to one's misery and uncertainty---proofs so convincing and so many, they would take too long to enumerate. Some of these perhaps could be explained by telepathy, but it is unlikely that you could have told me things long forgotten by myself and persisted in them in spite of my flat contradictions. With regard to the silver cup, telepathy was impossible in that case: don't you remember it disappeared when Jack's things were sent home? We were sure it had been stolen, it seemed the only possible explanation, but Jack's message (which we wrote down at the time) was that he 'knew it was safe and would arrive.' Now after sixteen months it has done so without a word of explanation and so close as to who sent it.

In case you would like to publish this I will sign it. Eleanor Burton.

The silver cup alluded to by Mrs. Burton was one which Major Burton had deposited in a safe place before he went into action. This fact, which he purported to state most emphatically, was unknown to anyone in England at the time the communication was received.

A few lines from another correspondent will complete the evidence:

As regards the prediction of Major Burton's death, you told me of it as far back as 1911, all of which came true to the smallest detail.

Mrs. Burton has been a friend of mine for some years, and of course I knew him too, and can realize how much all this means to them both.---M.

The remainder of this article presents additional cases in which automatic writing purportedly serves as a communication link to beings alive and dead. Similar contacts are supposedly made through ouija boards, firearms, mirrors, apparitions, etc.

## PBD-001 EPIDEMIC CONVULSIONS

Yardell, David W.: Popular Science Monthly, 20:496-507, 1892.

Extraordinary interest was excited in the popular mind of Kentucky, at an early day, by a form of convulsive disease, which, though it had been witnessed elsewhere in the world, had never before assumed a shape so decidedly epidemic. Among the Camisards, or French prophets, who appeared in the mountains of the Cevennes toward the close of the seventeenth century, the subjects, when about to receive the gift of prophecy, were often affected with trembling and fell down in swoons. When the fit came, no matter where they were, they fell, smiting their breasts with their hands, crying for mercy, and imprecating curses on the Pope. They were finally, after an obstinate struggle, put down by their insane persecutor, Louis XIV.

Epidemic convulsions prevailed in Scotland, half a century later. Multitudes, under pious preaching, were violently agitated, uttering loud cries, shaking, trembling, bleeding at the nose, the minister promoting the uproar by urging them not to stifle their convictions. The shriek, or the shout it is stated, never rose from one, but that others joined the outcry. The early career of John Wesley is well known to have been marked by similar disorders. In his journal he records numerous instances of men and women dropping to the ground under his preaching "as if struck by lightning," ten or a dozen praying at once. They had also prevailed extensively in New Zealand half a century before they became epidemic in Kentucky. The elder Edwards has left an instructive account of the bodily agitations which accompanied the revivals of religion from 1735-'42. Many instances are given of fainting, falling, trances, numbness, catarrhs, and convulsions, and he relates that some of the subjects lost their reason. The epidemics of Kentucky spread more widely, and persisted for a longer time, as well as in more extravagant forms. It continued to reappear for several years, and involved a district of country extending from Ohio to the mountains of Tennessee, and even into the old settlements in the Carolinas. Lorenzo Dow relates that, at a religious meeting in the court-house of Knoxville, when the Governor of Tennessee was present, he saw one hundred and fifty people "jerking" at one time. But at other places the frenzy reached a greater height. It was computed that, at a religious meeting in Kentucky, not less than three thousand persons fell in convulsions to the ground.

The extraordinary religious excitement in which these nervous disorders took their rise commenced in Logan County, Kentucky, under the preaching of Rev. James McGready, described as a man of "hideous visage and thunder-tones," with a highly impassioned style of eloquence. The excitement abated soon, but was renewed in a more intense form three years later, and continued to grow and deepen until it reached its height about the year 1800. Its effects were described by this fiery preacher as at that time "exceeding everything his eyes had ever beheld upon earth." Fervidness came in wagons, forty, fifty, and one hundred miles to attend the meetings, and it became necessary to establish camps for their accommodation. These camp-meetings generally continued four days, from Friday to Tuesday morning, but sometimes they lasted a week. One succeeded another in rapid succession, and thus the fervor of religious feeling was kept up. The woods and paths leading to the camp-ground seemed alive with people. "The laborer," says Dr. Dickson, in the work just quoted, "quitted his task; age attacked his crutch; youth forgot his pasture; the plow was left in the furrow; the deer enjoyed a respite upon the mountain; business of all kinds was suspended; dwelling-houses were deserted; whole neighborhoods were emptied; bold hunters, and sober matrons, young men, ruffians, and little children, flocked to the common center of attraction; every difficulty was surmounted, every risk ventured, to be present at the camp-meeting."

The concourse became immense. At one of these assemblages the attendance was computed at twenty thousand souls. And here were united all the elements best fitted to stir the emotional nature of man and to derange his nervous system. The spectacle at night, as Dr. Davidson depicts it, was one of the wildest grandeur. With great beauty of description he says: "The glare of the camp-fires, falling on a dense assemblage of heads simultaneously bowed in prayer, and reflected back from long ranges of tents upon every side; hundreds of candles and lamps suspended among the trees, together with numerous torches flashing to and fro, throwing an uncertain light upon the tremulous foliage; the solemn chattering of hyenas snuffing and falling on the night wind; the impassioned exhortations, the earnest prayers, the sobs, shrieks, or shouts, bursting from persons under intense agitation of mind; the sudden spasms which seized upon scores, and unexpectedly dashed them to the ground—all conspired not only to invest the scene with terrific interest, but to work up the feelings to the highest pitch of excitement." To these circumstances, that tended so powerfully to excite the nervous centers, we have to add others which gave intensity to their effect. The meetings were protracted to a late hour in the night, keeping the feelings long upon the stretch. A reverent and general enthusiasm ascribed the bodily agitations to a mysterious, distant agency. The preaching was fervid and impassioned in the extreme. Many of the preachers, unable to control their emotions during the sermons, went around in "a stinging ecstasy," shouting and shaking hands with others, as much excited as themselves. In this way everything was done to "heap fuel on the fire," and it was at such meetings that thousands fell in convulsions to the ground.

Some of the actors in these strange scenes have left records of the state of their minds, which show that they were in a condition bordering on insanity, if not actually insane. One of them relates that, while under conviction on account of his sins, he went about the woods for two years, through rain and snow, "roaring, howling, praying, day and night." And when light and hope broke in at last upon his mind, which he describes as a "rushing, mighty wind, that descended from heaven, and filled his whole being," he went shouting over the encampment all night and a great part of the next day. He continues: "I now made the mountains, woods, and campfires ring louder with my shouts and praises than I ever did with my howling cries; I never fell on my knees in secret but the Lord poured out his power, so that I shouted out aloud. Sometimes I shouted for two or three hours, and even fainted under the hand of the Lord. I was ready to cry out at the name of Jesus. The brightness of heaven rested continually upon my soul, so that I was often prevented from sleeping, eating, reading, writing, or preaching. I would sing a song, or utter a few verses, and the fire would break out among the people. I have spent nine nights out of ten besides my day meetings, and long, hard rides with the slain of the Lord."

Granada is the preacher who gives this description of himself, which is also descriptive of his times. He was a stormy orator who drew great crowds wherever he went. He admits that he went by the name of "the distracted preacher," but says that at one of his meetings "the people fell as if slain by a mighty weapon, and lay in such places and heaps that it was feared they would suffocate, and that in the woods." So violent was his manner, stamping with his feet and smiting with his hands, that he often broke down the stands erected for him in the woods. Once, it is told of him, he was addressing a class-meeting in the upper story of a dwelling-house, when the roof below was crowded with worshippers, and, being in what the historian calls "one of his big ways," he exclaimed, "I feel like breaking the trigger of hell!" and at the same time gave a tremendous stamp with his foot which actually broke one of the joists. The people below, hearing the sudden crash, ran screaming to the door, some of them really imagining, as the writer of all these events relates, "that hell had overtaken them."



Grande was of an excitable temperament and vivid imagination. His person was commanding, and, with a sounding voice and most impassioned manner, his oratory produced startling effects.

Another feature of these excited meetings, which served still further to intensify the feelings of the people who attended them for days and nights together, was the part taken in them by children. Nothing was more affecting to the congregation than the sight of a little boy or girl on a log or stump, passionately exhorting the multitude. Thus, a boy, who appeared to be about twelve years of age, is described as having retired from the stand at Indian Creek, Ohio, during the services, and, seizing a log and raising his voice to a high pitch, soon had nearly all the congregation with him. "With tears streaming down his cheeks, he cried aloud to the wicked, warning them of their danger, denouncing their certain doom if they persisted in their sins, expressing his love for their souls, and desiring that they should turn to the Lord and be saved." A man on each side held the boy up, and he spoke for about an hour. When quite exhausted, and language failed to give utterance to his emotions, the little orator raised his hands, and, dropping his handskerchief wet with tears and perspiration, cried out, "Thus, O sinner, shall you drop into hell, unless you forsake your sins and turn to the Lord." At that moment, the writer of this account continues, "Some fell like those who are shot in battle, and the work spread in a manner which human language can not describe."

McNemar instances boys of eight and ten years, and the Rev. John Lyle mentions one of seven, who called on sinners to repent, with an eloquence singularly overpowering. Possessed by one dominant idea, the people gave themselves up to the wildest enthusiasm, and it was an uncommon thing for them to spend the whole night in religious orgies such as have been described.

The spectacle of persons falling down in a paroxysm of feeling was first exhibited at Gager River Church, in one of McGreedy's congregations in the summer of 1779. The movement proved highly contagious and spread in all directions. After a roaring appeal to the feelings of the listeners, and especially during spirited singing, one and another in the multitude would fall suddenly to the ground and swoon away. Not only nervous women, but robust young men were overpowered. Some, continues the historian, fell suddenly as if struck by lightning, while others were seized with a universal tremor before they fell shrieking. Dr. Hylton, who often witnessed scenes of this sort, assured Dr. Davidson that he had once felt the sensation himself, and only overcame the tendency to convulsion by a determined effort of his will. A few attacks never failed to put the assembly in motion, and set men and women to falling all around. A waste of "pins and needles" was complained of by many of the subjects, and others fell a numbness of body, and lost all volitional control of their muscles. It soon grew into a habit, and those who had once fallen were ready to fall again under circumstances by no means exciting. Women who had suffered repeated attacks sometimes fell from their horses on their way to or from the meeting-house, while relating their past religious exercises.

The condition in some of the subjects was cataplectic, lasting generally from a few minutes to two or three hours; but in a few cases it continued many days. Others were violently convulsed as in hysteria or epilepsy, "wrought hard in fatal nervous agonies, the eyes rolling wildly." Most were speechless, but some were capable of conversing throughout the paroxysm. The extremities were cold; the face was pale or flushed, the breathing hard. Sensibility was abolished. Mr. Lyle, one of the prominent preachers of the times, having been furnished by Dr. Warfield with a vial of karschorn, applied it to a stout young man who was lying flat on his back, and, inadvertently, let some of the fluid run into his nostrils; but he took not the slightest notice of it. Others who fell

hard to the ground, or in running encountered stumps or trees, felt no pain from the violence. So many fell at Cabin Creek camp-meeting, it is related, that to prevent their being trodden upon they were laid out in order on two squares of the meeting-house, covering the floor like so many corpses. At Paint Creek Sacrament two hundred were estimated to have fallen; at Pleasant Point three hundred were prostrated; while at Cane Ridge, as has been stated, the number who fell was believed to have reached three thousand.

The "jerks," as they were termed, presented some novel and remarkable features. Their first occurrence is reported to have been at a sacramental meeting in East Tennessee, where several hundred people of both sexes were seized with this strange, convulsive movement. The Rev. E. W. Stone has left a vivid description of it. Sometimes, he says, the subject was affected in a single member of his body, but at others the spasms were universal. When the head alone was affected, it would be jerked from side to side so quickly that the features of the face could not be distinguished. When the whole system was affected, he continues, "I have seen the person stand in one place, and jerk backward and forward in quick succession, the head nearly touching the floor behind and before. All classes, saints and sinners, the strong as well as the weak, were thus affected. I have seen some wicked persons thus affected, and all the time cursing the jerks, while they were thrown to the earth with violence."

The first form in which these spasmodic movements made their appearance was that of a simple jerking of the arms from the elbow downward. When they involved the entire body, they are described as something terrible to behold. The head was thrown backward and forward with a celerity that alarmed spectators, causing the hair, if it was long, "to crack and snap like the lash of a whip."

The most graphic description of the "jerking exercise" was written by the Rev. Richard McKimmar, an eye-witness of the frenzy, as well as an apologist, believing it to be a display of Divine favor. In his "History of the Kentucky Revival" he says: "Nothing in nature could better represent this strange and unaccountable operation than for one to grasp another, alternately on every side, with a piece of red-hot iron. The exercise commonly began in the head, which would fly backward and forward, and from side to side with a quick jerk, which the person would naturally labor to suppress, but in vain; and the more any one labored to stay himself, and be sober, the more he staggered, and the more his twitches increased. He must necessarily go as he was assailed, whether with a violent dash on the ground, and bounce from place to place like a foot-ball, or hop round with head, limbs, and trunk twitching and jerking in every direction, as if they must inevitably fly asunder. And how such could escape without injury was so small wonder to spectators. By this strange operation the human frame was commonly so transformed and disfigured as to lose every trace of its natural appearance. Sometimes the head would be twitched right and left to a half-round with such velocity that not a feature could be discovered, but the face appeared as much behind as before. Head-dresses were of little account among the female jerkers. Handkerchiefs, bound tight round the head, were flung off with the first twitch, and the hair put into the utmost confusion; this was of very great inconvenience, to redress which the generality were shorn, though directly contrary to their confession of faith. Such as were seized with the jerks were wrested at once, not only from under their own government, but from that of every one else, so that it was dangerous to attempt confining them or touching them in any manner, to whatever danger they were exposed. Yet few were hurt, except such as rebelled against the operations through willful and deliberate enmity, and refused to comply with the injunctions which it came to enforce."

The same writer gives the history of a case of jerks as follows, and no case could illustrate more strikingly the nature of the affection:

A young man, of a pious family, the son of a tanner, feigned sickness one Sunday morning to avoid going that day to camp-meeting. He kept his bed until he was assured that all the family, except a few negro children, had left the premises, and was much pleased at the success of his stratagem. As he lay quietly in his bed, his thoughts naturally turned to the camp-meeting in progress. The assembled multitude, excited, agitated, convulsed, rose up vividly before his mind. All at once, while occupied with the scene, he felt himself violently jerked out of bed, and dashed round the walls in a manner utterly beyond his control. Prayer, he remembered, was deemed efficacious in such circumstances, and he fell upon his knees in the hope that it would prove a sedative in his case. It turned out as he hoped, and he returned to bed, happy at finding the spirit assuaged. But the enemy soon returned; the jerks were as bad as ever, but were again allayed by prayer. Dressing himself, he saw went to the tan-yard, and set about carrying a knife to occupy his mind. He rolled up his sleeves, and, grasping his knife, was about to commence the operation, when suddenly the knife was flung out of his hand, and he was jerked violently backward, over logs and against fences, as before. Gaining relief by resorting once more to prayer, he ventured to resume his occupation, but was again seized with convulsions, and at last forsook the tan-yard and betook himself to strong eries for mercy, at which he was found engaged by the family on their return from the meeting in the evening.

Another characteristic example is related by a writer in the "Gospel Herald":

A gentleman and lady of some note in the fashionable world were attracted by curiosity to the camp-meeting at Case Ridge. They indulged in many contemptuous remarks on their way, about the poor ignorant creatures who relied over screaming to the roof, and promised jestingly to stand by and assist each other in case that either should be seized with the convulsions. They had not been long on the ground, looking upon the strange scene before them, when the young woman lost her consciousness and fell to the ground. Her companion, forgetting his promise of protection, instantly forsook her and ran off at the top of his speed. But flight afforded him no safety. Before he had gone two hundred yards, he too fell down in convulsions, "while a crowd flocked round him to witness his mortification and offer prayers in his behalf."

These nervous disorders assumed many other grotesque forms besides those which have been described. The subjects often rolled over and over on the ground, or ran violently until worn out with the exertion. Hysterical laughter was another modification. Instances of laughter were only occasional at first, but it grew, until in 1853 the "holy laugh" was introduced systematically as a part of religious worship. Sometimes half the congregation, apparently in the most devout spirit, were to be heard laughing aloud in the midst of a lively sermon. As the excitement grew, the intoxicated subjects took to dancing, and at last to barking like dogs. McHesler says they actually assumed the posture of dogs, "mooving about on all-fours, growling, snapping the teeth, and barking with such an exactness of imitation as to deceive any one whose eyes were not directed to the spot." Nor were the people who suffered so mortifying a transformation always of the vulgar class; persons of the highest rank in society, on the contrary, men and women of cultivated minds and polite manners, found themselves, by sympathy, reduced to this degrading situation.

The "barks" were looked upon at first as a chastisement for resistance of duty, and the only way to escape them was to engage in the holy dance. But, from being regarded as marks of guilt, these wretched exercises came to be esteemed "tokens of Divine favor, and badges of special honor." With these

manifestations the insanity reached its height is about three years after it began to show itself.

It was one of the popular beliefs of the time that certain instincts or conditions of the system would avert these nervous attacks. Thus it was held that a woman with a child in her arms, or conscious of approaching maternity, was in a danger. But there was no truth in the supposition. The maternal instinct, at least, had no protective efficacy. An instance is related where a woman mounted the stand, with an infant in her arms, for the sake of a better prospect, and that being suddenly seized she fell backward, dropping her child. Some one fortunately saw the danger in time to seize and save the child before it fell to the ground.

A large proportion of the members of every congregation had power to resist the convulsive tendency. In a great majority, no such tendency probably existed; but where there was a conscious impulse toward the convulsions it could be restrained by most persons before it had been yielded to too long. Dr. Myrthel had but little of the disorder in his church. He discountenanced the wild enthusiasms from the beginning, and threatened to have any one who became convulsed turned out-of-doors. The religious frenzy soon began to abate when the clergy set their faces against the stormy exercises. Rev. Joseph Lyle, on the second Sabbath in July, 1849, preached in his church a significant sermon on "Order." The congregation had come together expecting the usual displays of feeling; but though some were agitated by his doctrines, and some strove to promote the confusion of intermingled exercises, only a few "fell," and, altogether, moderation triumphed. This was the first sermon preached against the fanaticism.

It is a remarkable fact that, notwithstanding the intensity and duration of this nervous disorder, no instance is recorded in which permanent insanity resulted from it. Such results were to have been expected; insanity is mentioned by Edwards as having attended the excitement in New England, and it may be that reason was destroyed in some whose cases have not become matters of history. In a few years, after a sounder public opinion began to assert itself, instances of the disorder had become rare, but it was many years before the epidemic entirely ceased.

As to its nature, there was but one opinion among medical men from the beginning. All referred it to a derangement of the nervous system. Dr. Felix Robertson, of Nashville, described the affection in his thesis, published in Philadelphia, in 1848, as a form of *shock*. In some cases it took the form of that disease. In others it bore a stronger resemblance to epilepsy; while in a greater number it partook rather of the character of *hysteria*. It was eminently sympathetic in its nature, as has been so often remarked of these affections. The convulsions once started in a congregation spread quickly through it, until all the fit subjects were convulsed. Repetition greatly increased the proclivity to the disorder, which was invited by the masses on the supposition that it was a true religious exercise.

These perverted muscular movements all come under the head of *reflex* action. By the continued religious fervor, the cerebral portion of the brain, the immediate seat of emotion and feeling, became inordinately excited. The impression, transmitted downward to the spinal cord, threw the muscles of voluntary motion into convulsions. Sensibility, which has its seat in the sensory ganglia, was generally annulled. When the hemisphere became involved, the subjects fell into a state of unconsciousness or coma. In this abnormal condition of the nervous centers, the bare recollection of the distressing scenes was sufficient in many cases to excite the convulsive movements. The former belong to *sensory-motor* actions; this last is an example of *ideo-motor* movement; instances of which are afforded by the act of vomiting.

which may be caused by the recollection of disgusting sights or odors. The principle of imitation accounts for the rest. The great nervous centers, in multitudes of people, being in a state of polarity, any unusual exhibition of feeling would throw the more excitable into spasms; and the affliction would then spread by sympathy, as hysterical convulsions and chorea are known to spread among girls at boarding-schools. And, as fear has checked these, the epidemic convulsions were checked by reason and common-sense, and finally ceased under the law which limits all violent action.

#### FBD-002 THE INDIAN MESSIAH

Fletcher, Alice C.; *Journal of American Folk-Lore*, 4:97-98, 1891.

The advent of the Messiah has been talked of among the Indians of the Missouri valley for five or six years. It started from a young Cheyenne who, having lost a near relative, went forth alone to wail, after the usual custom. He fell in a trance and dreamed he wandered over the country, seeing the lost game; finally he came upon a camp, when he met his dead relatives. Buffalo meat was drying before the tents, and cooking over the fire; every one was happy and enjoying plenty. As he stood looking at the scene, a line of light beyond the camp caught his eye; it slowly increased in width and brilliancy until a luminous ray stretched from the village to the eastern horizon. Down this path walked a figure clad in a robe, and lighter in color than the Indians. He proclaimed himself to be the Son of God whom the white men had crucified, and opened his robe to show his wounds. He was coming, he said, the second time to help the Indians; they must worship him, and he would restore to them the game, and there should be no more suffering from hunger, and the dead and the living would be reunited. The white race would disappear; they had done wickedly. Here the Cheyenne awoke.

After the manner of Indians, this man, who lived with the Arapaho, waited some time before he told his dream. Then others had like visions, and began to hear songs. Those who learned the songs gathered together to sing them with rhythmic movement of the body. Following the lines of other ancient Indian cults, the people fell in trances as they danced, and were supposed to talk with the dead and learn of the future life. From this single beginning the "Ghost Dance" grew. By and by people began to tell that the Messiah had been seen in the White Mountains near Mexico, and others heard of him in the mountains of the Northwest. A year or more ago delegations of Sioux, of Cheyennes, and Arapahos and other tribes, went to find the Messiah, and returned with wonderful stories. Some brought back bits of buffalo meat, and ornaments belonging to the dead. The manner of the destruction of the white race was described. Those in the south said it was to be by a cyclone; those in the west, that an earthquake would begin at the Atlantic coast, and, "rolling and gaping" across the continent, would swallow all the people. The northern Indians expected a landslide, and the Indians, by directing when the earth began to move, would not be drawn under.

From the Sioux delegation visiting Washington in February, 1891, I learned that the songs sung at the dance were in the Arapaho tongue; that the dance was not of any stated length, or at any stated time, nor was it preceded by fasting, nor was a feast prepared either during or after the ceremony. The dancing resembled that of the "Woman's Dance," and was performed around a pole, some-

what smaller than that used in the Sun Dance, and out with some of the rites attending the cutting of the Sun Dance pole. During the dance the people did not move rapidly, nor did they simulate the motions of an animal or of the warrior. They closed their eyes, that they might see into the other world. They sometimes wore a skin shirt, fashioned like that of "the man in the West" who taught them of the Messiah, and carried no warlike weapons.

The "Ghost Dance" presents nothing new as a rite, as it holds to old forms in the trance, the manner of dancing, and use of the pole. Its teachings of a deliverer, and the events to follow his coming, are equally old.

The belief in a deliverer can be traced as far back as we have any records of the aborigines. It is one of their fundamental myths. It is notable, in the present instance, that the new Messiah conforms to the old hero-myth in three essential characteristics. First, he is divine. The Indians speak of him as "The Son of God;" and, while this term applies to Christ, it is also applicable to the mythical hero, since he is associated with the mysterious power, the Creator. Secondly, he does not resemble the Indian race, but is of a lighter hue. Thirdly, he comes from the East wrapped in a robe, surrounded by light. In the identification of the mythical deliverer with the Christ of the white race, we see the unconscious attempt of the Indian to reanimate the ancient hero of his myth with all the power of the God of the triumphing white man.

The continuity of life after death, of both man and animals, is undoubted among Indians. The reality of dreams or visions is unquestioned. When a man closes his eyes, or falls into a faint or trance, among his living companions, the pictures he sees are considered to be reflections of actual persons and things, and are never attributed to breaks of memory or imagination. The lost game, the dead friends, are frequently seen in dreams; therefore their continued existence is thought to be proven beyond a doubt; and, as the living can thus enter the presence of the dead and return unchanged to this life, so the restoration of the dead to the living is comparatively a simple thing. This belief has been frequently appealed to in the various struggles of the Indians to recover their lost independence,--one of the best known instances being that of the Prophet, who has sought to encourage the Indians to league together for united action against the white race by promising the vast reinforcement of the dead.

The idea of a future happiness which has in it nothing of former experiences of pleasure to hardly conceivable. Different races and persons, therefore, picture a future life according to their culture; and, although these pictures vary widely in details, they have one element in common,--the absence of mental or physical suffering. The notion of future happiness to the uneducated Indian would naturally imply the restoration of past conditions of life, and this would necessitate the absence of the white race. By our occupation of this continent we have brought about the destruction of the game, of native vegetation in part, thus cutting off the Indian's old-time food supply, interfering with his modes of life and his ancient cults. Moreover, we have crowded many tribes off fertile lands on to tracts of barren soil, where only the government rations stand between the unfortunated red men and starvation. On these reservations we hold the tribe practically prisoners; for, should they attempt to leave their barren hills, they would be driven back by the military. The conviction that ours is a cruel and unjust race has been seared into the Indian mind in many ways. The story of the death of Christ has made a stronger impression upon some Indians than the story of his life of benevolence, and there are many natives who regard the manner of his death as additional evidence of the white man's inhumanity, he not having hesitated to attack the Son of God.\* Such being the Indian's estimate

\*Eight years ago, among the Opallala Sioux, I listened to men arguing the superiority of the Indian's reverence and sacrifice in the Sun Dance over the

of the white race, it is not to be wondered at that he has ventured to ally his treatment with that bestowed upon the Christ, and to predicate the destruction of the common offenders. The version making the earthquake the means of annihilation seems to have originated among the tribes of the Rocky Mountains; while the cyclones and landslides were suggested by those who live where the winds make havoc and earthquakes render regions dangerous to dwell upon. Thus the forms of the catastrophes seem to have been suggested by the environment of the Indians framing the story.

It is an interesting fact that this craze is confined almost exclusively to the uneducated. The Indians affected belong to tribes which formerly lived by hunting, and knew almost nothing of raising maize. It is not unlikely that the "craze" would have died out without any serious trouble, having been overcome by the quiet, persistent influence of the progressive and educated part of the people; but the non-progressive and turbulent elements have sought to use this religious movement for their own ends, while conjurers, dreamers, and other dangerous persons have multiplied stories and marvels, growing greater with each revival. Thus a distrust has grown up around the infected tribes, and a situation of difficulty and delicacy has come about.

In view of all the facts, it is not surprising that these Indians, cut off from exercising their former skill and independence in obtaining their food and clothing; growing daily more conscious of the crushing force of our on-sweeping civilization; becoming, in their ignorance, more and more isolated from a new present, which is educating their children in a new language and with new ideas, -- that these men of the past, finding themselves hedged in on all sides, and shorn of all that is familiar to their thought, should revert with the force of their race to their ancient hope of a deliverer, and to comfort their hearts with the white man's Messiah, who shall be able to rescue the falling Indians, feed their half-famished bodies with the abundant food of aid, so recreate them with their dead, and give back to them sole possession of their beloved land. In a rudely dramatic but pathetic manner this "Messiah craze" presents a picture of folk suffering, and their appeal for the preservation of their race, to the God of their oppressors.

#### PBD-003 THE MIRACLE MAN OF NEW ORLEANS

Fletcher, John M.: *American Journal of Psychology*, 33:113-128, 1922.

During the spring months of the year 1900 there came to New Orleans an old man presenting the typical ideas and makeup of a latter-day prophet, who has made this city a rival of Quebec as a center for miraculous healing. It is reported that in 1900 the pilgrimages to the shrine of St. Anne de Beaupre, near Quebec, including persons who had been healed and those who were seeking to be healed, amounted to 185,000. No account has been kept of those who have visited the New Orleans Miracle Man, but if one were to include those who come merely to see what was being done it is very likely that the number would exceed the total of those who visited the famous Quebec shrine in 1900. It is

curious and rewarding of the Christians, who were not only guilty, by their own account, of murdering God's Son, but who sought to secure through this act their vicarious release from future suffering. This statement I have met many times in different tribes.

interesting to note that the New Orleans Miracle Man is also of Canada, having been born there in 1847. In the veins of many whom he attempted to heal runs the blood of the so-called Acadians, who make up a considerable percentage of the population in certain regions of Louisiana. The 'Cajans', as they are known locally, include a large percentage of illiterate and also a large percentage of those who cannot speak English. It would not be true, to say, however, that only among the 'Cajans' was the faith in miraculous cures able to secure a foothold. There have been many persons of all nationalities, and representing all sections of the country and all strata of society, who have become converted to the belief in the old man's claims. A reporter on one of the city papers, who has recently come from New York, and who says his father was a physician, took the writer to task for asserting that there had been no authenticated case of the cure of an organic disease by the healer. Yet on the whole, as in all such cases, the great background on which the entire movement rests is one of ignorance and superstition. One does not have to do more than to visit one of the open-air demonstrations, and watch the types of faces aflamed in hope and the hands outstretched in pathetic appeal, to realize that this is true.

It has seemed to the writer that this case holds something that is of interest to psychology and that it should therefore be noticed and recorded. The social aspects of the case are now being investigated. Local psychiatrists are also seeking the opportunity to make a study of it. The following account is given with a view to presenting merely the facts and general impressions of the event itself. This account contains the substance of a paper read before the Southern Society of Psychology and Philosophy at its annual meeting at Tulane University in April, 1926.

As to the Miracle Man himself it must be said that very little is known and very little can be found out. His real name is John Cadamy, though on the occasion of his christening an older sister, who is reported by him to have had "foretold," said he was destined to be a prophet and wished him to be called Isaiah. In the family he was called Brother Isaiah, and it is by this name that he still prefers to be known. The circumstances of his christening in this fashion and the force of the suggestion in his name seem to have had much to do with determining his career.

In his early life he reads, so far as has been ascertained, no attempts to effect cures, or to exercise any other unusual gifts.

From Canada he came to America some time in his youth. As a young man, while walking alone in the woods of Nebraska, he claims to have heard a divine voice telling him that he was called upon to heal people of diseases. This seems to have meant to him that he should desert his family. He relates that he agonized with God over this matter far into the night, but arrived at no solution. The following morning his wife, who seems also to have had the same revelation about him, announced that she and their sons would have to give him up so that he could devote the rest of his life to the work to which he had been called. Since that time he has traveled in every part of the world healing by prayer and, like the apostles of Christ, earning his living meanwhile. He has apparently operated in many other American cities, although not so conspicuously as in New Orleans. In certain instances he seems to have been "licensed" to legis by the city authorities.

In spite of his popular title of the "Miracle Man," he does not lay claim to performing miracles. He says that the power to heal diseases comes to him periodically, but that all he does is done through the goodness of God. He disclaims being a Christian Scientist, though like the members of that communion he believes that God does not will disease. The truth of the matter seems to be that he is probably incapable of working out any consistent notion of what he proposes to do. He uses an oil of wintergreen to rub those whom he treats, but



he says that this has an curative properties, and is merely to decrease friction. He makes use of magic by blowing handkerchiefs and sending them to patients who are not able to reach him. In watching his healing one day the writer heard him speak of epilepsy as demonic possession. He said, "I have had a great deal of experience with them cases. And I tell you when their epileptic fits come out they makes a lot of noise." He presents all the appearances of being a devout, simple-minded religious fanatic. He could easily have made a Peter the Hermit or a St. Simon Stylites. Those who know him privately and intimately speak well of his character and absolve him from conscious fakery. Whether he can survive the notoriety thrust upon him remains to be seen. He has been repeatedly offered money, but either from fear of the law or from principle he seems to have refused it, though he does accept gifts. There are rumors that he has received money, though these are difficult to prove. Temptations of an character are also assailing him. Certain of his female 'cures' do not hesitate to kiss him and fondle him in public. This, coupled with the fact that he preaches that a wife should leave a husband if God calls her, makes it entirely possible that the matter may at any time have a sudden and unseemly ending.

The story of how he came to attract such extraordinary attention not only illustrates the human craving for the supernatural, but at the same time indicates the responsibility of the public press, a responsibility which is not always fully appreciated. For several days the papers of New Orleans debated among themselves whether they should give publicity to what was being done. They presently decided in the affirmative; and about the first warning that the public had was the burst into print of accounts of wonderful cures effected by a strange old man in a little house-boat on the road banks of the levee at the foot of Calcasieu Street. These accounts produced a marked impression on the entire city. Everywhere on the streets and in the homes people were talking about Brother Isaiah. Through the press dispatches reports went to other cities. Moving-picture concerns seized upon the new sensation and scattered the distorted rumors still farther. Even the billboards of Broadway, New York, gave space to this thriller.

It seems that the healer had been at work for some time prior to his burst into notoriety. He had in fact been to New Orleans once or twice before and had made acquaintances along the river-front. His reputation began to grow in the earlier months of this year to such an extent that it became necessary to call extra police-help in order to disentangle the automobiles that came to his home. There was even at this stage a curious mixture of the poor and the rich among his patrons. Some hobbed on foot, others came in elegant limousines. The people who first went to see him were those interested in being healed or in having some member of the family treated. After the frontpage account in the newspaper came out, the health-seekers were joined by a throng of the curious. Extra street-cars were put on the line leading to that portion of the river front. Great masses of pedestrians and people in automobiles crowded the levee daily. The number of persons seeking treatment assumed alarming proportions. The sick began to arrive on all trains, without taking the precaution to make inquiry about accommodations. The charitable organizations, the hospitals, the Red Cross, and the city officials found themselves with a problem on their hands. Letters, telegrams and long-distance telephone calls poured into the offices of the newspapers; they had apparently got more than they bargained for. Conditions of great distress began to spring up about the old man's place of operation. Invalids who perhaps had not left their rooms or beds for months came and stood for hours in the cold March wind and sometimes in the rain awaiting their turn. Patients who were almost delirious with fever would stand with their head on the shoulder of a relative in the long line of suffering. An occasional groan of pain would elicit the comforting statement that their turn would come soon. No toilet accommodations had been provided, much less any shelter or food. It became

a problem of serious concern to the State Board of Health. It became necessary to protect the health of the community, and at the same time it seemed wise to avoid any appearance of persecution of those who were holding with mad fanaticism to the faith of the old healer. One can imagine how unwelcome the whole procedure was when told that he was rubbing and manipulating his patients one after the other all day and most of the night without even washing his hands. It was reported that leprosy had appeared among his patients. On account of these dangers it became necessary to remove the tents that had been set up by the Red Cross on the levee for the protection of those who had left their homes to come for the treatment.

In the height of the excitement of the early days of his recent popularity one could hear on all kinds wonderful stories about what the 'miracle man' could do and had done. Some said he was Christ appearing on earth again. The story went around that he had once stopped a shower of rain by holding up his hand. The credulity and the will to believe upon the part of the well, and the desperate hope of the sick, made out of the situation a veritable rumor factory. An appreciation of the setting of this case seems to be necessary in order to get an idea of the atmosphere out of which these rumors grew. Miss Doris Keet, a former student of the writer and a graduate of Newcomb College, Tulane University, was assigned by the Times-Picayune of this city to write the matter up. She remained on the assignment until threatened with violence by one of the self-appointed managers, who was suspected of carrying on a petty graft-scheme by which he could for a consideration secure prompt attention from the healer. Miss Keet thus describes the situation as she saw it March 13th:

"Greatly swelling crowds, excitement rising to white heat throughout the city and community, dozens of new 'cures' and a few bits of conflicting testimony were results of another day and night of 'faith healing' on the levee off Audubon Park, where John Cudney, or 'Brother Isaiah,' has worked steadily for three days and three nights, praying for the healing of the sick and the defective.

"His great frame sagging slightly with weariness, his face almost as white as his long hair and his snowy beard, the old riverman had hardly paused for rest or food since the first rush upon his little houseboat began Wednesday afternoon. As he peered over some twisted form on a little rickety-wooded platform in the mud, hemmed in so closely by the crowd that scarcely a breath of air reached him, he pauses for a moment to swallow a few mouthfuls of orange or pineapple juice, passed to him over the heads of the crowd. Back in the tiny houseboat, that was almost sunk Thursday when the mob pressed aboard, Mrs. Goldberg, the 17 year old sister of the 'healer', prepared the only nourishment he found time to take."

The following is given as a picture of what the situation looked like March 14:

"Fascinated by joy from men, women and children who professed to be cured in an instant by 'Brother Isaiah's' powers continued to go up from many sources Friday.

"Watch fires were built all along the levee and down on the river beach late Saturday night by those who were determined to obtain close-up positions when 'Brother Isaiah' resumed his practice, which it was said he would do early Sunday morning. The bivouac of the 'faithful' presented a weird appearance, and hundreds of sight-seers journeyed in automobiles to look on the strange scene. Carnival and the Day of Judgment combined best expressed the atmosphere on the Audubon Park levee Saturday when 5000 persons at one time gathered to witness the 'faith healing' of John Cudney, the 'Brother Isaiah' who has thrown the city into a turmoil with his alleged 'cures'.

"By nightfall (of March 14) a village of little white tents had sprung up like a growth of mushrooms along the embankment. The American Red Cross had

contributed ten tons and one hundred oaks, and will provide more if necessary to house the unfortunate whose hope drives them to remaining at their posts day and night. . . . A large platform will be built for him later, since the 'healer' has refused all offers of a hall, declaring that he must do his work in the open air on the spot where he first began.

'Surroundings rapidly are becoming dangerously insanitary upon the levee. Since Sunday the spot has taken on the aspect of a lot just vacated by a circus. The ground is trampled bare for a long distance, and every vestige of grass has been wiped out by the thousands of feet. The walking line stands at the foot of the levee toward the river, and in the hollow has collected a drift of tattered papers, rotting fruit, fragments of food, broken bottles, torn boxes, ---all at the feet of the wretched ones who have stood for more than twenty-four hours packed between the ropes about the runway. In the sultry, banal atmosphere of Monday afternoon the place was repellent to every sense, yet the dreary line still stood with abject patience, scarcely speaking among themselves or noticing the reduced ranks of the sightseers who stood on the higher ground.

'Fetty commerce thrives all around the outskirts of the crowd about the 'miracle man'. The peanut, popcorn, soft drink, and fruit wagons are there and the latest addition to that thoroughfare is an array of photographers of Brother Isaiah at work. They hang artistically upon the red brick wall of the Marine Hospital.'

With reference to the reputed cures it seems quite difficult in this instance to find even the kernel of truth which must as a rule constitute the basis of fact upon which such excited rumors take their rise. It is needless to say that no organic diseases have been successfully treated by this healer. Out of the vast numbers who have been to him for treatment there must have been a percentage of cases of a functional character, which were amenable to just the kind of treatment he offered. But when one starts out to locate these cases they are difficult to find. One can find all sorts of stories about what was said to have been done, but substantiated instances are not so easy to find. And the interesting aspect of the case is that the minds of the crowds did not seem to need substantiation. They were quite ready to believe the miraculous reports without it. It was accepted the verdict of the crowds that surrounded the old man in the earlier days of his work here one would have to believe that tuberculosis, cancer, paralysis, Bright's disease, blindness, deafness, dumbness, and practically all other forms of human affliction yielded with equal readiness to his methods.

The case that gave the initial impetus to the wild rumors of the earlier days was that of a little girl who was born blind and who was reported to have had her eye-sight restored. The rumor of this cure flew like wild-fire over the city. This was followed by other reported cures in such rapid succession that it has never been possible to check up the case to see what the facts were. It sounds very similar to many other cases that were investigated and found to have no basis of fact whatever in them. There is at least one case in which subsequent investigation confirmed the rumor that a cure had been effected. This was the case of a man who had what was called rheumatic paralysis, and who had been unable to dress himself. He seems to have been cured and to have remained cured up to date.

The cases that were reported as cures were very numerous. A sample of this kind of cure, and at the same time a sample of the typical behavior of the crowd-mind, are afforded in the case of Benny Wilson. It seems that this young man had been a cripple since he was five years of age. He made his way to 'Brother Isaiah' on March 15th, and after much difficulty secured treatment. The crowd was much interested in Benny's case, and in general quite excited. After the treatment a dense crowd flocked around him in intense curiosity. They shouted, "He is walking!" others said, "No, he is running!" Women

screamed, while men swore terrible oaths to give vent to their feelings. The crowd was so thick about him that it was quite impossible for anyone to see what was going on, but from those who were near him it was subsequently found out that he had neither been running nor walking, but that he had been carried forward bodily by persons who had caught him under the arms. It was stated that it was doubtful whether his feet touched the ground at all during his exciting journey. Before he reached his home the runner came back that he was in the same condition as before the treatment. A man is reported to have gone up for treatment of cross-eyes. The crowd, having forgotten what he was being treated for, and having taken him for a paralytic, shouted 'another miracle' when he walked away. Another case of this character is that of an imbecile girl who was dumb. She was brought by her mother to be treated. While waiting on the outskirts of the crowd she began to chatter, doubtless in her usual fashion. The crowd took her to be a 'cure' and began to gather around her to hear her verifications. She naturally grew excited and talked the more vehemently. The mother strove in vain to tell the crowd that the child had not even seen the miracle man.

The extent to which the excitement and bewilderment penetrated the city is illustrated by the story of the man who had some time ago lost one eye. Without the knowledge of his wife he had a glass eye inserted. When he went home at night his wife asked in surprise what had happened to him. He replied that he had been treated by Brother Isaiah. Before he could control the situation his whole family fell on his neck and rejoiced.

The Chief of Police of New Orleans sent a test case about the middle of March in the person of Mr. John Mayes, formerly conductor on the Illinois Central Railroad. Mr. Mayes had suffered a stroke of paralysis about a year previously, which resulted in hemiplegia of his right side. His speech has also been interfered with, so that he is able to say only two words, 'no' which he repeats over and over, and 'Lou' the name by which he now designates his wife. For three days he had waited his turn for treatment. Both he and his wife had the utmost faith that the treatment would be successful. When his turn finally came he was carried onto the pier by the negro body-servant who is his constant attendant, and was placed in a chair in the presence of the healer. The account of the treatment of this case was:

"The afflicted man sat with his eyes glued to the face of the 'healer' while hope fairly blazed from them. Back of him his wife stood, with hands clasped tightly together, whispering encouragement. The 'miracle man', gaunt and weary, in his long blue garments, like the apron of a surgeon, bent over him with faith as fervent as the hope of the patient. Kneeling beside the chair, the big negro, his hands trembling with excitement, gently reassured the overcast and cast of the paralytic and held the little bottle of oil while the 'miracle man' rubbed the afflicted shoulder and forehead of the patient. After several moments of prayer he suddenly looked into the eyes of the patient and cried, "Say your name, say John!" The throat of the paralyzed man contracted and swelled with the effort; his eyes never left the eyes of the 'miracle man', but the only sound that came forth was "No! no! no!" "Yes", cried the healer, "No! no! say yes!" Patently the man tried again and again, but his eyes filled with tears as he failed again and again. "Say Praise God!" the healer cried again. "Call upon the Lord, my brother!" But the name that forced itself from the agonized lips of the paralyzed man was the name of the wife behind him, who burst into tears at the sound. The old healer in his anxiety to help the man made a figure almost as tragic as the other two. He tried again and again, with prayer, encouragement and friendly urgings, but at last the paralytic was carried away in the strong arms of his servant with the promise of 'later treatment', which perhaps would be effective."

These test cases did not dent the courage of the healer nor end the expectation of the believers.

The case of Emile Lacourne is of interest. Lacourne is the locally well-known blind newsboy-musician, who is reported to be one of the first introducers of that world-renowned New Orleans product, jazz music. When a newsboy on the streets he is said to have attracted the attention of Olga Motheresele and also of Sarah Bernhardt, each of whom desired to send him away to be educated in the schools for the blind. After being treated by the healer, Lacourne was told to go to his home and keep his eyes closed for 24 hours, then pray and open them. These instructions he carried out with eager care and interest, only to experience the terrible shock of disappointment in the end.

The recent stages of the work of the miracle man have been characterized by increasing doubts concerning his powers, though he still has a nucleus of followers who hang on his lips for every word he utters in his disconnected sentences. The reverence and breathless gaze which formerly characterized the attitude of the crowd toward him personally have markedly decreased, so that certain of his Italian patients seem to have threatened to "got him" for discriminating against them.

The moral which is apparent in this case scarcely needs to be pointed out. The lay public cannot easily be disturbed nowadays by the superstitious of the Middle Ages when it comes to organic diseases, such as infections and the like. General knowledge of this class of diseases has spread very rapidly, especially within recent years. The old-time medicine man has gone out of business. But when it comes to the mental side of disease there is still a lack of training upon the part of the average physician, and a susceptibility to the wildest superstitions upon the part even of intelligent laymen. In the realm of mental diseases it is not only possible for dignified cults which are indefensible in the light of modern knowledge to thrive, but we are actually left with primitive medicine men on our hands. John Cutney, alias Brother Isaiah, is one of them.

#### PBD-004 MASS SUGGESTION, HYPNOTISM, AND HYSTERIA

Marx, Robert W.: The Story of Hypnotism. Prentice-Hall, New York, 1947.

In 431 A. D. in Christianized Egypt the brethren were already steeped in ecstatic battles of hysteria. The Nestorians and the Monophysites were hard at each other's throats, attempting to determine--through vision, delirium, and superior force--whether Jesus was spirit alone or whether he was simultaneously spirit and flesh, an alternating or co-conscious amalgam. Meanwhile, a certain ambitious monk, Timothy the Cat, had special visions on the subject. To give these full play he slipped about at night, sitting in and out of the other monks' cells and supplying a running commentary on his latest revelations.

Soon, inflamed by the whispering campaign set in motion by Timothy, all of Alexandria went berserk. The acolytes of both gangs, Monophysite and Nestorian, crowded about on hands and knees. They barked like dogs. They were shaken out of one another with their teeth. They rolled on the streets in diabolical frenzy, slaves and freedom as well as monks and clergy. (pp. 195-196)

## FBD-006 THE "JUMPERS" OF MAINE

Anonymous: *Scientific American*, 44:117, 1881.

Dr. George M. Beard, in a paper read before the American Neurological Association, records some curious facts in regard to a singular class of persons whom he met in the region of the Moosehead Lake, Maine, and who are known in the language of that region as "Jumpers," or "Jumping Frenchmen." These individuals are afflicted with a peculiar nervous affection which manifests itself by sudden and explosive movements of the body under the influence of abnormal excitation, by a passive submission to orders authoritatively given them, and by an irresistible desire to imitate the action of others. The person thus afflicted jumps at the slightest sudden touch, and when an order is given him in a loud, quick tone he repeated the order and at once obeys. If, for instance, on the shore of a river he be ordered to jump into the water, he exclaims "Jump in," and at once executes the order. If he is told to strike one of his companions he exclaims, "Strike him," and the act follows the words.

Dr. Beard made the following experiments with one of these persons, who was twenty seven years of age. While sitting in a chair with a knife in his hand, about to cut some tobacco, this man was struck sharply on the shoulder and told to "throw it." Almost as quick as the explosion of a pistol the knife was thrown and stuck in a beam opposite; and at the same time he repeated the order, "Throw it," with a certain cry as of terror or alarm. A moment after, while filling his pipe, he was again slapped on the shoulder and told to "throw it." Immediately he threw the pipe and tobacco on the grass, at least a rod away, and with the same suddenness and explosiveness of movement as before. Whenever this man was struck quietly and easily, and in such a way that he could see that he was to be struck, he made only a slight jump or movement; but when the stroke was unexpected he could not restrain the jumping or jerking motion, although the cry did not always appear. Like experiments were made on other individuals of different ages with the exhibition of the same peculiar phenomena.

Dr. Beard classes this "jumping" as a psychical or mental form of nervous disease, of a functional character, its best analogies being psychical or mental hysteria—the so-called "servant-girl hysteria," as known to us in modern days, and as very widely known during the epidemics of the Middle Ages. Like mental or psychical hysteria, the jumping occurs not in the weak, or nervous or anemic, but in those in firm and unusual health; there are no stronger men in the woods, or anywhere, than some of these very "jumpers." Dr. Beard regards the disease as probably an evolution of tickling. Some, if not all, of the "jumpers" are ticklish—exceedingly so—and are easily irritated when touched in sensitive parts of the body. It would seem that in the evenings, in the woods, after the day's toil, in lieu of most other sources of amusement, the lumbermen have teased each other by tickling and playing and startling timid ones, until there has developed this jumping, which, by mental contagion, and by this practice, and by inheritance, has ripened into the full stage of the malady as it appears at the present hour. The malady is fully as hereditary as insanity, or epilepsy, or hay fever. Dr. Beard in four families found fourteen cases, and by the study of these it was possible to trace the disease back at least half a century. The malady seems to be endemic, confined mainly to the north woods of Maine and to persons of French descent, and it is psycho-contagious, that is, can be caught by personal contact, like cholera and hysteria.

## PBH-001 FASCINATION IN MAN

Carran, W.: Nature, 82:318, August 5, 1880.

Having frequently seen it stated in popular works on natural history as well as in some books of travels (chiefly Australian) that certain snakes possessed the power of so fascinating, with their gaze, birds and other creatures as to be able to seize upon and devour them without any difficulty, I am induced to inquire if such a power is peculiar to the serpent tribe or not, and incidentally to ask if any instances of its influence or extension can be traced, up the scale of creation, to man himself. Being of opinion that such is the case, while it has occurred to me that many of the fatal accidents that occur in the streets of large cities, such as London, &c., might be ascribed to some such agency or sensation, I am induced to call attention to the circumstances in these pages, and to submit the following as my own personal contributions towards the inquiry---

Describing certain incidents of the siege of Gibraltar, Drinkwater says, "History," p. 76, that "on the 9th Sept. Lane, ... lost his leg by a shot on the slope of the hill under the castle," and the italics are mine throughout. "He saw the shot before the fatal effect, but was fascinated in the spot. This sudden arrest of the faculties was not uncommon. Several instances occurred to my own observation where men totally free from any had their senses so engaged by a shell in its descent that though sensible of their danger, even so far as to cry for assistance, they have been immediately fixed to the place. But what is more remarkable, these men have so instantaneously recovered themselves on its fall to the ground as to remove to a place of safety before the shell burst."

Alluding to the first casualty that occurred at Cawnpore during the siege of the entrenchment there in 1857, Morley Thomson says ("The Story of Cawnpore," p. 69) that "several of us saw the ball bounding towards us, and he (McGuire) evidently saw it, but, like many others whom I saw fall at different times, he seemed fascinated to the spot"; and an old and now deceased departmental friend, who went through the whole Crimean campaign, assured me that he was once transfixed, disoriented, he called it after this fashion in presence of a shell that he saw issuing from Sebastopol, and whose every gyration in the air he could count. Other military friends have discussed the point with me in this same wise, and I think there is some allusion to it in one or other of the works of Larry, O'Rourke, Ballingall, or others of that ilk.

## PBH-002 INDIAN CONJURING AND HYPNOTISM

Henderson, W. Henry: Society for Psychical Research, Journal, 5:126-128, 1892.

Some of our readers may have seen--either in the Daily Graphic of November 23rd or reproduced in Light of December 9th--a letter narrating the performance of a "devil-woman" with phosphorescent hair, in a chamber in a temple at Benares, who appears to have used hypnotism as a part of her method of wonder-working. The writer describes how "an old priest brought to the doorway a small goat. It looked in and seemed very much frightened. No sooner did the

woman raise her hand than it became still, slowly advanced towards her and, as it reached the platform, fell down and was quickly drawn towards her, lying perfectly passive on its side." "She then went through the same sort of thing" with a cat, two pigeons, and a snake, "making the snake stand perfectly perpendicular." A oodite was then fetched by the writer's servant. "The woman ordered him to throw off his loose gown, so that he had nothing on but a loincloth"; then, "after a few passes, she placed her hand under his, and slowly raised him off the ground to the height of about two feet. . . . She then made a few hypnotic passes, and he became quite still, and by a deft turn of her hand she somehow turned his body sideways and raised him to that position as high as her own breast." The writer subsequently found the oodite's arms "rigid as iron, his fingers and hips the same." The process was then repeated on the writer himself. The fee for the performance was two rupees.

Mr. Barkworth has obtained from the writer---Mr. W. H. Henderson, of 27, Eaton-terrace, S.W.,---the following additional account of his experiences.

I was in Benares about a week; I have no friends resident there, and only saw the woman in question on the day before I left. She herself was probably resident in the town, but did not appear to be, in any public sense, or show. She was in a sort of temple, of which I forget the name, but it was in a central part of the town, and near the famous Cow Temple. From the interest the temple-keepers showed at my arrival I inferred that European visitors were not very frequent. The room into which I was brought was dimly lighted by one lamp, but the light fell on the face of the woman, which appeared to be of extreme age, very hideous and wizened; the eyes had a peculiar glittering expression. She wore no head-dress of any kind, and her hair appeared to stiffen and emit sparks (such as are sometimes produced in frosty weather when using a trestlecomb) comb). The goat was drawn to her without any contact, as though with a magnet, and the pigeons fluttered towards her in a way quite unlike flying; I cannot be sure whether their wings were expanded at all or not. The most singular neutral performance was that of the snake, which stood perfectly erect and rigid on the point of its tail; I could see clearly that the tail was not curled on the floor at all.

My servant was a Calcutta man, though he had been in Benares before. He seemed to view the whole performance with dread and dislike, and refused to submit himself to the woman's operations in any way. He, however, fetched in a boy from the street---a full-grown lad. When the woman lifted the boy from the ground she did so by placing one of her outstretched hands under one of his, and as the boy was rigid she raised his whole body off the ground. Once she put her hand under his elbow, and in turning him over horizontally she used both hands. He was then apparently floating horizontally in the air. I did not pass my hand or stick round him to test the presence of artificial support, but I feel fully confident that there was nothing of the kind. At the time the lad was thus floating his feet were pressing against the woman's body, and she had one hand in contact with him, but I cannot exactly remember where. I cannot say whether the boy was conscious or not, but his eyes were open.

When I was raised from the ground I felt that my feet had left it, but, of course, I cannot tell whether this was an hallucination or not. I retained perfect consciousness all the time and a perfect recollection afterwards of all that had occurred. I had never previously been hypnotized, and do not at all know that I was so then, though my sensations were peculiar. Most of her movements were exceedingly quick and rapid. The boy had his arms in a cruciform position when I attempted to put them down. I cannot be perfectly certain of the absolute correct positions of the woman's hands in raising the lad, or when she placed him horizontally, but have described to the best of my power and recollection.



## PBH-003 DR. HACK TUKE ON HYPNOTISM

Anonymous; Science, 5: 13-16, 1886.

Three interesting points are brought out in the following book review: (1) the resemblance between the thoughts of some hypnotized subjects and those encountered in out-of-the-body experiences; (2) the ability of some hypnotized subjects to hold their limbs in odd positions for long periods; and (3) the induction of different hypnotic states in either side of the body.

The author's main object is to point out the resemblance between natural and induced somnambulism, which latter term he uses as another name for hypnosis, and to call attention especially to the former mode of aberrant mental action as an important aid to the study of mind. His own article on natural somnambulism, based on answers to a circular sent out six years ago, contains little that was not known before; but his continuation into the mental condition of the hypnotic subject is of greater interest. He finds that consciousness may persist, or that it may pass rapidly or slowly into complete unconsciousness; the manifestations are not dependent upon its presence or absence. One subject, Mr. North, lecturer on physiology at Westminster hospital, says of himself at first, "I was not unconscious, but I seemed to exist in duplicate; my inner self appeared to be thoroughly alive to all that was going on, but made up its mind not to control or interfere with the acts of the outer self," and later, "I know perfectly well that I was playing the fool, i. e., that my outer self was doing so, the inner self looking on, too idle to interfere;" and later still, "Here I appear to have been absolutely unconscious for some moments." Another subject says, "Mr. Hansen told me that my hair was on fire. I touched my head, and saw that he was wrong. He then told me to put my head into cold water, directing me at the same time to a gas-burner. I felt it was not water. I felt the heat, but yet I could not refuse putting down my head and trying to wash it." Voluntary control over thought and action is suspended; reflex action of the cerebral cortex, in response to suggestions from without, comes into play; and, so long as consciousness is retained, the perception of this automatic cerebral action conveys the impression of a dual existence. Dr. Tuke's theory of the hypnotic state does not differ from that of Haldenbach: he holds that part of the cerebral cortex is exhausted by prolonged and monotonous excitation of certain sensory nerves, and that other parts, unexhausted, respond all the more acutely to stimulation. Whether hypnosis is injurious to the subject, or whether it has any therapeutic action, are questions that remain undecided. Mr. North found, after the third and last experiment tried upon him, that any exercise of close attention tended to bring on the same sensations as those which ushered in the hypnotic sleep.

From observations made upon patients at the Salpêtrière who were subject to hysteria major, Charcot and Richer were led to distinguish three distinct forms of hypnosis, ---the cataleptic, the lethargic, and the somnambulistic. The last is the form which bears the closest resemblance to the ordinary mesmeric trance. In the cataleptic state, the limbs of the patient remain for a long time, and without effort, in any position in which they may be placed; in the lethargic the muscles are relaxed, but they contract strongly and definitely under gentle mechanical stimulation (hyper-sensibilité neuromusculaire des hypnotisés, first observed by Mr. Charcot in 1873). The lethargic subject may be made cataleptic by simply pulling upon the eyelids and exposing the eyes to sufficient to put him back into the condition of lethargy. But, what is most remarkable, if one eye is kept open and the other shut, the singular phenomenon

is witnessed of an individual divided into two parts by the median plane. One half of the body, that which corresponds to the closed eye, presents the muscular susceptibility characteristic of the lethargic state; the other, corresponding to the open eye, is in a condition of catalepsy. Mr. Charcot very properly says, that to suppose that an ignorant person, exposed for the first time to this experiment, should be able to invent such an extraordinary phenomenon as this, would be 'truly childish.' But, besides this presumption, he has an infallible method of detecting stimulation. A very vigorous person, not hypnotized, may keep his arm extended as long as the cataleptic; but it is useless for him to try to pretend that it does not fatigue him. The operator has only to attach a pneumograph to his chest. The tracing which registers his respirations soon discloses great irregularity in their rhythm and their volume, and in this way his own muscles are forced to write down the evidence of his attempted deception.

#### PBH-004 [THE MYSTERY OF HYPNOTISM]

Kaestler, Arthur: The Roots of Coincidence, Random House, New York, 1972, pp. 125-126.

A word should be said in this context about the hypnotic rapport. Until the middle of the last century, hypnosis was treated as an occult fancy by Western science (although in other cultures it was taken for granted); today it has become so respectable and commonplace that we are apt to forget that we have no explanation for it. The evidence shows that a suitable subject can be made temporarily deaf, dumb, blind, anaesthetized, induced to experience hallucinations, or re-live scenes from his past. He can be made to forget or remember what happened during the trance at a snap of fingers. He can be given a post-hypnotic suggestion which will make him perform the following day, at 5 p.m. precisely, some silly action like untying his shoelaces--and then find some rationalization for it.

The uses of medical hypnosis on suitable patients in dentistry, obstetrics and dermatology are well known. Less well known, however, are the experiments by A. Mason and S. Black on the suppression of allergic skin responses by hypnosis. Patients were injected with extracts of pollen, to which they were known to be allergic, and after hypnotic treatment, ceased to show any reaction. In other patients hypnosis suppressed the allergic reaction against the tubercle bacillus. Now hypnotic suggestions can alter the chemical reactivity of tissues on the microscopic level in anybody's genes. After Mason's remarkable cure by hypnosis of a boy of sixteen suffering from ichthyosis (skin-skin disease, a congenital affliction previously thought to be incurable) a reviewer in the British Medical Journal commented that this single case was enough to require "a revision of current concepts on the relation between mind and body".

## PBJ-001 PARAMNESIA IN DAILY LIFE

Smith, Theodate L.: *American Journal of Psychology*, 24:22-44, 1910.

The word *paramnesia* as it occurs in this paper is used in its broader meaning and is applied not only to the phenomenon of apparent familiarity with something previously unknown, the *deja vu* of the French to which it is sometimes restricted, but to the whole group of errors or illusions of memory as usually distinguished from amnesia, but which I believe can be shown to involve an element of amnesia upon which the identity depends. Some years ago, in consequence of a personal experience, my interest was aroused in these phenomena as they occur in normal individuals; and I have since then, as opportunity occurred, recorded cases of which I was able to obtain a more or less complete analysis. The material thus accumulated now amounts to about forty-five cases, which fall into three groups or types which are explicable in accordance with the psychological laws of memory.

Memory images as distinguished from those of the imagination are characterized by a conscious reference to the past, however dim and vague this may be; and if this is lost, it becomes impossible to distinguish between the two, — a fact which is sometimes of considerable importance in the explanation of plagiarisms which may, from this cause, be absolutely unconscious and thus quite innocent of any intentional deception. Helen Keller's well-known unconscious plagiarisms at the age of twelve, which caused her so much unjust suffering, furnishes an excellent example of such a case in which the associations with the past having been lost, a story written by Miss Casby was reproduced as her own. The circumstances were as follows: The autumn after Helen had first learned to speak, she spent summer and fall at the summer home of her family in Alabama and Miss Sullivan described to her, in her usual vivid fashion, the beauties of the autumn foliage. Helen wrote a little story called "The Frost King" which she sent to Dr. Saagman as a birthday present. The story was a remarkable production for any twelve-year-old child; and for a blind child, a marvel, abounding as it did in vivid descriptions of color. Dr. Saagman was greatly pleased with it and published it in "The Monitor." A few weeks later this story was discovered to be an almost verbatim reproduction of a story written years before by Margaret T. Casby and published in a book called "Birdie and Her Friends." Miss Sullivan had never seen this book and Helen, though finally convinced that she did not originate the story, could recall absolutely nothing of the way it had come to her. So far as she was concerned, the story, in spite of all her painful efforts to recall the circumstances by which it had come into her mind, still seemed to be her own creation. The explanation was finally found in the fact that four years before, Helen and Miss Sullivan had spent the summer at Brewster with a friend, Mrs. Hopkins, who possessed a copy of Miss Casby's book and who probably, though she could not definitely recall doing so, read it to Helen during Miss Sullivan's absence on a vacation. Helen had at that time been under Miss Sullivan's instruction scarcely a year and a half and had learned her first word after Miss Sullivan's arrival. The story was read to her by the only means of communication then possible, by spelling the words into her hand. It could have conveyed little or no meaning to her mind, but the spelling of strange words probably aroused and interested her. It is little wonder that, when four years later the words came so readily to her pen, all previous associations with them should have been lost and they should seem her own. Many years later Miss Keller wrote, "It is certain that I cannot always distinguish my own thoughts from those I read, because what I read becomes the very substance and texture of my mind." Though it is natural that long-lingering associations should be more

readily confused in the absence of visual and auditory sensations, this confusion is, in varying degrees, a common phenomenon of memory. An instance in which this confusion appears in reversed form is illustrated by the experience of a very bright woman who during a discussion on literary topics quoted a very apt passage from *Stair*, the English critic, which she had read a day or two previously. In looking up this quotation, however, she found somewhat to her confusion that it was non-existent, being, in fact, her own commentary upon a passage which she had read in *Stair*.

The attribution of quotations or ideas to wrong sources is so common as to need no illustration; and the feeling of certainty attached to these distorted memories is often exceedingly strong so that a message through the entire works of an author may fail to convince the subject that he has not somehow overlooked the passage sought. Misquotations, also, in which perhaps the idea of the author is altered or even completely reversed, may be accompanied by this same feeling of certainty as to the correctness of the version given.

In every complete normal memory three elements may be distinguished: (1) a past experience belonging to me; (2) belonging to me in a particular manner, i. e., as something which has originated through sense-experiences or as a mental activity of which the concomitants are reproduced with more or less fullness; (3) the experience is located in past time with more or less definiteness. In paramnesia, the illusion or distortion may be due to the impairment of any of these three elements. It may consist in the transference of another's experience to oneself or *vis-a-vis*; in the addition of false concomitants or imaginary additions to actual events; in the dropping out of some necessary concomitant; in a confusion of mental and sensory experiences; in an apparent recognition of objects really seen for the first time; or in a false localization in time. Paramnesia have until very recently been chiefly studied in connection with hysteria or insanity where the striking and exaggerated forms occur, and discussions of the subject are to be found chiefly in the literature of psychiatry. Yet of the insipient and less exaggerated types, the daily experience of normal individuals furnishes abundant examples. Indeed so common are they that we rarely think of them as connected with the paramnesia of the psychiatrists. But let anyone undertake to describe some trifling event which occurred two or three weeks ago, and he will find the insipient prototype of some of the greatest diseases of memory, though in themselves quite devoid of abnormality. He will probably have a feeling of uncertainty as to the exact date of the occurrence; or if he thinks he remembers it with certainty he is quite likely to find himself mistaken. If he gives up the attempt to locate it exactly and refers it to last week or the week before, his confidence in such a degree of accuracy may prove to be misplaced. Some details will have dropped out, others will be slightly distorted, and very probably some which belong in other connections may be added. Sometimes we have a dim consciousness of these inaccuracies and perhaps even say, 'If I remember rightly' or 'If my memory does not deceive me;' at other times, we are so sure of our accuracy that objective proof is needed to convince us of our error.

Now is this inaccuracy confined to experiences located relatively far back in time. The same tendencies appear in insipient form in laboratory and Savage experiments, where the recall follows immediately upon the experience. In Dr. Kikine's experiments, the number of repetitions necessary to reproduce a Japanese character by drawing, was, in some instances, perceptibly increased by a false memory due to the distortion of the true image through an association of similarity. In one case, this was so marked that distinct successive exposures of the Japanese character were necessary before the false image was finally set aside and the figure correctly reproduced. In Savage experiments,

It has repeatedly been shown that in describing a picture immediately after it has been seen, objects not contained in the picture are given, the position and number of objects are altered and colors are falsely named. These falsifications are considerably increased through unconscious suggestions received from questions. For instance, in the demonstration of his method given by Prof. Stern at the Conference held at Clark University in the fall of 1903, the subject of the experiment when asked if there was anything else against the wall, in addition to what had already been described said: "Yes, there was a cupboard." And when asked its color he answered "brown" when questioned as to whether the table had a cover on it he answered "yes" and when asked to describe its color, affirmed that it was white. Neither cupboard nor table cover was represented in the picture. In the *Asanagy* literature, now of considerable extent, and in that of experimental psychology, may be found the germs of every type of paramnesia. Even in experiments with very simple material, the addition or distortion of visual elements, the transference of letters or syllables belonging in one series to another, wrong localization within the series and even the feeling of 'seen before' (identifying paramnesia) attached to a letter or syllable seen for the first time are all typical errors. In Abrahamson's experimental investigation of the illusions of memory, special attention was given to the study of identifying paramnesia which was artificially produced under laboratory conditions. In these experiments words in a series seen with distracted attention were invariably referred to a preceding series in which they had not occurred.

This particular form of paramnesia or double memory in which a new experience is accompanied by a feeling of having been experienced before (i. e. in its slighter forms, very common among normal individuals. Kraepelin even went so far in one of his earlier works as to classify it as belonging almost exclusively to normal individuals; but later in the seventh edition of his *Lehrbuch der Psychiatrie* evidently came to a different conclusion, for he there says that "this sometimes occurs transiently in normal life; but in disease may last for months and is particularly characteristic of epilepsies. Hallucinations of memory also occur in paranoias, in paranoic dementia and in maniacal forms of manic-depressive insanity." Ribot speaks of the *deja vu* as rare and this may perhaps be true of the more extreme cases which partake of the nature of an hallucination; for I have been able to obtain, at first hand, but two analysable cases and in only one of these was the analysis, which is here given, fairly complete.

On entering a certain room in the Albrechtsburg at Meissen, which contained a painting of the abduction of the two sons of Rurfort Friedrich the Gentle (1448) by Karl von Kaden, W. was vividly conscious of having been in that room before and of having seen the painting; there was, moreover, a recall of emotions aroused by the experience, which were stronger than were warranted by the present situation. As this particular castle had not been visited before and as the painting was of comparatively recent date, being contemporaneous with a restoration of the castle within recent years, any real memory of either the castle or painting was excluded. As, however, the story of the picture was familiar and other old German castles had been seen in childhood, it seemed possible that the illusory recognition might be due to elements of similarity from these sources. The true explanation, however, was stumbled upon nearly two years later and proved to be an old illustrated edition of historical tales for children, in which the story of the abduction of the princes occurred and which contained a picture of the scene as taking place in an old castle of which the outlines bore a crude resemblance to the room in the Albrechtsburg. The vividness of the false recognition was probably due in this case to the recrudescence of the emotional reactions produced in childhood by the story, as this again occurred on seeing the picture in the old book, and was a genuine associative memory. A very similar case is given by Hawthorne, in which the explanation so closely coincides

with the one above given that it is quoted in full: "Stanton Harcourt near Oxford has still in a state of good preservation certain portions of the old castle, among these two venerable towers. One of these towers in its entire capacity, from height to depth, constituted the kitchen of the ancient castle, and is still used for domestic purposes, although it has not and never had, a chimney; or rather we might say, it is in itself one vast chimney, with a hearth of thirty feet square, and a flue and aperture of the same size. There are two huge fire places within and the interior walls of the tower are blackened with the smoke that for centuries used to gush forth from there, seeking an exit through some wide air holes in the conical roof, full seventy feet above. These lofty openings were capable of being so arranged with reference to the wind, that the sooks are said to have been seldom troubled by the smoke. . . . Now, the place being without a parallel in England and therefore necessarily beyond the experience of an American, it is somewhat remarkable that while we stood gazing at this kitchen, I was haunted and perplexed by an idea that somewhere or other I had seen just this strange spectacle before. The height, the blackness the dismal void before my eyes, seemed as familiar as the decorous neatness of my grandfather's kitchen; only my unaccountable memory of the scene was lighted up, with an image of lurid fires blazing all round the dim interior circuit of the tower. I had never before had so pertinacious an attack, so I could not but suppose it, of that oddstate of mind wherein we fitfully and teasingly remember some previous scene or incident, of which the one now passing appears to be but the echo and reduplication. Though the explanation of the mystery did not for some time occur to me, I may as well conclude the matter here. In a letter of Pope's, addressed to the Duke of Buckingham, there is an account of Stanton Harcourt (as I now find, although the name is not mentioned) where he resided while translating a part of the Iliad. It is one of the admirable pieces of description in the language, . . . and among other rooms, most of which have since crumbled down and disappeared, he dashes off the grim aspect of this kitchen--which moreover, he peopled with witches, engaging Satan himself as head cook, who stirs the infernal address that scuffle and bubble over the fires. This letter and others relative to his shade here were very familiar to my earlier reading, and remaining still fresh at the bottom of my memory, caused the weird and ghastly associations that came over me on beholding the real spectacle that had formerly been made so vivid to my imagination."

The phase of identifying paramnesia seems to have received more attention from psychologists than other forms of false memories and there are three chief theories, with some variants, which seek to explain the feeling of a previous experience. The oldest is that of Anjel (1877) who explains the illusion as resulting from a double perception of the same object due to a larger interval than usual between sensation and perception, which are ordinarily so closely associated that they cannot be distinguished. For some reason, the mind has not organized and localized the sensation as soon as produced and consequently when this is accomplished the result appears already known and produces the illusion. The influence of fatigue furnishes one of the strongest supports for this argument. Lalande (1893) also holds the view of a double representation of the same image, but gives a somewhat different explanation of its mechanism, believing the double image due to an unusual acceleration of mental activity and the concentration of attention on the second image. The laboratory experiments of Abrahamowicz, previously mentioned, support this latter view. Lipis (1923) and Bourdon (1896) maintain that the illusion results from the presence of certain similar or analogous elements in the situation to some previous and forgotten experience, and with this hypothesis my own cases are in accord. According to Kinsberg the Illusion of memory results from the feeling of active attention and appears in states of disintegration of the mental synthesis. In states of inattention, when we are con-

sions of the relaxation and inattention. In this case the normal feeling of effort in assimilation is absent and this gives the feeling of something already known. It is quite possible that all these theories may be correct, as they are not necessarily contradictory and the conditions of the phenomena are so varied, that it may well be that the different hypotheses are all applicable under diverse circumstances. That fatigue is frequently, if not always, a factor in the occurrence not only in this, but in other types of paramnesia, there is considerable evidence.

Dugas reports an interesting case of false memory in a Professor X, who received a letter from a friend apprising him of a visit in a few days. On the day that his friend was expected, he asked his mother with whom he lived a question in regard to her preparation for the guest to arrive that evening, greatly to her surprise, as it was the first time she had heard of the impending visit. X, insisted that he had told her at the table on a certain day and named those present at the time, and it required the evidence of the supposed witnesses to convince him that his memory and not his mother's was at fault. In the same month (the last of the academic year) he twice demanded of his pupils written exercises that he believed that he had assigned. His memory was very distinct as to the circumstances and as before it required irrefutable evidence to convince him of his error. Dugas thinks that these paramnesias were due to fatigue and explains them by the fact that since nervous fatigue tends to produce over-fulfillment of the attention and the psychic states of sensation and memory differ less in matter than in the manner in which the mind undergoes them, the distinctions between them become obliterated, and with the weakening of the attention a situation mentally rehearsed was mistaken for the actual occurrence. But any distraction of attention, even when no special conditions of fatigue exist, may produce a similar result and cases of this type are of everyday occurrence. The following example is typical. A student remembered leaving his notebook under his seat in the lecture room but failed to find it there next morning. Later, he found it in his locker in the dressing room and then recalled that after having left it under the seat, it had occurred to him that it would be safer in his locker and he had placed it there, but being occupied with other things had completely forgotten the circumstances and had felt very positive that he had left the notebook in the lecture room.

Localization in time is one of the most uncertain elements in memory and unless fixed by external corroborative evidence has as almost its sole criterion the vividness with which the image presents itself to consciousness. In a general way, it is true that the clearness of an image tends to decrease in proportion as the experience recedes in time; but the very fact that we unconsciously apply this rule, leads to many illusions. Sometimes events far back in the past recur with vividness and there is then a tendency to refer them to a nearer date. There is, as it were, a foreshortening of time. In a similar way, events of childhood tend to become magnified because of their vividness. It is a familiar fact that recalling the scenes of childhood is apt to be a disappointing experience, the hills are so much lower and the houses and trees so much smaller than we remembered them. But displacement in time frequently occurs in recent events as well as in more remote experiences as is illustrated in the following example.

A little girl of about five years who attended kindergarten regularly was presented with a doll which became one of her most prized possessions. One day, a few weeks after she had come into possession of this doll, she came to her teacher at the close of the session in great distress; her doll was missing. She remembered exactly where she had put it in the morning on a shelf and not only gave all the circumstances with great detail but her statements were corroborated by another little girl who had seen her place the doll on the shelf.

Search, however, and questioning of the janitor and children failed to reveal its whereabouts. Two days later a confectioner in the neighborhood went to inquire if any of the kindergarten children had lost a muff as one of small size had been left in his shop two mornings previously. It proved to be the lost muff. In this case neither of the children had any idea of telling an untruth and, in fact, the details in regard to the muff were perfectly accurate, only they had happened on the day previous to that on which the muff was lost and probably on other days as well, so that the memory of the habitual occurrence had proved stronger than the memory of an omission of it on a certain day.

This form of paramnesia though very common among children in whom the time-sense is characteristically weak, is not at all uncommon among adults and sometimes plays an important part in the testimony of witnesses. In the trial of Little Rodes in famous murder case which occurred some years ago the evidence really turned on whether the accused wore a particular dress, which was afterwards burned, on the morning of the murder. A group of people at a summer hotel, who sat at the same table, in discussing the validity of the evidence, tried the experiment of having each one state what dresses the other members of the party had worn at breakfast. The errors were so numerous that it was unanimously decided that any evidence on such a point given several weeks after the event would be utterly unreliable; and yet the descriptions of the costumes belonging to each person were in the main correct though in a number of cases not worn on that particular morning. This inference has since been abundantly verified in the Amnestic experiments of Stern, who concludes that "statements subsequent to the event, in regard to the external appearance of persons, especially in regard to the color of the hair, form of the beard, clothing and its color, have in general no trustworthiness unless the attention has been especially directed to these points at the time of the original perception."

The following case, which at first sight appeared to be completely hallucinatory and to rest upon no foundation in external reality, proved later to be an amnesia in which the dropping out of one link in a chain of impressions gave an apparent falsity to the whole, and is probably typical of a whole class of cases. On the day after a reception at which about a hundred people were present, B. expressed her regret at not having been able to speak to a lady whom she had noticed to be present, and whom she had not seen for some time. She was surprised by the statement that the lady in question had not been present. This she considered a mistake; and as her memory of having seen her was perfectly clear, proceeded to describe in detail exactly how the lady was dressed, in what part of the room she was standing, with whom she was conversing, the circumstances that had prevented the meeting and the succeeding disappointment at finding that she had left before this had taken place. It was finally objectively proved to her that the lady in question could not have been present as she was not in the city. For several days the subject of the apparent hallucination was quite disturbed, as the apparent memory including her feeling of pleasure at seeing an old acquaintance remained vivid, and only after considerable hard work in going over and over the details of the afternoon was the explanation found. It proved to be the loss of an impression which was not only a fleeting one but immediately followed by a distraction which involved some emotional excitement. When half way across the room to greet the supposed acquaintance, she had been stopped and called aside to take part in a rather exciting discussion. At this moment she had perceived that she had made a mistake in the identity of the person, but this impression was so transitory as to be completely obliterated by the subsequent occurrence, thus leaving an apparently false memory, which on analysis reduced to a simple amnesia of one link in the chain of original impressions.

The transference of experiences belonging to another to oneself is curiously



illustrated in the following case of a young lady in the early twenties, who, in discussing early memories, affirmed that she remembered with perfect distinctness an accident which happened at her first weighing, when her age was still counted by hours. She remembered the carpet and furniture in the room and even the colors of the inopportune weighing cradle made by knotting the four corners of a small table cover and, most distinctly of all, the sensation of falling and losing breath when one of the knots slipped. As investigation was possible, it was learned that the story was correct in every detail except that the accident had happened in the case of her elder sister and consequently two years before she was born. Her good faith was undoubted and the memory remained, as far as her own introspection was concerned, quite as distinct a part of her mental life as any actual occurrence. The memory of the room and of the pattern of the table cover used in weighing were probably genuine memories as she and her sister were both born in the same house, had remained there until she was nearly four years old and the nursery had not been changed. In all probability, she had heard the story of the accident told when she was of an age to be impressed and excited by it, and very likely the catching of breath and feeling of disturbance in circulation were actual memories only displaced in time and slightly distorted in association. A similar case of distorted association has recently been related to me by a member of the University who remembers lying on a pillow and being looked at at a very early age, when, in fact he was not the observed but the observer, being at the time about four years of age. This reference of the experience of another to the self or vice versa is a common phenomenon of delir-



*Has been here once before. (Drawing by John C. Holden)*

lum, and of some types of hysteria and insanity; e. g., a patient in the delirium of fever repeatedly expressed pity for another and perfectly healthy person because he had such a terrible pain in his head. In another case, a patient personified her hands, which were swollen and painful, as two little white kittens who were suffering, and complained that the doctor would do nothing to help them. Historical instances of torture or descriptions of suffering are in delirium not only transferred as personal experiences but are afterwards remembered as such, exactly as in the case of unpleasant dreams, the knowledge that the experience was a delusion and of a purely mental character making no difference in the sense of reality accompanying the memory. The delusions of paranoiacs are often of precisely this character, the psychological difference between the memory of a vivid dream or of a fever delirium in normal individuals and the systematized delusions of a paranoiac lying in the fact that in the former case the experiences are recognized as purely mental while in the latter this recognition is wanting. In some interesting autobiographical material written down by a paranoiac and published in an early volume of the American Journal of Psychology, the equal ascriptions of reality to external and purely mental experiences is very noticeable.

I cite one more example, which is of special interest because, while like others, the paranoiac consists in an amnesia of one or two points, the memory image was unusually clear in outline and even the errors are due to suggestion from submerged associations. In a course of lectures dealing with psycho-analysis, a professor of psychology gave, among the clinical cases described in Freudian literature, the following. A young girl named Recha was, during her father's absence from home, saved from a burning house by a young man wearing a white cloak. The rescuer had been seen for a few days afterwards walking under an avenue of trees near by, but had then disappeared. On the father's return he finds his daughter the victim of a delusion that she had been saved from the flames by her guardian angel, by whose image her mind is completely possessed and with whom she is really in love in an earthly fashion. Her cure is effected by convincing her that her rescuer's disappearance is due to illness, as he is found by her father in a wretched condition, and that he is no angel but a man of depraved character and quite unworthy of her affection. Those familiar with Loewig's "Nathan der Weise," will recognize that this supposed Freudian case is the because that drama and that the story is reproduced with great fidelity to the original save in the finale. The occurrence of a product of literary genius more than a century old among the clinical cases of a very modern school of therapy is in itself of psychological interest and the explanation can be traced with tolerable accuracy. Thirty-five years before the professor had taught the drama as part of a German course but had not read it since. This interval, filled with an unusually active mental life and teaching, had quite obliterated the associations, but had left the outline of the story intact except for the details of the cure. As an example of hysterical delusion cured by psychic means, the case is an excellent one and as the reminiscence was vivid, it merely followed the usual psychological law in being referred to a recent date and thus logically classified among the Freudian cases recently studied, though the professor sought it in vain among his references. The changes in the outcome are particularly interesting as they can be traced to the material of the drama itself. In the drama, Recha's cure is effected by proving to her that her rescuer is not only a real person but her brother, as she is not Nathan's own child but has been adopted by him in infancy, although she is ignorant of the fact. The suggestion that his disappearance had been caused by illness and that he may be in want and suffering is, however, made by Nathan, who reproaches Recha, the nurse, for her lack of zeal in seeking Recha's rescuer, saying, "Friendless and penniless, he may be lying without the means to purchase aid." The errone-

ous interpretation of his character as given by the professor also contains a partial memory. Because when approached by Becha's grateful nurse and companion in the days immediately following the rescue of Becha, he simulates an indifference which he does not feel, and repulses her with rudeness and insults, because being bound by his vows as a templar he really fears to see Becha again.

As the last link in the chain of clear and submerged memories which caused the story to be transformed into a clinical case is the fact that Lessing himself puts into Nathan's mouth the psychological analysis of Becha's malady as well as the suggestion that her cure can be brought about only by psychic means. He recognizes that the strife between wounded feeling due to the rude repulse of the nurse's efforts to induce her rescuer to receive Becha's thanks and her strong feeling of gratitude and attraction toward him has produced a mental fixation which may become permanent unless overcome by convincing her of his worthy existence. And this does, in fact, lead to the happy issue of the drama. All this does, in fact, lead to the happy issue of the drama. All this is so entirely in accord with the Freudian theory of a psychic trauma as the cause of hysteria that the case fits quite naturally into the modern setting of psycho-analysis. Moreover, since mental imagery, as shown by experimental studies, tends to change in the direction of the customary and habitual, the substitution of the train of associations then occupying the professor's mind for the original connections was entirely in accord with the law of habit.

From the analysis of the foregoing cases it appears that paragnosia is reducible to a partial amnesia of the associative processes, in consequence of which the memory image is distorted and appears false.

The amnesia may consist in the dropping out of one or more impressions, as a result of weakened or distracted attention during the original experience, or in the loss of time and place associations. In the latter case, there may result a confusion between objective and subjective conditions, or the memory images thus detached may form a part of new series of mental processes without recognition of their reproductive character.

Paragnosia is thus not in itself an abnormal mental process, since it results from the weakening and blurring which are characteristic phenomena of memory images, but may exhibit all gradations from the slight deviations, which occur in varying degree in all normal reproductive processes, to extreme cases where the existing associative links and resulting confusion of subjective and objective experiences may completely distort the whole mental activity.

## PBJ-002 ILLUSIVE MEMORY

Cabers, Henry F. : Science, 3:274, 1894.

For some time past, I have been investigating a curious psychical or psychopathological experience which is alluded to by many writers upon psychology, and is not infrequently met with in general literature. It is that vague sentiment of familiarity we sometimes have upon entering a new experience, best expressed in the words, 'I have seen or known all this before.' It has been explained by various writers, upon two widely different theories. The first is, that this 'double perception,' 'double thinking,' 'double presentation,' as it has been variously named, arises from the dual structure of the brain, resulting in cases of imperfectly correlated action in two images or impressions not absolutely

simultaneous: the latter, therefore, is a repetition of the former, and gives rise to a sentiment that it has passed through the mind at some indefinite previous time. This theory, it will be observed, is a physiological one. The other theory is, that the phenomenon is a purely psychical one; that the false or illusory memory (*Erinnerungstauschung*, *Sandheit*) has a real basis in some actual past presentation which is identical, or closely similar, with the present one; or in some past images of the waking imagination, or dream-life, that, although these cannot be recalled into consciousness, they are sufficient to give us the conviction that the present event is the repetition of a former one—why, or how, we do not know. There are several cases upon record, where this sentiment has assumed a pathological character, and become a continual delusion, attending every experience.

Two years ago, in the hope of obtaining more information, I distributed a question upon the subject among a large number of persons, principally college-students. It may now be given in somewhat amplified form, as follows:—

Have you come suddenly upon an entirely new scene, and, while certain of its novelty, felt inwardly that you had seen it before—with a conviction that you were revisiting a dimly familiar locality? Mention, if you can, an instance or two in which this has occurred. Has any satisfactory explanation of this experience ever suggested itself to you? How frequent is the experience in your case? Was it more frequent in childhood than at present? How soon do you usually become conscious of the deception? Does it occur more frequently in connection with some kind of experience than with others?

A quantity of material upon this subject has already been collected in this and other ways, which I hope to publish in a review article in April. In the mean while, any information bearing upon this question will be of great assistance and value to me.

Of course we use term "illusory memory" *deja vu*.

## PBM-001 THE AUTOMATISM OF MEMORY AND ASSOCIATION IN PATHOLOGICAL SOMNAMBULISM

Mesner, E.: Journal of Nervous and Mental Disease, 2:44-67, 1876.

In addition to the automatism of the patient described below is the apparent retention of the image of the letter he was writing despite the physical removal of the letter. (Only an excerpt is reproduced.)

The nervous disorder which F. presents, only manifests itself in crises or paroxysms of brief duration, relatively with the intervening period. The first of these attacks goes as far back as the early part of 1851, when F. was still confined in Germany, and hemiplegic in the right side. At this period the crises repeated themselves at shorter intervals, and he continued in this condition as long as the wound in the skull remained open, or a trifle over a year; from this time onward the attacks were rarer, and the intermediate stage, which at the first was of from five to six days, became finally of from fifteen to thirty days. This periodicity was preserved for about two years, unless some fault of diet, or some excess of the patient stepped in to hasten the return. They always, however, resembled each other, and were stamped with the seal of an unconscious activity. The onset of the paroxysm is preceded by an uneasiness and a heaviness about the forehead, that the patient compares with the pressure of an iron band: in its termination it is the same, since, for many hours afterwards, he continues to complain of heaviness in his head, and numbness. The transition from health to illness is accomplished with rapidity, in a few minutes, insensibly, without convulsions, without cry: he changes from one to the other without experiencing those fading tints of light and reason which we find at the hour when sleep approaches; and he who is conscious, responsible and in full control of himself, an instant later is only a blind mechanism, an automaton, obeying the unconscious activity of his brain. He retains with an appearance of freedom which he does not really possess, he seems to exercise his will, and yet he has only an unconscious volition which is powerful to remove the slightest obstacle opposed to his movements.

All the actions in which he engages, all the activity which he exhibits in his attack, are merely the repetition of his former habits. It is more difficult to understand, or even to imagine, and yet he has a strange habit, which, as we shall elaborate further on, has exhibited itself from the time of the first paroxysm, when he was still a soldier, and which each time reappears in the same conditions, and seems the special purpose of his abnormal activity: it is the tendency to steal, or rather to make away with anything which comes in his way, and which he imperfectly conceals wherever he may chance to be. This desire for abstracting articles and concealing them, in such a predominant manner with this patient, that having appeared in the first attack, it has not failed to show itself in every subsequent accession. He is satisfied with anything, even the most trifling articles; and if he finds nothing on his neighbor's table, he takes with all the appearance of secrecy, although a numerous company may be surrounding and watching him, the various objects belonging to himself, his watch, knife, pocket-book, etc.

The entire duration of the attack is a phase of his existence of which he has no recollection upon awaking; the forgetfulness is so complete, that he expresses the greatest surprise when told of his actions; he has no notion, even the most indistinct, of the time, place, motives, investigations of which he has been the object, nor of the different persons who have attended him.

The separation between the two phases of his life, health and illness, is absolute.

We may come to the psychological study of this individual through the interpretation of the facts that present themselves during the attack, never losing sight of the details from daily observation, which may be found in another portion of this article.

The general sensibility is, as we have said, completely extinguished. The muscular sensibility is preserved. Hearing, smell, and taste, are sealed against any impressions from without. Sight yields only vague ideas, without taking cognizance. The sense of touch persists, and seems to acquire delicacy and an exaggerated insensibility.

And it is in the midst of this extensive nervous disturbance that we have to determine the value and significance of incidents which we shall shortly describe.

The activity of F<sub>1</sub> is nearly the same during his attack as in his normal condition, with the exception that motion is less rapid; he moves about with open eyes and a fixed gaze; if he is directed against an obstruction, he strikes against it slightly and turns to one side; whether it may be a tree, a chair, a bench, a man, or a woman, it is nothing more to him than an obstacle, the character of which he does not recognize. The expression of his countenance is generally impassive, immovable, and yet at times it reflects the ideas which spontaneously present themselves in his mind, or which the sense of touch awakens in his memory. His expression, his gestures, his mimicry, which have ceased to have any relation with his surroundings, are exclusively engaged in the functions of his personality, or still better, of his memory. For example, we witnessed the following scene:

He was promenading in the garden, under a grove of trees, when some one put back into his hand the case which he had let fall a few moments previously. He felt it, turned his head several times around the curved handle of the case, became attentive, seemed to listen, and suddenly cried out "hurry!" then, "where they are! there are at least twenty of them, to the two of us! we shall get the better of them!" and then, carrying his hand behind his back as if to get a cartridge, he went through the movements of loading his musket, crouched at full length in the grass, concealing his head behind a tree, in the posture of a sharp-shooter, and following with his gaze at his shoulder, all the movements of the enemy whom he seemed to see close at hand. This scene often repeated in detail during the course of the observations, has seemed to each of us the most complete expression of an hallucination called up by an illusion of touch, which, giving to a case the properties of a gun, awakened in his person reminiscences of his last campaign, and reproduced the struggle in which he was so grievously wounded. I have tried, during the attack occurring fifteen days later, to search for the confirmation of this hypothesis, and I do not believe that it is possible to throw any doubt upon this interpretation, since I have found that the patient having been again placed in the same conditions, the same scene is reproduced upon the encounter with the same object. It has thus been possible for me to direct the activity of my patient in accordance with a train of ideas which I could call up, by playing upon his tactile sensibility, at a time when none of his other senses afforded me any communication with him.

All the actions and expressions of F<sub>1</sub> are either the repetition of what he does every day, or are brought up by the impressions objects make upon his touch. It is sufficient to observe this patient during a few hours, in order to produce a decided opinion regarding this subject. By following him in his wanderings about the hospital of Saint-Anne, M. Morey and I have witnessed a thousand incidents coming up by chance, but all highly interesting from a psychological point of view.

We were once at the end of a corridor, near a door that was locked; F<sub>1</sub> passed his hands over this door, found the knob, grasped it, and attempted to

open it; failing to accomplish this, he sought for the key-hole, then for the key, which however, was not there; then, passing his fingers over the screws which secured the lock, he endeavored to seize them and turn them for the purpose of detaching the lock. This entire series of actions bears witness to an effort of his mind connected with the object before him. He was on the point of leaving the door and turning towards another room, when I held up before his eyes a bunch of seven or eight keys; he did not see them; I jangled them loudly at his ears; he did not notice them; placing them in his hand, he immediately took hold of them, and tried them one by one in the key-hole, without finding the single one which could fit; he then left the place, and went into one of the wards, taking in his passage various articles with which he filled his pockets; at length he came to a little table used for the records of the ward.

He passed his hands over the table but it was empty; in feeling of it, however, he came across the handle of a drawer; opening it, he took up a pen, and all at once this pen suggested to him the idea of writing; for at that moment he began to ransack the drawer, taking out and placing on the table several sheets of paper, and also an inkstand. He then sat down and commenced a letter, in which he recommended himself to his commanding officer for his good conduct and bravery, and made application for the military medal.

This letter was written with many mistakes in it, but these were identical as regards expression and orthography with all that we have seen him make in his healthy state. While the patient was writing, he aided us in an experiment that encouraged us to immediately examine in what degree the sense of sight assisted in the performance of this action. The facility with which he traced his letters, and followed the lines upon the paper, left no doubt concerning the exercise of vision upon the writing; but, in order to make the proof satisfactory, we have several times interposed a thick plate of sheet iron, between his hands and his eyes when he was writing; and although all the visual rays were intercepted, he did not immediately break off the line he had begun; he still continued to trace a few words written in an almost illegible manner, with the letters entangled in each other; then finally he stopped without recognizing either direction nor impatience. The obstacle removed, he finished the uncompleted line, and began another.

The sense of sight was therefore in full activity, and essential to the written expression of the patient.

As further evidence, we are able to cite a second test not less demonstrative; for while the patient was writing, we substituted water in place of the ink which he was using. The first time he dipped his pen, there still remained a slight tinge that was sufficient to render the writing legible; but the second time, the pen which held only water, traced transitory, frustrating characters as he at once perceived. He stopped, tried the tip of his pen, rubbed it on his coat-sleeve, and attempted to resume his writing--the same result--then a fresh examination of his pen, which he scrutinizes more carefully than before; again disappointed--and yet this patient, confused and distracted from his employment by our whim, never had the idea for an instant that the source of trouble was in the inkstand. His mind was incapable of spontaneity, and his sight, directed upon the paper and the pen which he held in his hand, remained very imperfect, inspecting the inkstand, with which he was not in contact. This second observation confirms the first; each demonstrates that sight really existed; but this fact seemed to be evident, that the field of vision was exclusively restricted to a circle relating most intimately with the individuality of the patient; that the sense of sight was only raised at the instance of touch; and that its exercise remained limited to those objects alone with which it was actually connected by the touch. Other observations subsequently came to the support of this opinion; and before passing

to a fresh series of facts, I wish to notice one very curious hallucination which we were so fortunate as to observe while F\_\_\_\_\_ was engaged in writing.

He had taken several sheets of paper to write upon, and there were nearly a dozen piled up before him; he was engaged upon the first page, when the thought occurred to us to snatch it quickly away; his pen, however, continued to write upon the second sheet, the same as if he had not perceived the abstraction that we had effected; and he completed his sentence without interruption, and without exhibiting any other expressions than a slight movement of surprise. He had written ten words on the second sheet, when we removed it as rapidly as the first, and he terminated on the third sheet the line commenced on the preceding, continuing from the exact point where his pen was placed. We took away successively, and in the same manner, the third sheet, then the fourth, and arrived at the fifth; he signed his name at the bottom of the page, when everything that he had written had disappeared with the preceding sheets. We saw him then turn his eyes towards the top of this blank page, read over all that he had written, giving a movement of the lips to each word; while at various times, he made with his pen, in different places on this blank page, here a comma, there an *g.*, at another place a *L*, following out carefully the orthography of each word, and correcting them to the best of his ability; each one of these corrections corresponding to an incomplete word, which we found at the same height and the same distance on the sheets of which we ourselves had possession.

Regarding the significance of this remarkable action, it seems to us that its solution exists in a hallucinatory state that creates the ideal-image; and gives to the mind or the memory, such a power of reflecting this ideal-image towards the senses, as these entering into exercise would give either to the mind or the remembrance, an external reality. This hallucination is of such a nature as those we meet with in sleep, in dreams, and in cerebral excitation. F\_\_\_\_\_ read over again in his memory the letter that he had written; his eyes fixed upon the blank page, giving him a false sensation of lines which did not exist, just as in one of the preceding observations, he saw Prussian soldiers before him, whose movements he watched intently, that he might pick some of them off at the reasonable moment.

His letter terminated. F\_\_\_\_\_ quitted the table, and putting himself again in motion, passed through another long ward of patients, taking indiscriminately every article that came within his reach, and concealing them afterwards under the quilt, under a mattress, under a chair-cover, and under a pile of sheets. Arrived in the garden, he took from his pocket a book of cigarette-papers, opened it, and detached a leaf from it; then took out his tobacco and rolled a cigarette with the dexterity of one who is accustomed to this proceeding. He searched for his match-box, lighted his cigarette with a match, which, falling still burning upon the ground, he extinguished by placing his foot upon it; then smoked his cigarette while strolling back and forth to the entire extent of the garden, without any of these actions presenting the slightest deviation in their manner from the ordinary method. Everything that he did, was the faithful reproduction of his ordinary road of life.

This first cigarette terminated, he prepared to smoke another, when we stepped up and began to interpose obstacles. He held a fresh sheet of paper in his hand, ready to receive the tobacco, and he searched vainly in his pocket for his tobacco, as we had flished it. He searched for it in another pocket, going through all his clothes until he came back to look for it in the first pocket, when his face expressed surprise. I offered him his tobacco-pouch, but he did not perceive it; I held it near his eyes, yet he still did not perceive it; even when I shook it just in front of his nose, he did not notice it. But when I placed it in contact with his hand, he seized it and completed his cigarette directly. Just as he was about to light the cigarette with one of his matches, I blew it out and



offered him instead a lighted match which I held in my own hand; he did not perceive it so close to his eyes as to sting a few lashes, yet he still did not perceive it, neither did he make the slightest motion of blinking. He lighted another match, when I blew it out and offered him one of mine, with the same indifference resulting on his part as before. I brought it in contact with the cigarette which he was holding in his mouth, but even when I burned the tobacco of his cigarette, he did not notice it, nor make any movement of aspiration. This experiment, so remarkable for its simplicity and for its results, goes to confirm the preceding; both show us that the patient sees certain objects and does not perceive others; that the sense of sight receives impressions from all the objects in personal relation with himself through the touch, and does not receive impressions, on the contrary, from things external to him; he perceives his own match, but does not perceive mine. I have at different times, during later paroxysms, repeated the same experiment and obtained the same results; the patient remained entirely indifferent; his eye, dull and fixed, exhibited neither blinking nor pupillary contraction.



*The committee (multiple personality). (Drawing by John C. Molteni)*

V., M. de G., *Society for Psychological Research, Journal*, 7:58, 1936.

The following account of experiences under the influence of nitrous oxide gas is somewhat similar to a case given in the *Journal* for July, 1896. The impressions do not seem to have of all resembled those described by Professor W. Hamamy, in his paper on *Partial Anaesthesia*, in the *Proceedings, S. P. R.*, Part XXV., Vol IX., p. 236.

About August, 1935, I had "laughing gas" during the extraction of two teeth, and observed the following:—

The dentist told me that when I heard the notes of a musical-box I should know I had "come to." The doctor said I should not hear him count "twelve." The same had been told me about three weeks before. I had on that occasion heard "seven," and knew no more till I heard the musical-box. On this occasion I tried to keep consciousness of the interval.

At "two" the gas was turned on. At "six" I was conscious, but aware that I could no longer stop the operation. I heard "seven" and "eight," and then the conversation between the two gentlemen became so absorbing that I forgot to listen to the counting. They were discussing the question of my sensibility, and saying that they were only pretending to give me gas. The last remark of the dentist was addressed to me. "You see, it is entirely a question of faith." As I heard this, I also heard the musical-box, and one part of me knew that the teeth were out and the remark of the dentist imaginary, while the other part knew that the remark was real, and that nothing but conversation had occurred since I sat down. Another part of me, which I can only call J, waited to see which was the correct version. Almost instantly the three united and I realized the situation.

Last June I again had gas for the extraction of one tooth, under similar circumstances. The doctor said I should not hear "fifteen."

At "two" the gas was turned on. At "seven" I was aware that I could not move much, but was still so conscious that I lifted my hand (with great difficulty) to show that I still felt. I heard "eight, nine", and instead of "ten," at what seemed just the proper interval, I heard the doctor speak about the extracted tooth to the dentist. At the same time I knew that someone else, very closely connected with me, had gone through a long experience since hearing the word "nine." Then I felt that these two "somebodies" were amalgamating, and as they united I heard the musical-box; but there was a further interval before I was able to move. The dentist was urging me to sit up; but I made no effort, as I felt that I was not quite sure that I was sufficiently enough to move. I was not certain that the person who heard the order to move was able to convey the order to the person who had to move. It was only when I actually sat up that I was sure that "I was I."

## PBP-001 A CASE OF POSSESSION

Fraser, Donald; *Journal of Abnormal Psychology*, 18-696-715, 1916.

The Demonic possession of the middle ages and of times nearer to our own was largely hysterical in character, and generally occurred in Epidemics. It was associated with the more superstitious and emotional side of religious beliefs, where a real Hell fire and a personal Devil with attendant Angels or Demons were believed in, and feared, much more intensely and widely than they are today even amongst the ignorant and superstitious, while suggestion and contagion played a large part in the spread, as it did in that other and more hateful form of it known as witchcraft.

Esquirol who wrote clearly about it in his "Maladies Mentales" under the heading of "Démomanie," spoke of it as being propagated "by contagion, and by the force of imitation." This was illustrated in the Epidemic of Loudun, amongst others referred to by him. This epidemic spread to neighbouring towns, menaced all the high Longueval, but was arrested by the wisdom of a Bishop, who did this by depriving the movement of its magnetic elements. In this epidemic form it was in its bodily and mental manifestations really hysteria with characteristic stigmata and convulsions. An excellent example of this religious hysteria was presented as recently as 1857 in an epidemic at Meccles in upper Saxony. It began with two little girls, pious and precocious, who had convulsive attacks. It spread to other children and then to adults. Amongst the younger of those affected, ecstasy, cataplexy, and somnambulism were seen, and later, convulsions only; convulsive attacks returned several times a day. An attack usually began with yawning, restless movements, the aspects of fear passing into fury with violent and impulsive movements, with excitation and cries that they were lost souls in hell, the mouth-piece of the devil, etc. These attacks would last from ten minutes to half an hour. A feature of this epidemic was the absence of coarse and erotic speech or gestures. Between the convulsions the victims were restless, idle and inattentive, being altered in character for the worse. In our day such epidemics are represented, though in tamer fashions, by Revivalism in its more solemn and extravagant eruptions. At all times, even when such manifestations are not much if at all out of harmony with ordinary religious feeling and action, there is a tendency to pathological conditions. Often the subjects in the words of Professor James "carry away a feeling of its being a miracle rather than a natural process, voices are often heard, lights seen, or visions witnessed; automatic motor phenomena occur; and it always seems after the surrender of the personal will as if an extraneous higher power had flooded in and taken possession." These are some of the more striking phenomena of mysticism, and are also largely pathological being amongst the major symptoms of hysteria. The history and course of our case illustrated very well this mixed condition. It has been pointed out that the ecstasies, trances, etc., of the mystic, while essentially pathological, have the evil effects of such morbid manifestations modified or large controlled by the idealism behind them, by that measure of true religious faith and feeling which dominates the whole process in the case at least of the higher mystics. The one may be rough and very mixed, but the precious metal is there also, as it was in our patient, though the divine influence for which she craved was perverted into that of the "Evil one." In the individual cases described by Esquirol we recognize a more profound mental disturbance than is shown in the epidemic or hysterical variety. We indeed see many similar cases in our asylums though we generally speak of them as Religious Melancholias rather than as Démomanias. In such cases recovery is slow or may not occur, the patient passing into a state of chronic

mania, or of Dementia. There are other cases where the religious emotions and ideals are completely subordinated to or become identified with feelings of fear or remorse, the result of fixed ideas of a shameful, distressing or frightsome character. A good example of this condition though essentially hysterical in its nature, is detailed by Pierre Janet. The patient, a neurotic, respectable business man thirty-three years of age, a good husband and father, on his return from a business journey of some weeks' duration is found to have become depressed and taciturn, and as the days pass his melancholy deepens. At first he would not speak, but soon when he wished to speak could not, making vain attempts at articulation. Under the influence of medical ideas suggested to him his symptoms simulate first Diabetes next Heart disease and his prostration becomes profound. By and by he passes into a state only to be described as acute Demomania marked by maniacal outbreaks in which he cried out and blasphemed, harrowing in quieter intervals his powerlessness to resist the Devil who was, he believed, actually not figuratively within him, who spoke and blasphemed through him, prevented him sleeping, etc. After some months he was sent to the Salpêtrière where he came under the observation of Charcot and Pierre Janet. He was cured by means of suggestion by the latter, who also ascertained by his methods that the illness was the result of remorse for an offence committed during the business journey which preceded the outbreak.

In many ways our case differs from cases of this type. An important difference was in the intermittent character of the symptoms. For a period of two years the patient alternated between a condition of acute misery from the delusion that the evil one had entered into her body, and one of apparent sanity. At the end of two years she was dismissed cured, and has remained well for several years. She differed also in the absence of blasphemous, extravagant or obscene speech or action. The Devil never at any time used her as the mouthpiece for devilish words or thoughts. He was there, and as she insisted, in bodily form within her, making her intensely miserable by his presence, and with the feeling that she was cast away from "grace" and the privileges of the religious life. Nor were there, as in the case above referred to shameful or remorseful complexes at the root of her mental condition. In presenting the facts of the case, names and special marks of identification have been altered.

Mrs. A., a widow, aged fifty-two years, was admitted to the Paisley District Asylum in 1910 with a history of having suffered for a month previously from mental depression said to be due to distressing delusions of a religious character such as that she was lost, was past forgiveness, and dominating and originating all such thoughts was the belief that she was possessed by Satan or an evil spirit, who was in bodily form within her. This delusion caused her acute misery, and so absorbed her thoughts that she had ceased to take any interest in her household affairs, and had even talked of suicide.

Her condition on admission and for two years subsequently was that of recurring states of this acute mental distress, when she would rock to and fro, screaming and crying out, often with tears over her lost and dreadful state, and the presence in her house of Satan or the "Evil one" whom she said she felt within her, and who made her "repulsive." This condition was varied with intervals of usually from one to three days of apparently complete sanity, when though quiet and somewhat reserved in manner, she was quite cheerful. When questioned at such times as to her delusion, she would admit its absurdity, but refer to an uneasy sensation in the region of the left hypochondrium, which, as she put it, surely meant that there was something wrong there. She would be occasionally normal in this way for a week or more, and on more than one occasion was so well as to be allowed out on parole, but had often to be brought back next day as depressed and delusive as ever. She was always worse in the mornings, and

often improved as the day went on. She was a stout, pleasant featured and intelligent woman, somewhat anemic, and with a slight bluish tinge of lips, though beyond a lack of tone in sounds, the heart was normal. Her anemic condition was accounted for by her having suffered from menorrhagia for the greater part of two years, which only stopped a few months before her admission to the Asylum. It had during its continuance brought on breathlessness on exertion, and what she called spasms or "grippings at the heart," no doubt the basis of her uneasy feelings in left hypochondriums. There was a slight enlargement of the thyroid gland, but no symptoms referable to it. None of these physical conditions beyond the "grippings at the heart" if maybe, appeared to have any appreciable influence on her mental condition, which as has been noted above was normal until a month before her admission. An interesting feature of the case was the relation between her blood pressure and her varying mental states. Her blood pressure was taken with a Riva Rocci Sphygmomanometer morning and evening, sometimes oftener, during the greater part of 1912-13, and it was noted that her depressed or delusional states were marked by a low pressure, while a high or relatively high pressure marked her sane and cheerful states, contrary to what is usually observed in melancholia, though similar to what is seen in agitated melancholia and mania. Thus at a pressure of 120<sup>mm</sup>Hg, she was generally very well; at or about 120<sup>mm</sup>Hg she was often well; at 110<sup>mm</sup>Hg or 100<sup>mm</sup>Hg she was always ill. When recovering, and few weeks before dismissal there was a fairly steady pressure of 118<sup>mm</sup>Hg to 120<sup>mm</sup>Hg day after day. It had been also noted throughout, that during a continuous period of depression, or of well-being, the pressure kept steadily high or low day after day according to the mental condition. There was obviously then a constant and close relationship between her blood pressure and her mental states. At first sight it looked as though these states were directly affected by the varying pressure as it may have influenced the nutrition and therefore the functions of the brain, and on physiological grounds it is difficult to exclude such an influence altogether, even though we come to the conclusion as we did that the variations followed the emotional conditions, and did not precede or cause them. The broad general statement has been made that "each pleasurable emotion raises the general blood pressure and increases the blood flow through the brain and each painful emotion brings about the opposite result."

.....

She had married happily at the age of nineteen years, had a family of eight children, but had been a widow for about twenty years. Her husband died suddenly abroad, where she had lived with her family for two years after his death, and acting on the advice of her friends, she came back to this country bringing all her children with her. This involved her in years of struggle and anxiety to bring them up creditably, which she managed to do. During all these years of widowhood and stress she was mentally well, and latterly she described her life as a happy one surrounded as she was by an affectionate and well doing family. She had been brought up in a pious household. Her father and her husband had been deeply and consistently religious though strict in their belief and observance of the latter. This upbringing favoured a natural tendency towards religious mysticism, which was also promoted by the creed of the church to which she latterly belonged, and of which she was a devotee. In this church the "gift of tongues" and of "prophesying" was recognized as a part of its heritage, and as she informed me in one of her normal times, she occasionally spoke or prophesied in the public assemblies of the congregation. I gathered that her utterances were generally but a word or two of exhortation or pious aspirations, given expression to in a moment of exaltation. From her description of her state at such times, she was carried out of herself, was oblivious to the moment of the presence and actions of those about her, was in short in a state of ecstasy when she "prophesied." A natural tendency to self-depression,

and to ideas of unworthiness asserted themselves outside of these periods of exaltation, which were generally followed by doubts as to her fitness to take part in such work, and by the feeling as she expressed it: "that she had presumed as she was unworthy," and that God would be angry with her for her presumption. Throughout her religious life she had been always lacking in "assurance." Latterly this feeling had grown in her and was evidently part of a deeper feeling of mental depression, as she began to think often, and with a feeling of dread that she had been surely too happy these later years which stood in such contrast to the poverty, struggles and disappointments of the early years of her widowhood. This was her mental condition for some little time before her attack of acute mental disturbance which began one night a month before admission to the asylum. She went to bed feeling ill and shivering as if from a chill. In the middle of the night she woke up in a fright from a vivid dream the contents of which merged in a strong sensation as of a hand being pressed on her shoulder. She described the sensation as being that of a positive feeling of pressure, and with it came a feeling of dread, and the conviction that it was the hand of Satan, so that she cried out aloud to him to go out of the house, as it was blessed, referring to the fact, as is the custom in her church that the minister had blessed the house when she went to live in it. She thought of calling to her daughter who was asleep near her, but did not, and after a time fell asleep again being "comforted by the feeling that the Lord would take care of her." Next morning the effects of the "chill" had passed off, but there was left a more or less constant feeling of vague dread and fear of death, and with this a haunting idea born of this strongly felt hallucination of external touch that Satan was within her. The feelings of dread and fear grew steadily, and became too strong for her faith in the Lord taking care of her, and very quickly her obsession as to possession by Satan, became the definite delusion it was on admission to the asylum. Hallucinations of what might be termed internal touch leading to this idea of possession, are not unknown in the annals of mysticisms of the more morbid types of it. Indeed the more ecstatic the mystic becomes, the more he merges himself in his feelings and tends to develop hallucinatory sensations. He is possessed, and desires to be possessed, fortunately for him, by the Divine and not the evil spirit. Hallucinations of external touch are as might be expected more rare, though not uncommon we understand in the more abnormal types, and occur in people supposed to be normal. Havelock Ellis tells of a "Farmer's daughter who dreamt that she saw a brother, dead some years, with blood streaming from his fingers. She awoke in a fright and was comforting herself with the thought that it was only a dream when she felt a hand grip her shoulder three times in succession. There was no one in the room, the door was locked and no explanation seemed possible to her. She was very frightened, got up at once, dressed, and spent the rest of that night downstairs working. She was so convinced that a real hand had touched her, that although it seemed impossible, she asked her brothers if they had not been playing a trick on her. The nervous shock was considerable, and she was unable to sleep well for some weeks afterwards." The writer's explanation is:—"It is well recognized that involuntary muscular twitches may occur in the shoulder, especially after it has become subject to pressure, and that in some cases such contractions may simulate a touch." In illustration of this he quotes from the Psychological Society's Report on the "Causes of Hallucination" the case of an overworked, and overworried man who, a few minutes after leaving a car, had the vivid feeling that someone had touched him on the shoulder, though on turning round he had found no one near. He then remembered that on the car he had been leaning on an iron bolt, and therefore what he had experienced was doubtless a spontaneous muscular contraction excited by the pressure. Touches felt on awakening in correspondence with a

dreams are not so very uncommon. We think as to this likely enough explanation, that whatever the local sensation may have been, or however slight, as it probably was, it could only give rise to an hallucination of having been touched by some external personality when it was absorbed into, and became a part of a considerable emotional disturbance as in the case of the girl above referred to, and of my patient. In both cases associated with a frightsome dream. The illness of the latter began with a dream, and its continuance was in our opinion, largely due to dreams of a painful character. During the whole period of her residence it was noted that she dreamt a great deal, and that they were terrifying or alarming dreams, and that her bad days were generally preceded by a bad dream. None of her dreams were regularly made, at one time for ten consecutive nights, and only three of them were so far as she remembered free from dreams. All of her dreams she described as "awful." Many of them were of being mixed up with objectionable people who behaved roughly and used profane language, but, and of this she was very certain, she never talked or acted obscenely. She frequently dreamt of being on high precipitous places from which she was either falling, or could not get away from. She described one vivid dream during which she suffered great misery, and awoke from it in great distress. She dreamt that she was listening to a preacher with open Bible in his hand, that he spoke about Peter whom he was accusing of disobedience; a number of people were present but she saw particularly only one man who looked very happy; the sermon ended, and she awoke in "agony," this feeling being due, she said, to the conviction present with her, that the seaman, and the man's happiness were intended to show her how much she had lost since she was cut off from "grace" by Satan dwelling in her body. Again she dreamt of a near relative whom she heard singing. "And they all speak in tongues to magnify the Lord." This brought sorrow to her of which she was conscious during the dream and after she awoke as she thought Satan was putting this before her to show her what she had lost. In another dream she saw three unpleasant looking men talking together. The worst looking of them of Jewish appearance, came close to her face, and argued with her about the evil spirit. She said "he was in her body," and he answered "away with him." She fell asleep and dreamt the same dream again. These dreams were obviously governed by her dread and fear as to her religious position. The following one is somewhat different:--"A big brown bear came up to her and growled against her face; she slept again and dreamt she was in a big ship sailing in black and dirty water; that she tried hard to get out of the ship, but could not, and awoke in great distress." We presume Freudians would find in the latent content of all these dreams, particularly in this last one, evidence in favour of their position, though to us they reveal only, in the blurred and broken way dreams do, the prevailing trend of thoughts governed by morbid religious fears and garbed in the phraseology and symbolism of a paleist faith. The seriousness of their ending and meaning to her being obviously due to their relation to the dream which ushered in her illness to which indeed most of them were closely related in content and context. No doubt Freudian psychoanalysis would be able to carry her memory back into the region of long forgotten infantile or early sex memories where, as in every normal human being lie, the shadowy outlines of instinctive feelings whose roots are in a far away, phylogenetic past, having apart from suggestion no role as factors in the production of morbid fears or fancies. The fantastical and too often repulsive dream interpretations of this school forcibly remind us of the words of Lord Bacon, "With regard to the interpretation of natural dreams it is a thing that has been laboriously handled by many writers, but it is full of follies." All kinds of trivial incidents of childhood and early youth are stored up by all of us, and are recalled in sudden and unsuspected ways, but not because of any relaxation of a supposed "vegar," nor necessarily because of any content of a sea nature, but because they are more

often than not associated with fear, chief of the coarser emotions, and a more primitive and more enduring emotion than any of those connected with reproduction, and more alien to the organism than sex memories even of a perverse order, their resurrection being due to some subtle association between the present and the past, generally a sensory one, visual or auditory most frequently. In our own case the earliest recollections of childhood are so associated and recollected. Sunshine amongst trees, and birds singing bring back to us at very long intervals a country scene where as a child we were frightened by threats of a "bogie man." The only childish incidents which unexpectedly recur with us were associated with childish fears and disappointments of a usual and ordinary character never with morbid elements or emotional complexes which were repressed or obscured in the Freudian sense, and in this we are not singular.

Again and again, association tests, as prescribed by Jung, and repeated examinations of a psychological character were made without our being able to obtain the slightest indication of their being erotic or similar influences of the slightest value as factors in the causation of her mental disturbance. The chief value of Jung's Tests we have found to be the suggestion of lines of inquiry or the confirmation of evidence obtained in other ways. The results here were negative and in that confirmed what we knew from the history and character of our patient as a pure minded woman of blameless life. She was constitutionally timid, and all her life liable to doubts and fears of a morbid type. As an instance of this she told us that when twelve years of age while influenced by the death of her step-mother, which had just taken place, one morning early her father went out to his work leaving her in bed, and alone in the house. Immediately after he left she heard or more likely thought she heard, someone lift the latch of the door, as if to come in, but though no one came in she was left in a state of great fear, so marked that for long afterwards she dreaded being left alone, and still remembers vividly her feelings during that experience. This temperament she carried into her religious life which as we have seen was marked by fears and doubts. "No one will deny that fear is the type of aesthetic manifestations. Yet is it not the mother of phantasms of numberless speculations, of altogether irrational and chimerical religious practices." The strength and character of her beliefs as well as the religious teachings and influences to which she had been subjected from her earliest years, all tended to develop the mystical in a temperament ready for the dissociation necessary to enable the mystic to attain to that ecstasy or absorption in something outside and beyond the self which is the essence of that state. Why the ecstasy which she knew and desired should pass into its opposite is not difficult to understand when the above history is considered.

The shock which originated the attack gave form and reality to fears and doubts which had been assailing her for some time, and to the influence of which she was specially liable at this time by the lowered physiological tension, the result of her previous menorrhagia, and by the fact that the comparative ease and comfort of her later life had given her opportunities for introspection absent during her previous life of struggle for and interest in others. She was then scrupulous, timid and superstitious, a mystical, a psychopathic temperament, taking her place all the same with John Bunyan and other chief of sinners whose self-depreciation and absorption in the struggle for salvation from sin and the power of the Devil, though morbid in character was not pathological. But when Satan became not merely a spirit influencing her, but had entered bodily into her, the barrier was crossed, and she was to herself literally possessed, and became filled with fear, a fear pathological in action, dominating her mentally and physically during her dissociated states. Once initiated it is not difficult to see how these dissociated states which recurred so regularly and persisted so



long were kept up by her temperament, and her constantly recurring dreams of a terrifying or depressing character, which were, as we have already indicated, but representations of the original shock. The following quotation applies closely to her case. "On this view an intense, sudden painful experience, especially if the significance of it can be dimly felt, but not understood, may persist long and faintly reactualized by the central consciousness and without fusion with it, almost as if it were a foreign body in the psychic system." Professor James has termed the pathological emotion an objectless emotion, but as Professor Dewey puts it "From its own standpoint it is not objectless; it goes on at once to supply itself with an object, with a rational excuse for being." Here the sensations in the left hypochondrium which she had described as "grippings at the heart," became the object which, under the influence of the initial shock with its unusual and alarming sensations and feelings, she interpreted as she did.

Her recovery was very gradual and marked by many relapses. In her treatment as in our ideas as to the causation of the disorder, we put the accent on the psychic rather than on the physical factors. We did not however underrate the latter but constantly sought to improve her bodily health and condition. When at her worst in 1911 her weight, taken monthly, was round about one hundred and sixty pounds. In 1912 it went up from one hundred and sixty-six to one hundred and eighty-eight pounds and averaged one hundred and seventy-six pounds. But as in the case of her blood pressure, the rise was due largely to her mental improvement. It may be of interest to note here that during and after a somewhat severe attack of diarrhoea with hemorrhage from the bowels, her mental condition was better than usual, as might even have been expected considering the mental distraction the attack involved.

We were satisfied that we could have shortened materially the duration of her illness---two years,---by hypnotic suggestion, but unfortunately her friends objected to this mode of treatment. Suggestion in the waking state had been abundantly used, but with little apparent effect of an immediate kind.

#### PBP-002 PSYCHIC DISTURBANCES IN RUSSIA

Anonymous: Science, 11:175, 1888.

About twenty years ago a peasant in the province of Perm, after spending much time in the reading of religious books, concluded that the end of the world was at hand and converted his neighbors to his belief. Voluntary suicide was the only release from the misery that surrounded them. A number of men, women, and children, including the members of his own family, retired to a forest, where the men dug catacombs, while the women made strawbeds. This lasted three days. Then all the disciples, dressed in the garments of death, three times renounced Satan. The leader gave the command: "Take no food and no drink for twelve days, and you shall enter the kingdom of heaven." Then the days of suffering began. A few, more human than the rest, appealed in behalf of the children, when they saw writhing in agony, and sucking blades of grass or eating sand; but the leader was immovable. At length two of the inmates could endure it no longer, and died. This frightened the band, and the leader announced that the hour of death had come. They massacred the children, and decided to confine the rest. At this stage the police had sought them out, but their frenzy was kindled to the highest pitch. With the prospect of capture before them, a horrible carnage ensued. They killed the women with hatchets, and the efforts of the police only succeeded in saving the leader and three of his associates.

Another instance is that of the monk Falare, who, not many years ago, went along the banks of the Volga, preaching suicide with great success. One night eighty-four persons met in a cavern that had been filled with straw. They began to fast and pray; but one woman fled, and informed the police. As their pursuers appeared, they set fire to the straw, and threw themselves upon it, killing themselves with hatchets. Many were saved, however, and one of the condemned escaped from prison, and continued to propagate the doctrine. More than sixty persons, including whole families, became his disciples. A day was fixed upon which one peasant went to the houses of the others, killing men, women, and children, all calmly submitting to their fate. The leader then had himself killed. Thirty-five persons, in all, thus perished. These *suicide massacres* are becoming more rare, but all kinds of crimes are still perpetrated as the result of a religious fanaticism. In 1879 a woman threw her child into the fire in obedience to a divine command, and showed no signs of remorse when called to trial. A dozen years ago a man crucified himself, actually nailing his feet and one hand to a cross, and then impaling the other on a nail.

Sects with less horrible practices are numerous. One such calls itself the 'Nagatoré,' and its members keep themselves aloof from all men. They recognize no government, no right, no duty, no property, no marriage, no rites of any kind. Each stands for himself, and life is of no value. They oppose compulsory labor, and neither hire themselves as nor keep servants. They lead lawless lives, and spend much of their time in prisons. About twenty-five years ago the 'Jumper' (Prigoxy) appeared. They found many followers in the Caucasus and the neighboring mountains, where prisoners had been exiled. The chief apostle of the sect called himself God, and among their doctrines was the gaining of insight by prayer and ecstasy. The face would grow pale, the breath be quickened; then the body would sway, the feet begin to beat, followed by jumping and violent contortions, until exhaustion ceased. Some cry and declare the Spirit is upon them. The meeting ends by a fraternal kiss among all the members, men and women. They abstain from many kinds of food, allow no stimulants, and forbid all even the most innocent pleasure. Their time is spent in praying and fasting, but they have no ceremonies of any kind. A group of these calls itself the 'Children of Zion.' They live in solitary houses, and scourge themselves, jumping and shrieking until they are possessed. They fast, often letting their women and children die of hunger. They believe the end of the world to be near, and regard themselves, as do other sects, as the only true Christians. They predict a kingdom of Zion that shall last for a thousand years. Their leader has twelve apostles and a number of queens. When once displeased he threatened to fly to heaven. Another sect are the 'Communists,' who regard themselves as the elect people of God. They, too, have ecstasies, and predict the end of the world. A man of twenty-five and a girl of eighteen represent Christ and the Virgin among them, and receive homage. They preach an equal ownership in property, and a rich citizen gave up his property to be divided among them. The police has interfered with the organization, but it is still secretly propagated. These are only samples of the many social and religious disturbances that give evidence of the abnormal state of mind under which these unfortunate people live.

See Section PBD for other instances of mass delusion, and mass hysteria.

## PBP-003 VOOODOO, ROOT WORK, AND MEDICINE

Tilling, David C.: Psychosomatic Medicine, 35-483-490, 1947.

"Root work" is akin to hypnosis. To illustrate its operation, we quote one of the seven cases discussed by Tilling.

**Case 2.** This case demonstrates how root work may present as an acute psychiatric emergency. The style of presentation here is considerably different from that of the first patient and yet both patients shared the underlying belief in being bewitched.

Mr. E. E., a 38-year-old Negro, came to the Emergency Department in an unresponsive state. He started blankly at the ceiling and scratched his lips. He spoke very little but did repeatedly ask for his girl friend. "\_\_\_\_, where are you?" Careful physical and neurological examinations failed to reveal any abnormality. He was given Acriptal intravenously and did say that he "fell out at the club." (He worked at a club as porter and bartender and was brought to the hospital by his employer.)

He was admitted to the hospital psychiatric service and remained in the same condition for 36 hr. He began to respond by writing notes. He wrote, "I'm not crazy. I'm sick inside. Why did they bring me up here? I will never talk again."

On the day after admission he vomited and abruptly said he felt better, and he began to talk. He said, "It isn't because I didn't want to talk, it was the feeling in my chest, the poison in my stomach that wouldn't let me. I feel better now."

Physical examination and routine urinalysis, serologic tests, and complete blood count done in the hospital were normal. His electroencephalogram was normal. After he began to communicate, there was no evidence of a psychotic thought disorder.

He then told a long and detailed story of being under the poison spell of root work since childhood. He said that both his parents and his 3 older half-sisters had died from the poison. He was born in Florida, the son of a Jamaican boot-legger and a Creole mother, both alcoholics, who beat him because he wasn't a girl.

When he was 4 or 5 years old, the family had a quarrel with neighbors over bootleg liquor. He believed that the neighbors were familiar with root work and placed a hex on the patient's family. When he was 6, his father died. When he was 8, his mother died. Shortly after this his 3 older half-sisters died. All died in the same manner: choking, gagging and with acute indigestion.

During that period he remained symptom-free, but he believed that the hex was on him as well. He felt he was able to avoid the poison by avoiding food which didn't agree with him.

When he was orphaned, he went to live with an uncle who forced him to work. He hated the work and began to steal. At age 12 he was sent to jail and he says he was in and out of jail until age 19 when he enlisted in the Army. It was then that he experienced his first "poisoning" as he called it.

He stated that the attacks from the poison spell were initiated by eating something that caused a stomach upset. Then the poison takes over (as if it were there all the time from the original hex), and the poison swells up into the chest, makes the victim unable to talk, and can even cause death. With vomiting the poison would be expelled and the attack would pass off.

While at Ft. Leavenworth he had his first such spell and passed out. He said he couldn't talk for 24 hr. and was taken for dead. When the spell broke he said he was normal but was treated in an Army hospital for 1 year and then returned to duty. (Proof of this has been verified.)

Two years later he had his second attack while still in the Army. He said he ate some pancakes for breakfast which did not agree with him and then the poison went to work. He became faint and for 26 hr. he couldn't speak and 'felt all feeling' over his body. He rapidly cleared. The doctors told him he had "sleeping sickness" but he says it was "poison."

He served with Patton in Europe, went AWOL, was in the stockade, and was then discharged. His uncle ran off with some \$8000 he had sent home during the war. Soon he was in trouble again for burglary. For 12 years after the War he was in and out of prison.

He had his third attack at age 33. He was in prison, and it was exactly like the first two. He was taken to a hospital and he said he saw a psychiatrist who said he was "normal."

He lived in Rochester for 2 years prior to his admission. He worked at a nightclub for 2 weeks prior to his admission. After spending the night with his girl friend, he awoke on the day prior to admission noticing a mild discomfort in his stomach. He fought the "sour stomach" all day. He tried to vomit, but couldn't. (He later thought that it was good he had not vomited as it "might have killed him.") He ate some cornflakes and felt a sudden mass rise up in his chest. The sensation waned and waned all day, and late in the evening he passed out after he stood up to go to his room and rest. He was then brought to the hospital.

After the patient felt better, he quickly pushed for discharge and was only in the hospital for 3 days. He failed to return to the clinic.

The first 2 cases have been presented in some detail to delineate the special beliefs of these patients and how they may manifest themselves in a clinical setting. It is hoped that the detailed accounts will assist a physician unfamiliar with real work in approaching a similar problem. The next 4 cases will be presented in a more cursory fashion to bring out other aspects of the problem.

#### FBP-004 (PRIMITIVE MAGIC)

Anonymous; Nature, 100:396, July 8, 1920.

In the University of California, Publications in American Archaeology and Ethnology (Vol. 4), No. 4 Miss Lucille Hooper gives a valuable account of Shamanism among the Caballa Indians, one of the largest surviving tribes in Southern California. At one of their festivals or annual rites the Shaman first took a dark substance from his breast; then "he reached into the fire with his foot and kicked out a few coals. One of these he picked up; it was about the size of a dollar. He immediately put it into his mouth. I was only a few feet away, and one of the sparks from his mouth, as he blew, fell on my hand, so I can testify that they were hot. The glow from the coal could be seen on the roof of his mouth. He swallowed it in about a minute. He swallowed three coals in this way." The dancing and singing are part of the rite. One man intended to eat the coals, "but his song had not gone right; he had forgotten part of it, no doubt due to some disturbing influence among those watching, or perhaps because of some spirit preventing his success. Since his song did not go right, he could do nothing." Other marvels of a similar kind are reported. "Another man saw a dove walking around; he raised his hands and clapped them together. The dove dropped as though dead, and blood flowed from its mouth. He then picked it up, threw it into the air, and it flew off as though nothing had happened." The report includes a full account of the religious and domestic rites practiced by the tribe. Their pottery, which was of an interesting type, has now disappeared with the use of manufactured articles.

## PBP-006 HYSTERIA AS RELIGION

Anonymous; Knowledge, 9-113-114, 1985.

An Indiana journal has a long account of the strange doings of a so-called female evangelist who is going through the country holding revival meetings in which alleged "trances" figure conspicuously. It is complained by sober-minded and observing professors of religion that the effects of these revivals are evanescent, and that in fact the excitement passes as rapidly as it comes. The ministry have been accused of jealousy of these meetings and the leaders of them, but the general disapproval entertained toward such methods by thinking pastors rests upon far higher grounds.

Medical science does not hesitate to assign the methods here used for religious purposes to the category of diseases. The kind of trances into which the Indiana evangelist falls is not mysterious to the student of medicine. He recognizes it as one of the manifestations of the many-sided disease called hysteria. And in the epidemic character of the emotional outbreaks at such revival meetings the influence of similar abnormal conditions is perceived.

To the physician's apprehension there is in these violent physical phenomena no question of mental conviction or conversion, no evidence of any intellectual process whatever; but solely and simply an involuntary and irrational nervous convulsion, propagated by contagion, truly epidemic in its character, and inviting treatment by medicine like any other physical complaint. The epidemic character of such outbreaks has indeed been conclusively established. The precise aspects of the epidemic may be determined by almost any trivial external incident, and it depends upon something of this kind whether the victims shall all move like cats, as did a whole convent full of nuns in Italy, or imagine themselves monkeys, and try to climb the pillars of the churches, as happened to congregations in Ireland, or shout "Glory!" and roll on the ground, as do the negroes at Southern revivals.

The Convulsives of St. Melard belonged in the same category. They were seized with a furious desire to be beaten, and so transported were they by their hallucinations that they actually endured the most violent blows, not only without sustaining permanent injury, but without showing the least external lesion. In the Irish epidemic, half a century ago, the people of whole parishes were affected, and it was observed that when those who passed from an infected village to one which had previously escaped, the epidemic was spread by contagion, just as a zymotic disease might have been.

In revivals this element of contagion is very powerful, and this is one of the most marked characteristics of hysteria. Merely looking at a person in a convulsive will often throw sensitive persons into a precisely similar state. The phenomena, however, have nothing to do with the will or the understanding. They are physical, not mental, and it is for this reason that they do not produce any permanent effects. The common experience of lay observers respecting the after effects of spasmodic revival meetings is simply a confirmation of the scientific conclusion. The evangelists who operate by means of trances and exciting the emotions of their hearers powerfully often produce very striking effects, but cannot expect any lasting changes in their subjects.

There is mischief in the delusion which confounds hysteria with religion, for the consequences of this mistake are of a kind to disgust sober and rational people, while they afford opportunity for ridicule to unbelievers, and disturb and expose to bad influences the weak men and women who accept them for what they are not. A little sound education in physiology and the elements of medical science would dissipate the hallucination that the evidences of diseased condition are analogous with the proofs of religious conviction.

## PBP-006 HYPNOTISM AND THE ESKIMO

Mason, G. T.: *American Journal of Psychology*, 1:302, 1888.

Capt. Realy, in his last report of the cruise of the *Corwin*, reports a most singular performance resembling a spiritistic *gigogne*. The wife of one of the natives, an old hag of 88, was observed to drop suddenly on the ground. Her lips were blue, her teeth were set hard together, while her labored breathing produced a light froth from her lips. The eyes were closed, the pupils much contracted and the whole appearance of the eye expressionless. Her husband immediately ran to her, passed a stout deerskin thong around her head, and secured it to the end of a stout staff about 8 feet in length. He then sat down near the woman's head and brought the staff across his thighs, making a lever of the first kind. Then he began in a chanting tone to speak to a spirit of the dead concerning his probable success during the approaching hunting season. When a question was to be answered he passed and tried to lift the woman's head from the ground. If he succeeded it meant yes; if not, the contrary answer was inferred. The performance went on some time, and such force was used by the man that the poor creature's head was in danger.

During the *gigogne* the man had his rifle and hunting knife brought and placed near by to ascertain their qualities. When the questioning ceased the thong was removed from the woman's head, and with a few passes exactly similar to those used by mind readers, the woman was restored to consciousness. For a while she seemed dazed and unsteady, but soon commenced to narrate what she had seen in the trance. She claimed to have been far away in a deer country, to have seen relatives and friends of those present, who listened with rapt attention, and with the appearance of perfect confidence in her veracity, to the messages and news which she brought them. This happened at the mouth of Kowak river in Kotzebue Sound, Alaska, in August, 1888.

## PBP-007 THERIANTHROPY

Eisler, Robert: *Encyclopaedia of Aberrations, a Psychiatric Handbook*. Pedology, E., ed., Philosophical Library, New York, 1933.

In many parts of Africa the belief in men who can transform themselves into lions and leopards and kill their enemies in this state is ineradicable (P. S. de Chaille, *Wild Life under the Equator*, London, 1902, p. 254; *Adventures in the Great Forests of Equatorial Africa and the Country of Ibanti*, New York [Harper], 1900, p. 129; Albert Schweitzer, *Mitihoggen und Lumboggen*, Bam., [Haupt], 1923). There are quite recent reports of their continued activities: *Waxer Tughat*, 3 May 1934 (execution of nine Negro members of the sect of 'leopard-men'; Near Frolie Pyrene, 16 May 1936 (execution of eight Angotes in Stanleyville, Belgian Congo); *News From Progress*, 29 June 1937. "Menachliche Leoparden" by 'Africanus', Isled 'Wan's Farm, Equatorial Africa, end of May', describing the marks of the man as made of brown tree-bark, painted with black and yellow spots, with a real leopard's tail attached to the back. The Angotes in question dragged young people, chiefly women and girls, by night from their huts, incanted them with knives shaped like leopards' claws, pierced the heart with a trident knife [probably representing forked-lightning.---(R. E.)] and devoured the bodies. (p. 522)

## PBT-001 EVIDENCE OF SURVIVAL OF A HUMAN PERSONALITY

Tilgard, R. A.; Nature, 132:684-697, October 20, 1928.

I have just been able to see Nature of Aug. 18 before leaving America for Australia, and must ask permission to reply to the editorial article in that issue referring to my report, which, as you were good enough to admit, established at least a *prima facie* case for the supernormality of the Margery phenomena.

The article referred to is fair but weak. The supernormal does not mean the supernatural. Everything must be accordant with Nature when properly understood, but for lack of experience some things that occur may seem to us strange and exceptional. That is no reason for refusing scientific attention to them when reasonably evidenced. A century ago, the breaking down of a chemical element would have been regarded as supernatural---there is no need to multiply instances of things which would have been discarded at one time, though as knowledge grew they were accepted and incorporated into the body of organized science.

The purport of my article is to show men of science that supernormal phenomena do actually occur in Nature and ought therefore to be studied by them. I cannot accept the plea that science has too much to do to attend to them; such an attitude would have excluded many now recognized discoveries. The discovery of radium ultimately broke up the old physics and opened up a new atomic theory. Biology will never progress so long as it is built on the foundation of the material cell and molecule and atom; psychical phenomena clearly point the way to a deeper understanding of the meaning of life. My call is set to the older biologists but to the younger men, feeling confident that some of them have the courage and vision to follow up the new path into unexplored territories.

On page 290 complaint is made of the "inadequacy and oddity of the tests." The tests were not inadequate, though they may appear so after the rigorous prying and shortening of my report on which you insisted; and it is not their oddity which should surprise you, but the accuracy of the results.

On page 290, par. 4, the phrase "my number" only signified that it was the number selected by Walter out of my lot of sheets. A reader could see that that was all I intended to convey.

You also ask in the same paragraph whether we signed "all the sheets under instruction." The answer is No. Other misapprehensions would have been removed by my full report. I had made several signs on some of them, and otherwise had taken every precaution to prevent fraudulent substitutes of my sheets, but these details had to be cut out for brevity in the version you admitted. The object of the test was to see whether Walter could select and recognize numbers in the dark and then convey these numbers mentally to Mrs. Litelmann, eighty miles away. Even assuming that Margery was awake and could see in the dark, you have not even begun to offer an explanation of how Mrs. Litelmann simultaneously wrote these numbers, eighty miles away, in a tiny village without any quick means of communication with Boston. As to what the writer of the article thinks may have been Mrs. Litelmann's successful "shot" at a square and a circle, it must be remembered that she did not even know that it was to be a drawing test, and that Mr. Evans might have drawn anything---flowers, fruit, animals, anything; so it is unreasonable to attribute success to mere chance.

As a further test of Walter's power to see and do things in the dark, I may mention that, at a subsequent sitting on Aug. 9, Dr. F. Mair, of Honolulu, was with me, having brought some pieces cut out of a magazine to see if Walter could decipher them and pass a knowledge of them to Mrs. Litelmann sitting simultaneously in her own home in Cambridge. Two of these fragments he took out of his pocket and gave to Walter in the dark. After the seance, Margery

wrote the words "The Moon" and "No Juice"; and these words were afterwards found to correspond with the slips presented at random. I took a telephone call to Mrs. Litsofmann's house, and they reported that she had drawn a crescent moon followed by some hieroglyphics (see Fig. 1), which when held to a mirror reads as the word "juice."



Fig. 1. Copy of what Mrs. Litsofmann wrote at a distance of 33 miles from the source of August 8.

At the same sitting Walter chose the numbers 4, 1, and 14 from a calendar, and said that he would make Mrs. L. write it backwards. She wrote 41. I ask you what normal reason could she have had for writing this rather than any other combination of two digits. The suggestion that this lady, sitting simultaneously miles away from the Cransden, can be an accomplice of theirs in fraud is really too wild to be taken seriously.

With regard to thumb-prints, the writer of the leading article in *Nature* says that few of us could draw the pattern of our thumb-prints even while we have our thumbs. Exactly, that is what makes the thumb-print test so cogent as an individual character. He implies that it can have nothing to do with survival; but some psychical researchers, including myself, hold as a possibility that a surviving personality might possess a psychic body or soul, having a psychophysical-parallellism with the physical body which is dead. If we can prove this, we also prove at the same time that living men are not mere physical bodies only, but psychic bodies spiritus, if you like, clothed temporarily in physical bodies, just as our physical bodies are covered with clothes. The problem is a greater one than that of mere survival; it concerns the basic nature of our existence here and now, as well as hereafter. Now it is an indubitable fact that Walter, dead for sixteen years, does give a consistent thumb-print in wax, which is not that of the medium or any of the sitters. He claims that it is his own thumb-print. The print agrees exactly with that afterwards found on the razor used by Walter on the morning of his death, though the latter shows only a portion of the clear area. Eiber, then, those prints are really those of Walter's psychic thumb, or they are produced fraudulently. It is my business as a researcher to eliminate all possibilities of fraud, so as to present this tremendous truth with irresistible force to the scientific world.

Finally, on my return to America, in order to eliminate every chance of collusion unless I myself were the culprit, Dr. Cransden allowed me to have a sitting alone with Margery; he and my assistant being outside the door. Under these conditions Walter came through, talked while Margery's mouth was prevented from speaking by Dr. Richardson's "voice machine," and finally gave me three excellent thumb-prints. Margery was bound hand and foot by adhesive medical tape, and otherwise fully controlled, her feet being in shoes and stockings.

This 'solus' sitting is unanswerable. It is the crown and triumph of my work in psychical research. It now only remains for sceptics to accept the proof or to attack my own competence and veracity. (G. J. Tillyard.)



[When on his way to New Zealand, Dr. Tillyard sent a long letter in reply to the leading article in Nature of Aug. 18. Space could not, however, be found to publish the letter in full, and as much delay would be involved if it had to be sent to him for abridgment, we decided to ask a friend who is an expert in the subject to condense it and yet include the salient points. The letter represents this abbreviated version of the original communication.

We cannot think that in his letter Dr. Tillyard has added any cogency to his article. He does not attempt to reply to the very pertinent remarks we tentatively made, and above all to the suggestion that the experiments were not devised by himself. Moreover, his attempt to show that he had tried to prevent substitution of the calendar sheets by making secret signs is entirely beside the mark. No substitution whatever was necessary. Dr. Tillyard provided the critic with a normal explanation by using all the calendar sheets and then handing over the whole packet when told to do so by the 'Control,' as also did Mr. Evans by drawing ign diagrams when one playing card drawn haphazard from his own pack would have been sufficient. Instead of explaining why he did these things, he speaks of new experiments at subsequent sittings, both alone and with others, on which we do not propose to comment.

Before these alleged 'psychic' phenomena can be accepted by the scientific world, the method by which experiments are conducted will have to be wholly revised. The novel atmosphere of the seance room and the unexpected events which take place there are often apt to blind the newcomer to the faulty scientific procedure that prevails. The observers are never really the experimenters. They are the obedient servants of the 'Controls,' who direct their actions, their tests, and their general behaviour. If they attempt to assert their authority, either their presence is considered undesirable, or the 'phenomena' cease. The conclusions of the Sorbonne Commission a few years ago that 'psychic' phenomena tend to decrease in proportion as control conditions are applied, admit a few if any exceptions; and until Dr. Tillyard's results are independently confirmed under much more rigid conditions, and without the flaws indicated above, it would be rash to suppose that this case provides better evidence for the supernatural than those hitherto reported.—Editor, Nature.]

PBT-002 GENERATION OF PARANORMAL PHYSICAL PHENOMENA IN CONNECTION WITH AN IMAGINARY 'COMMUNICATOR'

Cross, Iris M. and Sparrow, Margaret H.; New Harmonist, 1-4-12, January, 1974.

An attempt at ghost construction. In September 1912 a group of members of the Toronto S. P. H. decided to attempt to construct a ghost. This followed a discussion on the nature of ghosts and speculation as to whether, in fact, a ghost was an artifact conjured up from the mind of the beholder. If this were so, the reasoning went, why could one not deliberately conjure up an apparition?

It was decided that the proposed apparition would be an entirely imaginary character, a completely invented ghost. The group would sit for an hour, or maybe more, at least once weekly, and try by various methods to produce the appearance of this character. It was realized that, in any case, other types of phenomena might occur, and the possibilities of collective telepathy, collective hallucination, etc. were discussed. It was agreed that the group would be kept to a small number, and that the members would attempt to keep regular attendance as far as possible.

The group consisted of M. S. S., B. M., A. P., D. O'D., L. H., A. H., S. K., and I. M. C. During the early part of the sessions one or two other people took part for short periods, but the group finally crystallized into the members mentioned above, five females and three males.

The story in brief was as follows. Philip was an aristocratic Englishman, living in the middle 1800's at the time of Oliver Cromwell. He had been a supporter of the King, and was a Catholic. He was married to a beautiful but cold and frigid wife, Dorothea, the daughter of a neighbouring nobleman. One day when out riding on the boundaries of his estates Philip came across a gypsy encampment and saw there a beautiful dark-eyed raven-haired gypsy girl, Margo, and fell instantly in love with her. He brought her back secretly to live in the gatehouse, near the stables of Diddington Manor—his family home. For some time he kept his love-nest secret, but eventually Dorothea, realizing he was keeping someone else there, found Margo, and accused her of witchcraft and stealing her husband. Philip was too afraid of losing his reputation and his possessions to protest at the trial of Margo, and she was convicted of witchcraft and burned at the stake. Philip was subsequently stricken with remorse that he had not tried to defend Margo and used to pace the battlements of Diddington in despair. Finally, one morning his body was found at the bottom of the battlements, whence he had cast himself in a fit of agony and remorse.

The story continues that Philip has been reincarnated several times since then, but once every century or so, his ghost is seen on the battlements at Diddington. The group decided that the year 1872 was a period between incarnations, and that his ghost is again evident. The theory is that if he can be materialized and reassured that Margo has forgiven him, and is indeed "on the other side", then he will be at rest.

The reason for a completely treated character is, of course, that there can be no question that any manifestation that may occur could be due to a real spirit (in the Spiritualistic sense of the word)—or in other words it would prove, to the group's satisfaction at any rate, that it arose from their collective minds. It should also be stated clearly that nobody in the group claimed to be psychic or a medium—the whole theory rested on the assumption that if anything could be produced it could be done by anybody, and not by a special type of person only.

The group spent more time elaborating the story of Philip, and fixing in their minds a picture of him that tallied with all their individual ideas of him as a person. In fact, an actual picture was drawn, which all agreed to. The venue of the story, Diddington Hall, is a real place in Warwickshire, England, and was at the time known to one of the group. Subsequently two other members of the group visited it during a visit to England, and brought back pictures of the house, Dorothea's home, the stables and surrounding countryside. Any history of the house is unknown to the group, but there is no evidence whatever that any such people as were detailed in the story existed, nor did the group believe this in any way. The group also at this stage familiarized themselves with the customs and ideas of the times as far as possible.

The first phase: meditation methods. The sittings started with a group sitting in a circle round a table, and meditating in silence, initially for periods of ten minutes, later increasing the time of meditation up to half an hour. Sometimes they sat in a circle, without a table, in meditation, and the venue would not necessarily be constant, the group meeting in various homes. After the period of meditation the group would discuss their experiences and feelings during meditation, and also discuss the story and personality of Philip.

During this initial period difficulty was experienced by some members of the group in realizing that Philip was a group entity. Individual impressions of Philip obtained during meditation were related which made it clear that the group were still in the throes of creating a unified personality.

At this stage also, an observer was stationed outside the group to witness any unusual phenomena that might occur. This observer, who to an "aura-viewer", frequently described auras around the heads of the participants, and also energy fields passing from one member to another, and around different persons. On occasion all members were aware of a certain existence in the room or around the centre of the table, although the atmosphere was quite clear. Smoking was not allowed until after the period of meditation.

The group continued to meet in this way weekly for a whole year, and during this period the members had come to relate to each other extremely well; they were completely relaxed in each other's company, and a strong bond of affection and friendship was becoming evident.

The second phase: a change of approach. In the summer of 1973 work which had been done in England during the previous ten years came to the attention of the group. This work had been started in 1964 and continued with interruptions until 1972 (Batchelder, 1964; Brookes-Smith and Hunt, 1970; Brookes-Smith, 1973). However those members who had read it previously had not realized its relevance to their current experiment. Batchelder, and later Brookes-Smith and his associates were specifically interested in producing physical effects, such as table levitation and raps, but our Toronto group wondered if a similar approach might also work in the creation of Philip. In any case it was felt at that time that a different approach was needed, as the effects produced had so far been minimal.

Batchelder and Brookes-Smith and Hunt recommended an approach to physical phenomena more closely approximating the old type of seances as performed during the Victorian era. Instead of quiet concentrated meditation, an atmosphere of jollity and relaxation should be created, together with the singing of songs, telling of jokes, and exhortations to the table to obey the sitters' commands. In their papers they gave a completely reasoned philosophy as to why this method worked. Our Toronto group decided that, as we had worked for a whole year on the other method without many obvious results, we would try this recommended method. Consequently at a meeting in late August 1973 at the home of one of the members the group tried this new method. They found it a little difficult at first to dispense with the meditation method they had become accustomed to, and were a little inhibited in producing an atmosphere of singing and jokes. Apart from a feeling of "vibration" in the table at times nothing happened at this session.

But at the following session, and on subsequent evenings, using this method, very extraordinary things happened indeed. The first experience was the "feeling" of raps in the table. At this stage "feeling" is the right word because these raps were definitely felt rather than heard at this initial stage, and also because the group was making a degree of noise at the time, and would not necessarily be able to hear the raps if they were audible. It should be stated that these sessions were conducted in a fair degree of light. During the first two or three there was a light in the corner of the room, and sometimes also a lighted candle on the table. Later the group worked in a easy light which made it perfectly possible to observe clearly everything happening. At no time did the Toronto group work in the dark.

The year's building up of rapport now paid off. After the initial hesitation the group found no difficulty in relaxing, singing jolly or sentimental songs, telling jokes, and generally creating the kind of atmosphere recommended by Batchelder and Brookes-Smith. When the group sang particular songs, especially songs associated with the period that Philip lived in, the table began to respond by producing raps which became louder and more obvious as time went on.

The group adopted the procedure of addressing the table as "Philip" and for convenience this mode of reference will continue to be used in this article.

"Philip" himself adopted the procedure of one rap for Yea and two for No, with slight hesitant knocks when the answer was doubtful. Of the question apparently not understood. "He" would also give a lead series of raps for a song of which he approved, and very soon adopted the habit of actually beating time to favored songs. At the beginning of each session the members of the group would address him in turn, saying "Hello, Philip", and under each hand to turn there would be heard a loud and definite rap. Again, at the end of the session the group would individually say "Goodnight" and get individual responses. Questions were asked regarding Philip himself, his likes and dislikes, his habits and customs, and the "Philip" of the table responded exactly in the manner one would expect. In other words, the table recreated the personality of Philip. (However, on occasion the table would rap out an answer inconsistent with the story, which intrigued the group—for instance, he twice denied quite vigorously that he had loved Margo—the keystone of the story! This the group found most interesting and unexpected.)

It should be stated that the initial sessions were held in the home of one of the members. An ordinary plastic-topped metal-legged card table was used. After two or three sessions the group moved to the home of another member where a room was set aside for the sessions. A similar card table was used—it should be stated several tables were experimented with, all with a similar result. The floor was thickly carpeted, and in ordinary circumstances it was very difficult to move the table by pushing on this floor. Needless to say the raps could not be produced by someone's feet tapping the floor. The raps became louder and were clearly audible during quiet moments during the sessions. They moved about the table, often appearing to come from within or underneath the table. They were equally audible and profile if the group were all standing up around the table, with all hands in view, finger-tips lightly resting on top of the table. Later it was found that it did not matter if everyone was not resting hands on the table, and various combinations of members of the group were able to produce the phenomena alone—the last occasion being when only four members of the group were able to be present, and another member of the Society who had not been aware of this work had come in, and the phenomena occurred with just the four group members and the complete stranger.

After some four weeks of sittings when raps were produced, one night, suddenly the table started to move, and it moved around the room in random fashion. The sitters were forced to vacate their chairs and follow it. It would race right into corners, forcing most of the sitters to relinquish their contact, and then shoot across the room at great speed, so that at times it was difficult to keep up with it. When it came to rest, the sitters, standing around the table, would continue their questions, and the raps would come forcibly, and apparently intelligently as before, thus demonstrating again that no-one was tapping from underneath.

The table developed quite a personality, and the sitters were enjoying the whole thing tremendously; at times the situation became quite hilarious. "Philip" was showing preferences, likes and dislikes, and also apparent preferences for members of the group, together with an attitude for mischievous pranks—he was apt to chase a particular person; on one occasion a member had left the room, having said goodnight, and then had to come back for her jacket. "Philip" made a very definite and obvious attempt to prevent her getting the jacket, and finally whisked across the room in chase! At times he showed a tendency to "sulk" at something he did not like, but became completely noisy and appreciative of songs or jokes he approved of. He particularly liked drinking songs, as befitting a Cavalier!

On one occasion, on a hot evening, the table had been particularly vigorous, and the group had been trying to persuade "Philip" to lift the table, as in the Brooker-Smith experiments. This had been unsuccessful, and to date there has

been no real and obvious levitation. One of the members said "Well, Philip, if you are not hot and tired we are: we would like a rest. Why don't you just flip right over, and then we'll all have a glass of lemonade and a rest". Whereupon the table immediately tilted, and with all hands on the top of the table, gave a curious little "flip" and landed completely upside down with all four legs in the air.

During this period of rest with the table still upside down, another member of the Society came into the room, a member who had not been associated with this experiment in any way, and who was quite sceptical of the whole phenomena. The group righted the table and introduced the visitor, R. The table responded with a slight tap. "That's not loud enough", said one of the group, "you can do better than that". Whereupon a very loud rap indeed was heard from the centre of the table. R. was allowed to join the group, and when he spoke to "Philip" very loud raps were heard immediately under his hand in reply. Later A. H. G. O. came into the room, and again the table produced raps in greeting, and in reply to his questions. The raps could be heard in the doorway of the room, and very many people not connected with the initial group in any way, and somewhat sceptical in their own approach, have heard the raps, and seen the table movements, and all are satisfied that these are produced parapsychically and not by the group members themselves.

Discussion. Details of the individual sittings and happenings are too long for this paper, and will be the subject of a somewhat lengthier manuscript at a later date. The phenomena are continuing, and the group is planning how to continue its approach to this experiment, and have not lost sight of their original objective, which was to try to create an actual manifestation of an apparition.

However to sum up this paper, some discussion is clearly relevant. First and foremost the group are tremendously indebted to the very detailed descriptions of the work done by Batchelder, and later Brookes-Smith and Hunt. It is not only relevant that the method of working is productive of results, but the reasoning as to why it works is most important. Our Toronto group had not seriously looked at the English experiments until after they had had a whole year of meditation and group working, and this clearly paid off when the method of approach was changed—already the group were in complete rapport, and able to go straight from there, and it seems as if this is necessary.

Batchelder and Brookes-Smith were concentrating on actual physical phenomena, the Toronto group on an invented entity, but again this fits in with the philosophy of reasoning that if everyone in the group believes that something will happen, then it does indeed happen.

Several basic points emerged. One does have to believe implicitly that the phenomena can happen, and will happen, and not be surprised when something unusual does happen. A. K. Talbot says, "...the psychological researcher, while carrying out his investigation, cannot afford the luxury of a neutral and unbiased attitude if he wishes to advance beyond the vicious circle of endless repetition of half-satisfactory experiments which are the usual reward of the half-covertured experimenter. He should identify himself and become at one with the physical situation by adopting, in the name of a working hypothesis, as it were, a whole-hearted acceptance of the phenomena at their face value, regardless of how much this deliberate act of acceptance may outrage his intellectual convictions". Talbot, of course, qualifies this advice with the admonition: "While thus acting as a whole-hearted believer, keep a corner of your mind alert, unclouded, and unemotional, avoiding all partnership. A pretty little piece of mental acrobatics!". The attitude which Talbot thinks appropriate is illustrated by the reaction of the Brookes-Smith and Hunt group when a chair moved telekinetically. The watchers did not react with astonishment, but rather in speculation on how

to use the force then manifested (which was gentler than they had with their tables) in order to have better controlled experiments. Brookes-Smith says that the group exhibited psychological "poise", and that such poise appears to be necessary for this type of experiment.

The Toronto group found that if they became too intense in their questioning, or too concentrated, the raps became feebler, and more erratic. Also it would seem that, speaking metaphorically, just as one can create a positive "thought-form" one can just as easily dissipate it. (This is analogous to what is said by Solar, though he conceives of a thought form or pseudo-ghost as having an objective though transient reality, whereas we are using the term merely as a figure of speech.) Our group on one occasion demonstrated the unstable nature of Philip. Answers to questions were somewhat erratic, and the phenomena were slow in coming on this evening. Philip would not respond to commands, and one member of the group said "Well, Philip, if you won't co-operate, we can send you away (as you know); subsequently on that evening the phenomena almost disappeared completely, and it was necessary to reinforce the group's belief in Philip and the phenomena for the raps and movements to return.

The Toronto group has not been working as long as the Brookes-Smith group and, as stated, it was specifically laid down that no member had claim to psychic power or ability, and so this group has not reproduced all the phenomena that the Brookes-Smith group has. However, many things that have happened in Toronto strikingly resemble those that the two English groups report, so that one is able to say with certainty that here is, in fact, a repeatable parapsychological experiment—unlikely as it may seem. In a later publication, points of similarity will be detailed at greater length. It is clear that in some way that we cannot yet understand a group of people can create a thought-directed force which can be expressed in a physical way—i. e., produce noise, or move objects. I think we have proved this can be done by any random group of people, provided they can condition themselves psychologically to produce this effect.

The Toronto group has much more to do in the way of experimentation, and many of the English experiments should be repeated. Many variations of this experiment could also be done, and would prove very interesting.

We are indebted tremendously to Hutchekler and the Brookes-Smith and Hart groups not only for their very clear exposition of their own experiments, but for giving us the faith and belief that we could repeat their work, and so produce the repeatable parapsychological experiment, with many implications both for psychology and physical research, especially psychokinesis.

The foregoing report underscores the possibility that many scientific observations may be created or at least conditioned by the experimenters. Obviously, the apparent objective reality of Philip is an incredible phenomenon—one that must be thoroughly checked out by other experimenters.

## PBW-001 DREAM MURDERS

Anonymous; *Encyclopedia of Aberrations, A Psychiatric Handbook*, Podolsky, E., ed., Philosophical Library, New York, 1953.

A famous French detective, Robert Ledru, aged 35, was holidaying at the French seaport of La Hague. He had just recovered from a nervous breakdown---the result of mental strain suffered in solving a case. One morning, while getting dressed after a refreshing twelve hours' sleep, he noticed that his socks were unusually damp, and wondered about it. Later in the morning his superior in Paris wired that the naked body of a man, presumably a midnight bather, had been found shot on the beach at Saint Adresse. As it was only a short distance from where the detective was vacationing, he agreed to help the baffled local police.

The murdered man proved to be Andre Monet, a Parisian small businessman, on a modest vacation. Monet was not wealthy, had few friends, no enemies, and was in effect a harmless nobody. His clothes, neatly piled on the sand by his body, had not been rifled. It was apparently another of these baffling motiveless murders. There were only two clues: the murderer's footprint which, the local police pointed out, was practically useless as the murderer had been in stocking feet. The ballistic record proved that the bullet had been fired from a Luger, a very common make. Even Ledru's own gun was a Luger.

Then later, as Ledru examined one of the footprints with a magnifying glass he turned pale as death. A toe was missing from the stocking foot. Ledru himself lacked a toe in the right foot! In a flash the explanation of his wet socks came upon him. On cold nights he was accustomed to sleeping in his socks.

Before the astounded police Ledru made an impression of his toeless foot in the wet sand beside the murderer's prints. With the magnifying glass he compared the two. Obtaining the lethal bullet from the local police, Ledru hurried back to his hotel, fired a muffled shot from his own gun into the pillow, and examined the grooves on the two bullets.

In haste he returned to Paris to report to his superior.

"I have the killer and the evidence but I lack the motive. It was I who killed Andre Monet." The detective laid the bullets and photos of the two footprints on the desk. Ledru's horrified chief refused to believe, thinking that the brilliant detective was going mad. But after such conclusive evidence as he had presented, it was quite clear that Ledru had murdered Monet while walking in his sleep. (p. 114)

## PBW-002 [DOUBLE PERSONALITY OF THE AMBULATORY TYPE]

James, Prof.: Society for Psychological Research, Journal, 5:5, 1881.

Professor James then gave an account of a case of "double personality of the ambulatory type," the subject of which, Amos Bourne, was, at the time of his seizure (January 6th, 1881), an itinerant preacher, 61 years old, residing in Greene, N.J. One morning, whilst apparently in his usual state of health, he disappeared, and in spite of the publicity which the newspapers gave to the fact, and the efforts of the police to find him, he remained undiscovered for a period of two months, at the end of which time he "woke up" at Norristown, Pennsylvania, where for the previous six weeks he had been keeping a small variety store, under the name of A. J. Brown, appearing to his neighbors and customers as a normal person, but being, as it would seem, in a somnambulistic condition all the while. Professor James gave a sketch of Mr. Bourne's life, which presented at least one other incident of great interest, and went on to describe in detail how he had conceived that Mr. Bourne, if hypnotized, might give a full account of his strange absence, including the first two weeks, of which no account had ever been forthcoming. Mr. Bourne, in his normal state, recollected nothing whatever between the time of his disappearance from Rhode Island and his "waking up" in Norristown, eight weeks afterwards. The results justified the expectation of Professor James. Mr. Bourne was hypnotized repeatedly by Professor James and Mr. Hodgson, and gave an account of his doings during his eight weeks' absence, and verification has been obtained of some of the incidents which he described as having occurred before his arrival at Norristown. In the hypnotic trance he called himself A. J. Brown, and recollected nothing later than going to sleep in the store at Norristown.



PBZ-001 EXTREME EXAMPLES OF THE POWER TO CARRY ON PROCESSES OF REASONING SUBCONSCIOUSLY

Hilprecht, Herman V. *Noted Witnesses for Psychic Organization*, W. F. Prince, ed., University Books, New York, 1963, pp. 25-39. (Originally published in 1939, Boston Society for Psychological Research)

These are included, not because they are presumed to be supernormal incidents but because they might easily be deemed such, and illustrate the very great care which must be exercised before one takes his stand upon a conclusion of supernormality. They show that some persons, once they have performed conscious mental labor on some intricate problem, are able to carry on the ratiocinative process after they are asleep. Probably in varying degrees this is the case with all people, but some are insufficiently reflective or introspective ever to take notice, while with the majority who do little in the way of hard thinking even when awake, the ability to do so while asleep is too feeble to leave recognizable traces.

Since it is presumed that most "supernormal" mental events first pass through the subconscious, though they do not have their origin in it, the examples given will show that, potent as that "machine" may be for such a purpose, it may also easily interfere with it by its own normal activity. Hence it is expected that, although automatic writing or speaking may announce facts in such number and complexity as defy any attempt to normally explain them, since the psychic's subconscious had no known data on which to found even inferences, yet it will, once the prime facts, say about a stranger present, emerge within it, tend to make its own inferences, often erroneous, and so evidently obscure and damage the record. Only in rare instances does it appear almost completely to escape doing so.

The instances selected were furnished by Dr. Herman V. Hilprecht, Professor of Assyrian in the University of Pennsylvania, and were first printed by Professor William Brewster Newbold in the *Proceedings S. P. R.*, Vol. XII, pp. 12-26. I abbreviate and analyze them in my own way.

During the winter of 1882-1883, he was working with Professor Friedrich Delitzsch, and preparing to publish the original text, its transliteration and its translation, of a stone of Nebuchadnezzar. He had accepted Prof. Delitzsch's explanation that the name Nebuchadnezzar---*Nebu-kadurru-nessar*---meant "Nebu protect my mason's pad" (ivortur=beard, i. e., "my work as a builder." One night, after working late (it is not said that he was engaged on the problem of this name---probably not, but at least on related or similar cases) he went to bed at about two o'clock in the morning. He woke after somewhat restless sleep, with the thought in his mind that the name should be translated "Nebu protect my masonry." He but dimly remembered dreaming of being at work at his table. As he began to reflect, "at once" (illustrating how the bright thoughts which suddenly emerge full-grown in our consciousness may have been worked out in the subconscious) he saw that *kadurru* could be derived from *kaduru*, to engrave. Shortly afterwards he published this translation in his dissertation, and it has since been universally adopted." The second example is far more intricate and striking. This is Prof. Hilprecht's own account.

One Saturday evening, about the middle of March, 1883, I had been wearying myself, as I had done so often in the weeks preceding, in the vain attempt to decipher two small fragments of agate which were supposed to belong to the finger-rings of some Babylonian. The labor was much increased by the fact that the fragments presented remnants only of characters and lines, that dozens of similar small fragments had been found in the ruins of the temple of Bel at

Nippur with which nothing could be done, that in this case furthermore I had never had the originals before me, but only a hasty sketch made by one of the members of the expedition sent by the University of Pennsylvania to Babylonia. I could not say more than that the fragments, taking into consideration the place in which they were found and the peculiar characteristics of the cuneiform characters preserved upon them, spring from the Cassite period of Babylonian history (circa 1700-1140 B. C.); moreover, as the first character of the third line of the first fragment seemed to be KU, I ascribed this fragment, with an interrogation point, to King Kurigalzu, while I placed the other fragment, as unclassifiable, with other Cassite fragments upon a page of my book where I published the unclassifiable fragments. The proofs already lay before me, but I was far from satisfied. The whole problem passed yet again through my mind that March evening before I placed my mark of approval under the last correction in the book. Even then I had come to no conclusion. About midnight, weary and exhausted, I went to bed and was soon in deep sleep. Then I dreamed the following remarkable dream. A tall, thin priest of the old pre-Christian Nippur, about forty years of age and clad in a simple abba, led me to the treasure-chamber of the temple, on its southeast side. He went with me into a small, low-ceiled room, without windows, in which there was a large wooden chest, while scraps of agate and lapis-lazuli lay scattered on the floor. Here he addressed me as follows: "The two fragments which you have published separately upon pages 22 and 26, being together, are not finger-rings, and their history is as follows: King Kurigalzu (circa 1200 B. C.) once sent to the temple of Bel, among other articles of agate and lapis-lazuli, an inscribed votive cylinder of agate. Then we priests suddenly received the command to make for the statue of the god Ninib a pair of earrings of agate. We were in great dismay, since there was no agate as raw material at hand. In order to execute the command there was nothing for us to do but cut the votive cylinder into three parts, thus making three rings, each of which contained a portion of the original inscription. The first two rings served as earrings for the statue of the god; the two fragments which have given you so much trouble are portions of them. If you will put the two together you will have confirmation of my words. But the third ring you have not yet found in the course of your excavations, and you never will find it." With this, the priest disappeared. I awoke at once and immediately told my wife the dream that I might not forget it. Next morning--Sunday--I examined the fragments once more in the light of these disclosures, and to my astonishment found all the details of the dream precisely verified in so far as the means of verification were in my hands. The original inscription on the votive cylinder read: "To the god Ninib, son of Bel, his lord, has Kurigalzu, pontifex of Bel, presented this."

The problem was then at last solved. I stated in the preface that I had unfortunately discovered too late that the two fragments belonged together, made the corresponding changes in the Table of Contents, pp. 22 and 26, and, it being not possible to transpose the fragments, as the plates were already made, I put in each plate a brief reference to the other. (Cf. Hilprecht, *The Babylonian Expedition of the University of Pennsylvania*, Series A, *Cuneiform Texts*, Vol. I, Part 1, "Old Babylonian Inscriptions, chiefly from Nippur,") (II. V. Hilprecht)

Professor Hilprecht finally verified the principal facts asserted in the dream relative to the rings and inscriptions, as he says, the next day. But immediately following the dream he went to his study and provisionally verified it by reference to his working copy. His wife made a statement narrating that she was awakened by a sigh, saw him hurrying into his study, and heard him cry: "It is so, it is so!" She followed him and heard the story of the dream.

## PBZ-002 HUMAN DREAM PROCESSES AS ANALOGOUS TO COMPUTER PROGRAMME CLEARANCE

Newman, E. A., and Evans, C. R.; *Nature*, 206:524, May 1, 1965.

Recent experiments have led to a renewed interest in the very long-standing problem of dreams. With perhaps the single exception of the contribution of the nineteenth-century psychoanalysts, dream theories have been based on negligible experimental evidence and have never been sufficiently rigorous or explicit to attract serious scientific interest. The work of Dement, however, demonstrates what appears to be a convincing behavioural measure of dream periods and, though criticised on several counts, has had an undoubted effect from the point of view of stimulating further experimental investigations and theoretical considerations. We have ourselves recently proposed elsewhere that the dream process might be likened in function to the systematic programme clearance which is absolutely necessary where computer programmes are being continuously evolved to meet changing circumstances. The greater the change in circumstances being programmed for, the greater must be the amount of programme evolution and the more urgent the programme clear-out. In our view, the primary function of sleep is probably to allow such a clearing process to get under way without interference from external information: 'dreams' occur when the level of consciousness shifts for one reason or another and the clearing process is interrupted. Prolonged deprivation of the opportunity to dream would inevitably produce a breakdown in human efficiency, most probably in the region where novel situations must be handled. More recently yet, Kalos et al. have attempted an experimental reappraisal of Dement's original findings: but, while depriving subjects of the opportunity to dream for a number of nights, they did not notice any significant deterioration in their performance in certain psychometric investigations. In substance they agree that dream-deprivation leads to increased attempts on the part of subjects to dream, but noted no 'psychic changes' as the result of this deprivation. However, the apparent discrepancy between the results of Kalos and those of Dement is not, we believe, serious for present theoretical interpretations of the dream-deprivation investigations, for a number of reasons which we shall consider here.

Perhaps the most important factor which needs to be considered in our proposition that the dream clearance is, in fact, an excretion of novel material collected by the system in the course of the day. Thus, the degree of disorganization caused by interrupting dreaming will be a function of the amount of new material "added to the existing programmes" in the course of recent experience. As Lilly has pointed out, when individuals are subjected to quite abnormally constant environments (for example, in a space-capsule orbiting the Earth), the required period of sleep appears to fall off dramatically and may be reduced to as little as 2 h. If we have interpreted their account correctly, Kalos et al. have, in fact, provided a very restricted environment to their two subjects, allowing them to be generally idle in the course of the day and confining them (for purposes of observation) to a single room. Thus, inadvertently, they seem to have weighted their experimental conditions against the possibility of there being severe psychic effects.

The second point which needs to be considered has, we believe, not been raised in any of the previous work. The view stated here, based on the early experiments, is that patterns of eye movements give a reasonably behavioural indication that an individual is dreaming when they occur. This is suggested by the fact that subjects awakened during such periods of activity report that they have been dreaming. The not unreasonable (or 'safe') assumption is that dreaming does not occur when eye movements are not present, for no dreams are

reported under these conditions. We suggest, however, that the rapid eye movements which Dement *et al.* report may be indicative only of a particular type of dream, that is, one involving oculomotor accompaniment and sustained reached visual imagery. Such dreams, we propose, would be easy to 'recall' or 'verbalize' when the sleeper is interrupted, and since the greatest proportion of novel information is absorbed through the visual system we might therefore consider them to be among the most important. However, the presence of 'non-visual' dreams not accompanied by eye movements would seem to be required. These would include 'dreams' involving auditory and proprioceptive information, and often with much sub-verbal emotional overtones. Thus, through our programme clearance we can imagine a set of circumstances in which interruption of rapid eye movements alone would not produce major psychic disorders—unless the interruption was prolonged excessively. A third comment, a criticism which cannot unfortunately be verified, or, for that matter answered, would relate to the obvious difficulty of ensuring that subjects did not take 'cat naps' here and there, or indulge in some really intensive 'day-dreaming'. Were subjects, for example, watched unrelentingly at all times of the day? Kales's own finding that visual dreaming was reported as rapid and extremely vivid in some cases would itself suggest that in 'emergency' situations some very rapid programme clearance will be undertaken by the system at the first opportunity.

We suggest, therefore, that before the crucial nature of the function of dreams can be satisfactorily uncovered, it will be necessary to test the programme clearance hypothesis more stringently. We do not know for certain how many nights' dream deprivation will produce the kind of massive breakdown which we predict; in the appropriate circumstances it might be as little as three perhaps more than seven. Whatever the time-interval, it will certainly be important that the individual is not given a kind of holiday in his waking hours, but subjected to a good deal of experience of novel information of biological significance: experience, in fact, that would have required modification of their normal programme.

The new view of dreaming which Dement's important work and our own interpretation of his findings have allowed may yet be of more than academic interest. The implications for the treatment of psychiatric disorders could be appreciable, though the extended Russian experiments in sleep therapy seem to run against the point. The nature of sleep induction is probably vital; it is well known that barbiturates, while producing a very heavy sleep, do not always produce a refreshing one. Probably the 'level' to allow dreaming via programme clearance to operate most effectively is critical. Too deep a sleep (that is, barbiturate induced) may inhibit dreaming greatly; too shallow a sleep (as in feverish states) produces the familiar symptoms of restless, repetitive scanning or trivia.

## SECTION PH: HIDDEN KNOWLEDGE

Telepathy, precognition, and dowsing are cornerstones of parapsychology. Knowledge hidden physically, residing in the brain of another, or located somewhere in the future cannot according to the tenets of most scientists be obtained. The frequent claims to the contrary always evoke charges of fraud, poor experiment design, bad statistics, and the like, because no acceptable mechanism comes close to explaining these phenomena. The proof of telepathy would inevitably lead to the turmoil of scientific revolution; and many scientists would avoid this if at all possible. The many cases of fraud in this field and considerable sloppy experimentation have encouraged this outlook. There exists, however, a large body of data that supports the reality of "impossible" information channels.

The subject of scrying or crystal vision has been placed in the PH section (hallucinations) because most cases of crystal gazing seem to be true hallucinations; that is, they are subjective constructs rather than visions of hidden knowledge.

- PHD Dowsing, including distance-optical perception and object reading (divination)
- \*PHP Precognition, prophecy
- PHT Thought transference, telepathy

\*This subsection not included in Vol. P1.



## PHD 001 THREE LESSONS IN RHADOMANCY

Vance, Lee J.: *Journal of American Folk-Lore*, 4:241-246, 1891.

Vance presents a rather amusing as well as historical overview of dowsing, which though generally negative in tone provides some insight to the character and motives of dowseers.

To those who have not seen the dowsing rod in working order, we would say that a forked branch of witch-hazel or of peach is selected always in the shape of the letter Y. The branches are grasped at the ends by the hands, with the palms turned upwards, the ends of the branches being between the thumb and the forefinger, the stem where the branches unite being held horizontally. Then the dowsier, with the elbow bent and the forearm at right angle, walks over the ground, and the forked stems move, rising up or down, according as there is or is not a subterranean spring or mineral vein beneath the surface.

It has been my good fortune to take three lessons in rhadomancy.

1. The first lesson was some seven years ago. It was given in eastern Ohio, at the time of the excitement over gas wells. Curious to relate, there appeared my number of philanthropic individuals who offered to locate a good paying gas or oil well for a small consideration. With them it was a case of heads I win, tails you lose. If they struck oil or gas, they got a handsome fee; if they failed, they lost nothing but their time.

One man in particular had been successful in one instance, and that was enough to establish his reputation as a great dowsier. He interested some half a dozen people in our city. As a guarantee of good faith, he wanted to show his prospective investors how the magic rod worked in his hand.

I remember well the bright summer morning when we rode out into the country. Our conveyance stopped in front of a ten-acre lot, under which, according to the dowsman, gas flowed in an immense volume. We all stood silently around while the expert was getting his apparatus ready for the experiment. He used what I took to be two metal wires coming together into a fork or shank, on which was placed a covered cup. The contents of this cup was of course a deep secret. Holding his two elbows at right angles, he began to walk over the ground with military step. He assumed an expression best denoted by the word "intense." He started off in a trance-like state, and his amazed audience followed on and on behind. Suddenly the dowsman seemed to be in a fit. He finally recovered his composure and his breath to say: "Here is the spot. If you dig down here, you will find enough gas to blow up a whole county." The performance of the dowsman was so remarkable that no one ventured to dispute his word. One of the party stepped forward and said, "Let me try it. I should like to see whether the rod will wiggle in my hand." But the rod remained straight and motionless. Then others ventured to try the instrument, but in every case the rod refused to move in the hands of an unbeliever. I afterwards learned that one man, having more faith than judgment, did sink a shaft down some hundred feet on the spot located; that, instead of gas, there issued forth from the earth a copious volume of water.

2. My second lesson was extremely interesting and instructive. Some five years ago I ran across a curious specimen of the *Dick Dousterweird* order in Yates County, New York. He had a local habitation, and a name for finding water, but at this time he was engaged in locating gas and oil wells. I made his acquaintance, and soon persuaded him to show me some of the secrets of his craft. He was not particularly secretive or modest in talking about himself and his doings. He certainly had a fond belief in his extraordinary power to locate water, oil, and gas veins by the aid of the rod. His reputation included a large

assortment of forked sticks. Some were simply green tree twigs; others were of wire or metal; others, again, were incased in leather.

I met the rodeman by appointment one Sunday afternoon, and together we experimented with the different wands. I tried each and all of them, but in no single instance was I successful in having any twisting, or turning, or signs indicating water, gas, or oil under the surface. However, in his hands, any one of the rods would twist and turn in a most remarkable manner. Two or three times I quietly marked the exact spot which he had indicated. After leading him off to other places, and then back again to spots already marked, I discovered that he located entirely new places.

I rather think that I won the confidence of the rodeman by professing deep interest in his magical performance. I took so many lessons in modern rhabdometry that he came to regard me as a convert to his art. After a while, he expressed the belief that I would soon be able to work the twig as well as any one. Certainly I have since become quite an adept in the tricks of his trade.

Let me state that this rodeman was really sincere in the belief in his own power. He was not a little proud of the workings of the rod in his hand. He had exhibited his different forked sticks in some half a dozen counties in New York State. His name had been celebrated in the local papers, from which he kept many clippings. Two or three extracts will suffice to show popular confidence in his claims to be regarded as a wonderful diviner. This is from the "Cincinnati Times": "And so it is; down goes the well, and it goes down where Jonathan and his divining rod have located it." Another extract, from the "Tuscar Daily Journal," reads as follows: "Some time ago, Dr. Champlin devised an instrument which will disclose the existence of natural gas, no matter how deep down. It is a secret, not a patented appliance. I have seen its operations, seen the truth of its actions verified, and have an abiding faith in it" (September 3, 1889). In the "Gandee Record" there is some doggerel, in which occurs this line: "We put our trust in Champlin and his great divining rod." One man had faith enough to pay all the expenses of the rodeman in Texas. The "San Angelo Standard" said: "We think Mr. C. is a man of astounding abilities, and would be as famous as Edison if better known." And as notices of this extraordinary diviner might be multiplied.

3. My third lesson in rhabdometry was about a year ago. Last December there appeared in the "New York Times" an account of the wonderful discoveries of a diviner in Morrisania. I made up my mind to go the next day and see for myself. The scene of operation was a brewery yard, and there the expert showed several of us what he could do. In this case the magic instrument was quite different from many I had seen, or even heard of. A small lump of metal, looking like a plumb-bob, hung from a fine wire, which was connected (as he said) with a small electrical apparatus held in the hand. The diviner claimed that he had located from the floor on which we then stood the direction of a base filled with water on the floor below. He also claimed that the vibration of the wire indicated approximately the volume of water beneath the surface of the ground. The diviner distinctly repudiated any magic that might be attributed to his art. On the contrary, the apparatus which enabled him to detect subterranean springs was a scheme of his own invention, and was based on scientific principles.

Several of us tried our hand at locating any hidden spring that might be running under our feet. Only in one instance did the wire show the least vibration or quiver. When the diviner walked over the same spot, a very considerable agitation of the wire was noticed. Several times he stopped and said, "Here is a place where the water is not only large in volume, but swift-running." The expert was very loath to impart much information about his scientific device, and in many ways our tests with him were unsatisfactory.

Here ends the third lesson.



The practical use of rods or wands dates back to ancient times. It was known to the Greeks, from whom we get our word "rhabdometry." M. Lescroart, in his "Chaldean Magic," mentions the use of divining rods by the Magi. He says that divination by wands was known and practiced in Babylonia, and "that this was even the rod which will direct them to the richest deposits, and by which he has made his own fortune. In proof of their credence he also published the certificates of several men of science." How generous some men are, after they have made their own fortune!

Coming down to recent times, Prof. R. W. Raymond, a mining engineer, gives several instances of encountering, in Western mining regions, parties of capitalists accompanied by experts whose business it was to discover mines by the use of the divining rod. Indeed, we do not think that the following statement of a writer in "Harper's Magazine" is any too broad: "Almost every county and every State of the Union has its professional adept at divination, at least so far as the discovery of hidden well-springs is concerned, and our mining districts of the West are prolific in these modern soothsayers who claim to be in familiar communication with subterranean stores of wealth, and stand ready to betray the confidence for a consideration."

The real question is, Why is any stick or stone magical? Briefly stated, it is one of the recognized principles in magic that any real or fancied resemblance of a stick or stone to any portion of the human body, any analogy based on color, is enough to give such things a reputation for magical virtues. In Scotland, stones were called by the name of the parts they resembled, as "eye-stone," "head-stone;" they possessed, of course, certain mystic properties. The whole "Doctrine of Signatures," in old medical practice, was based on this kind of magical reasoning. Thus, the saffron, or eye-bright, was supposed to be good for the eye; the mandrake possessed certain sexual virtues because its roots resembled the human body. Now, the divining rod in form resembles the letter Y, and vaguely the form and number of limbs of the human body. In this association of ideas lies, I think, the explanation of some of the magical properties attributed to forked sticks.

With regard to rhabdometry, so all the strange uses of the divining rod, what is the method of folk-lore? The student of folk-lore will compare the uses and practices of civilized people with similar uses and practices among the uncivilized. He fails, however, to find anything exactly similar to modern rhabdometry among people in a low stage of culture. He does find magic wands, but he does not find the "working the twig" as we moderns have come to see it. Therefore it would seem that the finding of water or seams of precious metal by the use of the rod is a comparatively modern device or invention.

The last lesson we would attempt to gather from the divining rod is this: Once let a superstitious practice start, there is no telling how or when or where it will end.

#### PHD-002 DOWSING EXPERIMENTS

Foolson, H. A.; *Nature*, 229:169-168, January 15, 1971.

Historically the practice of dowsing goes back many centuries. The most ancient reference is a Chinese engraving of AD 167 showing the Emperor Yu holding a forked divining rod. In the sixteenth century divining rods were used by miners searching for metal ores although this practice was condemned by Luther. By the seventeenth century various theories to explain the phenomena were put forward by several writers but with a lamentable lack of evidence of

any systematic trials to substantiate the theories.

In the present century the subject has received some publicity and there are national societies of dowseers. From time to time dowsing is mentioned in the press and recently trials were featured in a television programme (*Margins of the Mind* on Granada TV, in May 1968). Many people claim the ability to locate water, metals, stoneware, archaeological remains and other buried objects by dowsing. Some go so far as to claim the location of these objects by dowsing over a map of the area without the necessity of going over the ground.

Three types of apparatus are commonly used: (1) forked rods; (2) a pair of L shaped rods, and (3) a pendulum or plumb line. When one considers these three methods and the wide variety of objects which it is claimed can be found by dowsing, it is clear that to discover a satisfactory scientific or physiological explanation is a formidable task. Some writers claim that the subject is not susceptible to scientific analysis but belongs to the realm of art, appreciation and subjective judgments.

Before seeking explanations, it is necessary to substantiate the claims. For this purpose, a series of trials were devised at the Military Engineering Experimental Establishment (MEEX) in a controlled series of experiments. These covered map dowsing and *in situ* dowsing for buried mines. Later tests were carried out for water divining by the Royal School of Military Engineering (RSME). Some additional trials were devised to test theories put forward.

**Map Dowsing.** An accurate survey was made of one of MEEX's outstations and a map of a scale of 1/2,500 was prepared. The area covered 254 acres and contained 5.7 miles of roads and tracks. To make the trial manageable twenty inert mines were buried only in the roads and tracks.

The map plus a sample mine was sent to experimenter A because it was reasonable to suppose he should know what he was looking for. He was told that an unspecified number of these mines were buried only in the roads and tracks and that any of his marks would be assumed to cover the full width of the road and a strip 10 feet wide. This corresponds to an error of about  $\pm 0.025$  inches on the map.

Experimenter A asked for time and practice. His first attempt gave twenty-seven mines and nine of them nearer than 50 feet. He then asked for more sample mines to practice on, and that he should be given the position of two of the buried mines, and further that a short stretch of road containing some mines should be indicated. This was done and a marked portion on the map, 3,480 feet long containing five mines, was selected. His results gave eight mines in this stretch with the nearest mark 20 feet from a mine. In spite of these discouraging results he suggested a more limited trial. A plan of a figure of eight track at a scale of 1/400 was sent to him with a short stretch 200 feet long indicated, in which was buried a row of five mines. This map was used by experimenter A and four others, with the result shown in Table 1.

Table 1  
Achievements on Figure of Eight Track

Experimenter	Distance mark to mine (feet)
A	145
B	155
C	160
D	162
E	84

A mark midway could not have been more than 166 feet from any possible position.

Experimenter E was given the original map in the same conditions. He asked for a sample of the inert mine filling (sand and pitch) which he was given. His first trial gave twenty-six mines, the nearest mark being 60 feet from a mine. He then suggested that the filling was too similar to the surrounding soil and asked to try with something radically different. He therefore sent a bottle of homeopathic medicine and this was buried in one of the marks. He failed to locate this on his second trial.

Experimenter G was also given the map and the same conditions, but was told that there were fewer than fifty mines. His result gave fifty-three mines and the nearest was 48 feet from an actual mine.

During these trials a limited guessing exercise was carried out using the staff of MENE. Fifty members were asked to guess the number and locations of mines in the 2,488 foot stretch of road. Eighteen guessed the correct number and one of these was within 1 foot of a mine.

It is easy to show that none of the results are better than pure chance. Taking A's first results, his nearest mark is within 80 feet of a mine. The whole 6.7 miles can be thought of as units 160 feet long, that is mine  $\pm$  80 feet. There are therefore 221 such units and with twenty mines and twenty-seven marks on the dowser's map one would expect  $20 \times 27/221$  or about 2.5 answers within 80 feet. Only one was achieved, a below chance result due to the grouping of his marks in a few areas. Similar calculations for other dowsers give similar results.

To sum up on map dowsing, the results from all the trials are really failures and there is no evidence that this is a practical method for locating mines. Most experimenters claim that their marks are either "spot on" or else failures. None of the experimenters achieved better results than the guessing exercise. It may be said that because only seven dowsers have been tested, the results are too few to disprove the claims.

In Site Dowsing. In this test several mines were buried in a grid pattern and experimenters were asked to dows over the places where mines were buried and over others where they were not. Using  $\chi^2$  tests it is possible to determine whether the dowsers are performing better than chance.

It became clear that the test could also be used to widen the inquiry and determine the dowsers' ability to distinguish between different types of buried objects. Five classes were established: M, metallic mine; P, plastic mine; C, concrete block; W, wooden block; B, blank or nothing. The concrete and wooden blocks were the same size and shape as the metallic mines.

Next a decision was made on the spacing and numbers of these objects. It was felt that 20 foot centres would be far enough apart to eradicate the "influence" of one object on another and all the dowsers agreed with this condition. The number of objects determines the significance level and power function of the experiment. Because the number of dowsers was not expected to be large a significance level of 1% was chosen. This means that there is a 1% chance of falsely detecting an association. The power function considers the different analyses of the results and the smallest association, say, between metal and plastic mines, must have enough figures in it for detectable differences. On this basis the total sample size was fixed at 400, that is, five groups of eighty of each class.

An area of land consisting of heath and heather was marked out and half of it was cleared and raked level. Each half had 200 squares and the objects were buried in a random pattern as shown in Fig. 1. Holes were dug at the centres of every square and different gangs of men buried each class of object so that no one could know the locations of all 400. None of these men took any subse-

quent part in the trials nor were they present on the site during trials. The only master location plan was looked in a safe throughout the experiment.

Response score cards were provided for all dowsers, who were not told of the wooden and concrete objects but were shown the mines. They were asked to dowsse in front of small wooden pegs carrying the square identity and to record mines, plastic mine or nothing. Neither of the two people who supervised the laying took

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
20	2	4	3	1	5	1	4	2	2	1	2	4	3	2	5	4	4	5	1	5	20
19	2	2	1	5	1	2	4	2	4	3	1	5	1	4	3	4	4	2	4	3	19
18	5	1	4	1	5	1	4	3	2	5	1	3	4	3	1	1	4	5	2	5	18
17	2	3	1	2	1	4	5	3	1	2	5	1	5	1	2	2	6	1	5	2	17
16	2	5	5	3	5	1	4	2	4	1	4	2	1	5	1	2	3	5	1	5	16
15	4	2	3	6	1	4	2	5	2	4	5	1	3	1	4	1	2	3	5	3	15
14	4	1	1	3	2	3	1	2	4	2	1	4	1	2	1	4	4	1	2	2	14
13	4	2	3	1	2	2	2	1	2	3	3	4	5	1	4	4	4	5	4	1	13
12	3	4	3	3	5	3	3	2	5	2	5	2	3	5	2	1	5	4	2	4	12
11	4	1	3	4	2	3	3	4	3	1	1	3	1	3	3	3	4	3	4	2	11
10	3	4	1	3	2	3	1	4	2	5	3	4	2	1	5	3	1	4	3	4	10
9	1	3	2	4	3	2	2	1	4	4	2	2	4	4	2	6	2	1	5	4	9
8	4	2	4	5	4	5	4	1	5	5	3	1	1	3	1	4	4	2	1	2	8
7	2	1	1	3	4	4	2	4	4	3	3	3	3	4	2	1	3	4	5	4	7
6	3	4	3	4	4	5	4	2	1	3	5	4	3	3	3	3	3	1	2	5	6
5	1	2	2	2	1	4	3	4	5	3	1	6	5	3	4	3	5	3	4	4	5
4	5	2	5	1	4	2	3	5	2	1	4	2	3	1	3	4	4	3	1	2	4
3	2	5	4	3	3	1	4	1	4	4	2	5	1	3	2	3	2	3	2	1	3
2	4	4	5	2	4	2	2	5	3	2	1	3	2	4	2	5	1	2	5	2	2
1	1	2	3	5	1	4	1	2	1	2	3	1	4	1	3	2	2	5	2	4	1

5 Plastic Mine

6 Plastic Bar Mine

3 Concrete Dummy

2 Metallic Mine

4 Wood Dummy

1 Blank

Fig. 1. Random number table for mines.

any part or were anywhere near the site. The number of each class of object was fixed at forty each in the natural and in the naked ground, which gives a response table for each dowsing. A typical set of responses is shown in Table 2.

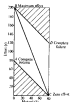


Fig. 4. Effort and hazard.

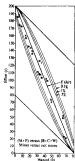


Fig. 5. Hazard and effort, natural ground

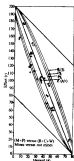


Fig. 6. Hazard and effort, naked ground

Table 2  
Response Table

Response	B	M	C	W	F	Totals
M	8	7	8	11	7	41
P	21	26	24	22	26	119
B	11	7	8	7	7	40
	40	40	40	40	40	200

Twenty-two people volunteered to try their powers. Nearly all were firmly convinced they could do it. One person, at his own request, asked to repeat the trial because he felt (subjectively) that he had not done very well at his first try. One other was asked to repeat the trial because his score card had ambiguous markings.

Two of the methods used are shown in Figs. 2 and 3. Dowsing rods were of many varieties including wood or nylon and each dowser was free to use whatever method he chose. One dowser used a plumb bob.

The responses can be analyzed in a great many ways. For the purposes of these trials they were grouped as follows: (a) total response in a 2 by 3 by 3 table for raked and natural ground; (b) response mine versus not mine, that is (M + P) versus (B + C + W) 2 x 2 table; (c) response object versus blank, that is (M + P + C + W) versus B 2 x 2 table; (d) response mine versus blank (M + P) versus B 2 x 2 table; (e)  $2 \times 2^3$  for a, b, c and d for each experimenter; (f)  $\sum x^2$  for all experimenters.

While this analysis was being made it was clear that the simple mathematical treatment did not reveal the whole truth. Thus in a simple 2 x 2 table, for example (M + P) versus (B + C + W), there is one degree of freedom. Thus if we assume  $r$  "yes" responses we have Table 3.

Table 3  
Responses after Mathematical Treatment

Response	(M + P)	(B + C + W)	Total
Yes	$80 - b$	$b + c - 80$	$r$
No	$b$	$200 - r - b$	$200 - r$
	80	120	200

Only one further figure,  $b$ , is needed to complete the table. The  $\chi^2$  test does not distinguish between a good and a bad result. Thus if it is assumed that  $r = 100$  (reasonable average) and  $b = 20$  or 60, then  $\chi^2 = 10.3$  each time. The second result is much worse than the first because the dowser had only located twenty mines out of eighty, whereas in the first result he located sixty. Thus the  $\chi^2$  tests do not distinguish between good and bad dowsers and to overcome this objection the following method was devised. Clearly the dowser who responded "yes" to every square would find all the mines, but at a cost of maximum effort in digging up every square. The dowser who responds "yes" at all the B-C-W places would achieve total failure but with far less effort.

There are thus two aspects to consider—effort and hazard. Effort is the number of squares to be dug up, that is, the number of "yes" responses, and hazard is the number of mines not discovered. This leads to a two-dimensional plot of effort against hazard (Fig. 4).

At the point 80, 0 is complete success; at 200, 0 is maximum effort and all mines found; at 120, 80 is complete failure and no mines are found; at 0, 80 is zero effort and no mines are found. The results all lie within the parallels given and pure chance results lie on the diagonal line as shown. About this diagonal

One probability point can be calculated such that the probability of a score mark being beyond the point is ( $\alpha$  - confidence level). Curves for 5%, 1% and 0.1% are shown. The farther the score marks are from the diagonal the better is the performance of the dowser, and of course the marks must be trending towards point A.

Table 4  
Minas Missed (Random, Holes Dug Effort)

Experi- menter	Raked		Natural		Total	
	Minas missed (R)	Holes dug (r)	Minas missed (R)	Holes dug (r)	Minas missed (R)	Holes dug (r)
1	--	--	23	129	--	--
2	22	126	54	269	26	296
3	73	28	47	22	142	42
4	--	--	23	129	--	--
5	33	186	65	51	98	155
6	59	44	48	83	96	117
7	42	30	41	43	110	113
8	46	79	31	111	77	150
9	7	188	6	174	12	222
10	12	177	4	189	16	288
11	26	140	52	73	88	173
12	23	121	--	--	--	--
13	27	115	34	108	61	221
14	21	126	42	102	63	228
15*	--	--	12	12	--	--
16	46	96	--	--	--	--
17	22	149	--	--	--	--
18	27	100	--	--	--	--
19	24	151	21	144	45	225
20	52	64	--	--	--	--
21*	--	--	27	27	--	--
22*	--	--	11	26	--	--
Minas percent	50		60		160	

\*Note that in these cases only part of the course was covered, so these results are not plotted in Figs. 3 and 4.

Table 4 shows all the results for the twenty-two experimenters and these are plotted on Fig. 5 for the natural ground and on Fig. 6 for the raked. On the whole it is clear that most of the plotted marks are very close to the diagonal line of pure chance. Various other analyses were carried out but in no cases were the results good enough to excite interest. The best dowser was No. 9 on raked ground whose result was significant at the 1% level. This was, however, only achieved with a very high effort in digging many holes and containing mines. The results reveal a detectable difference between dowsing over raked and natural ground, which suggests that visual evidence in the raked ground helps the dowser. The effect of a few trifling signs would be to slide the diagonal line of Fig. 4 to the left because hazard and effort are both reduced by the number of mark signs. The plotted marks then fall on the revised chance level diagonal. If the dowers had to search for mines instead of trying over selected points it seems unlikely that they would have been more successful.

**Water Dowsing.** In the search for water, dowsing is more familiar than in seeking for metals or archaeological remains. In general, dowers claim to find moving water---springs, pipes and so on---rather than static pools of under-ground water.

A test of the ability to detect flowing water was arranged with the cooperation of an experienced dowser. A 2 inch polythene pipe carried the water under a lawn and was controlled by a stopcock which the dowser could not see. He was asked to say whether or not the water was flowing in a series of twenty-five trials, the stopcock being on or off in a prearranged random sequence. He used a V shaped rod (iron castings) and walked across the line of the pipe to give his verdict. Two sequences were carried out giving fifty results. The water was flowing in twenty-five of them. The dowser was correct in nine cases of water flowing and in sixteen of it not flowing, that is, he was correct in twenty-five out of fifty cases. This is entirely consistent with chance (guessing) and shows no evidence of being able to detect flowing water.

Further tests were carried out by RME at Chatham. An experienced dowser undertook to train junior officers and judge their ability as dowsers. He took each of them over an alleged subterranean water flow when the student held one end of a forked rod and the dowser held the other. Students were then asked to dowses over what was alleged to be a second flow. Many officers were tested and 20% were judged to be highly sensitive. These tests were later found to be invalid because a boring at the first trial site found no water at all.

In an additional test, the 25 per cent of sensitive officers were asked to locate and estimate the depth and rate of flow of water within a given 12 yard square. The flow was known to be 50,000 gallons per hour through a 42 inch main 8 feet down. Forty-seven per cent were said to have "high" sensitivity and 26 per cent to have "nil" sensitivity and this cast doubts on their initial high grading.

Finally, the four most successful students were asked to dowses over an area 150 feet square containing several 8 inch water pipes, with flowing water about 4 feet down. The position was known but could not be seen on the ground. Eighty markers were put down at least 10 feet apart; sixteen of them were cover pipes in an overall random pattern. The four students had to say which of the markers was over a pipe. An analysis of the results showed no significant difference for chance except for one student who differed by 5 per cent which might be attributed to an ability to dowses. The sample size is, however, rather small to derive valid results.

The result of all these trials was frankly disappointing, the students were inconsistent and the judgment of the experienced dowser proved to be faulty. There is no real evidence of any dowsing ability which could produce results better than chance or guessing.

Theories of Dowsing. Beard claims that dowsers are sensitive to variations in the Earth's magnetic field.<sup>2</sup> In most places the field is sensibly constant and therefore not detectable. But by dowsing in an aeroplane one is moving so much faster that these variations can be detected. Thus dowsing from an overbridge with vehicles passing beneath will, in Beard's opinion, produce a result.

Beard describes measurement of electrical potential differences between buried electrodes, and associates these with electrical currents and hence magnetic fields. These are in turn related to the flows of water through gravel filters and seepages into wells when pumping water. By fitting small, light permanent magnets to the crosses of the crosses he found that his dowsers lost their ability. He therefore concludes that the organ of sensitivity is in the elbow and not in the hand or head.

Very few scientific tests are described and then only in relation to artificial magnetic fields. A rectangular wire wound frame was set up to give a field between 0.1 and 10.0 magsnes at the body of the dowser as he walked past. A preliminary "weigh in" was allowed in which the dowser was told whether the current was on or off. In a series of five attempts after this 100% success was achieved. When the preliminary "weigh in" was omitted the result was pure chance in up to fifty trials.



Table 5  
Test for Magnetic Effects

Test	Response	Current on	Current off	Total
(a)	yes	8	4	12
	no	5	8	13
		13	12	25 $\chi^2 = 1.80$
(b)	yes	5	4	9
	no	8	8	16
		13	12	25 $\chi^2 = 0.07$
(c)	yes	4	6	10
	no	9	6	15
		13	12	25 $\chi^2 = 0.66$

This theory was tested at MEKE. Two coils were set up and an experienced dowser attempted to say whether the current was on or off. The field strength was 0.7 mG at 1 m from the plane of the coil. Three test runs of twenty-five each were carried out consisting of: (a) passing the coils placed in line 3 m apart; (b) passing between the coils 3 m apart with magnetic fields in line; (c) as for (b) but coils 1 m apart.

Results are summarized in Table 5. These results are no different from pure chance and show that this experienced dowser is not susceptible to magnetic effects.

During the MEKE trials it was suggested that the cause of the dowser's signal was an alteration in the electrical properties of the skin, and an instrument was produced in which this difference could be measured. This consisted of two coils of wire protected by conducting rubber. The coils were loops wrapped round the hands so that they and the dowsing rods were held together. Screened leads connected the coils to a millivoltmeter arranged to read from -50 to +50. The loops had remarkable sensitivity, for by squeezing them almost any reading could be obtained. The inventor claimed the instrument measured capacitance or alternatively "radiesthesia" which are unspecific waves of radiation.

The most successful dowser (Dr. F) agreed to try the instrument over two rows of twenty squares. On the first row he was correct seven times, reading -50 to +40 when correct, and on the second row he was correct six times, reading -15 to -50 when correct and -5 to +50 when wrong. There was thus no correlation between instrument readings and correct or incorrect dowsing finds.

During the trials I carefully watched several dowser's at work (Figs. 2 and 3). With all methods quite small movements of the hand produce very large movements of the dowsing instrument. The problem with the common Y rods is three dimensional and not easily apparent. Fig. 3 is an isometric sketch of the normal Y rods. OX and OY are horizontal axes and the axis of the dowser's hands is to hold the rods in the position shown. This he does by first pulling them apart and then bending the ends by a torque about the vertical axis through A and B. Because the rods are small there is very little torque that can be resisted about the horizontal axis OX. If this is now treated as a structural instability problem it can be shown that, if the tip C is slightly displaced, instability will occur unless a considerable restoring torque can be applied about the XX axis. The rods will move violently and rapidly into the vertical plane.

The L shaped rods are held with the short leg vertical. Here again very little torque can be applied about the vertical axis except by gripping. In the instrument known as the "revealer" this grip is eliminated by mounting the short leg in ball bearings. If the short leg departs slightly from the vertical the rods are bound to swing. Because humans are right and left handed there is a tendency for the two hands to move in opposite senses either slightly inwards or slightly outwards. Possibly an inwards movement is easier and more natural so the rods move together.

In both cases, V or L rods, only extremely slight and imperceptible movements of the hands are required for quite large and spectacular movements of the divining rods because of the initial structurally unstable position chosen. This is most noticeable in the V rods and once they start to move they almost seem to become alive in the hands. I think that this is the explanation for a large part of the mystery surrounding dowsing.

Nevertheless, dowsers will continue to maintain their claims and to say that scientists distort their powers almost out of prejudice. The following arguments are often put forward: (1) The "one good case" argument, that even one success is enough to prove dowsing. This is not statistically true. (2) The "test of time" argument that because dowsing has gone on for so long it must be true. This would also make witchcraft and astrology true. (3) The "score of truth" argument; that is, evidence from case after case. Compare old Chinese saying "If a thousand people believe a foolish thing, it is still a foolish thing". (4) The "testimonials" argument that some famous men (Nobel prize winners) have endorsed dowsing. Even more, however, have pronounced against it. (5) The "good and bad dowsers" argument that dowsing gets a bad name because too many amateurs have dabbled in it. That was not true in the trials described here, for only those who claimed to be good dowsers and were recognized as such by other dowsers took part. (6) The "unfairness" and artificiality argument. Usually this is a post hoc argument. Great care was taken in all trials to ensure that dowsers agreed beforehand that the test was a fair one. (7) The "unfavorable atmosphere" argument that the dowsers is surrounded by disbelievers or those who want him to fail. This is not true, and I would have been delighted to find even one dowsers with significant results. (8) The "persecution" argument---look what happened to Galileo. Dowsing has nothing to do with Galileo and is valid or not irrespective of what happened to him or any other persecuted individual.

V. Solov'ev, (November, 1967); New York Times (October 15, 1967); Times (December 11, 1967); Sunday Express (March 3, 1968); Times (March 5, 1968). Engineering News-Record (May 2, 1968).

2 Tocard, Y., Le Signal de Bourcier (Dunod, Paris).

3 Voigt, K. Z., and Hyman, R., Water Witching (University of Chicago Press).

#### PHD-003 DERM-OPTICAL PERCEPTION: A PEER DOWN THE NOSE

Gardner, Martin: Science, 151:844-857, February 11, 1966. (Copyright 1966 by the American Association for the Advancement of Science)

Gardner's classic expose of the trickery employed by some individuals claiming psychic powers illustrates why parapsychology has made only limited progress in convincing science-in-general that it deals with objective, valid phenomena. Manifestly, some of the startling results reported by scientists in this volume may be the consequence of inspired cheating.

Science reporting in United States newspapers and mass-circulation magazines is more accurate and freer of sensationalism than ever before, with pseudoscience confined largely to books. A reverse situation holds in the Soviet Union. Except for the books that defended Lysenko's theories, Soviet books are singularly free of pseudoscience, and now that Lysenko is out of power, Western genetics is rapidly entering the new Russian biology textbooks. Meanwhile, Russian newspapers and popular magazines are sensationalizing science much as our Sunday supplements did in the 1930's. The Soviet citizen has recently been presented with accounts of fish brought back to life after having been frozen 5000 years, of deep-sea monsters that leave giant tracks across the ocean floor, of absurd perpetual-motion devices, of extraterrestrial scientists who have used a laser beam to blast an enormous crater in Siberia, and scores of similar stories.

By and large, the press in the United States has not taken this genre of Soviet science writing seriously. But in 1963 and 1964 it gave serious attention to a sudden revival, in Russia's popular press, of ancient claims that certain persons are gifted with the ability to "see" with their fingers.

The revival began with a report, in the summer of 1963, in the Sverdlovsk newspaper *Izvestiya Rubezhye*. Isaac Goldberg, of First City Hospital in Lower Tagil, had discovered that an epileptic patient, a 22-year-old girl named Hesa Kalesteva, could read print simply by moving a fingertip over the lines. Hesa went to Moscow for more testing, and sensational articles about her abilities appeared in *Izvestia* and other newspapers and popular magazines. The first report in the United States was in *Time*, 25 January 1964.

When I first saw *Time's* photograph of Goldberg watching Hesa, who was blindfolded, glide her middle finger over a newspaper page, I broke into a loud guffaw. To explain that laugh, I must back up a bit. For 30 years my petriptic hobby has been magic. I contribute to conjuring journals, write treatises on card manipulation, invent tricks, and, in brief, am conversant with all branches of this curious art of deception, including a branch called "mentalism."

For half a century professional mentalists—performers, such as Joseph Dunninger, who claim unusual mental powers—have been entertaining multitudes with "eyesless vision" acts. Usually the mentalist first has a committee from the audience seal his eyes shut with adhesive tape. Over each eye is taped something opaque, such as a powder puff or a silver dollar. Then a large black cloth is pulled around the eyes to form a tight blindfold. Koda Bux, a Mohammedan who comes from Kashmir, is perhaps the best known of today's entertainers who feature such an act. He has both eyes covered with large disks of dough, then many yards of cloth are wound like a turban to cover his entire face from the top of his forehead to the tip of his chin. Yet Koda Bux is able to read books, solve mathematical problems on a blackboard, and describe objects held in front of him.

**The Nose Peek.** Now I do not wish to endanger my standing in the magic fraternity by revealing too much, but let me say that Koda Bux and other mentalists who feature eyesless vision do obtain, by trickery, a way of seeing. Many ingenious methods have been devised, but the oldest and simplest, surprisingly little understood except by magicians, is known in the trade as the "nose peek." If the reader will pause at this point and ask someone to blindfold him, he may be surprised to discover that it is impossible, without injury to his eyes, to prepare a blindfold that does not permit a tiny aperture, on each side of the nose, through which light can enter each eye. By turning the eyes downward one can see, with either eye, a small area beneath the nose and extending forward at an angle of 30 to 45 degrees from the vertical. A sleep-mask blindfold is no better; it does not fit snugly enough around the nose. Besides, slight pressure on the top of the mask, under the pretense of rubbing the fore-

head, levers out the lower edge to permit even wider peeks. The great French magician Robert-Houdin (from whom Houdini took his name), in his memoirs (2), tells of watching another conjurer perform a certain card trick while blindfolded. The blindfold, Robert-Houdin writes, "was a useless precaution. . . for whatever care may be taken to deprive a person of sight in this way, the projection of the nose always leaves a vacuum sufficient to see clearly." Pushing wads of cotton or cloth into the two apertures accomplishes nothing. One can always, while pretending to adjust the blindfold, secretly insert his thumb and form a tiny space under the wadding. The wadding can actually be an asset in maintaining a wider aperture than there would be without it. I will not go into more subtle methods currently used by mentalists for overcoming such apparent obstacles as adhesive tape criss-crossed over the apertures, balls of dough, and so on.

If the mentalist is obtaining information by a nose peek there are other methods; he must carefully guard against what has been called the "sniff" posture. When the head of a blindfolded person is in a normal position, the view down the nose covers anything placed on the near edge of a table at which the person is seated. But to extend the peek farther forward it is necessary to raise the nose slightly, as though one is sniffing. Practiced performers avoid the sniff posture by tilting the head slightly under cover of some gesture, such as nodding in reply to a question, scratching the neck, and other common gestures.

One of the great secrets of successful blindfold work is to obtain a peek in advance, covered by a gesture, quickly memorize whatever information is in view, then later—perhaps many minutes later—to exploit this information under the pretense that it is just then being obtained. Who could expect observers to remember exactly what happened 3 minutes earlier? Indeed, only a trained mentalist, serving as an observer, would know exactly what to look for.

Concealing the "sniff" demands much cleverness and experience. In 1944, on a television show in the United States, a girl who claimed powers of extrasensory vision was asked to describe, while blindfolded, the appearance of a stranger standing before her. She began with his shoes, then went on to his trousers, shirt, and necktie. As her description moved upward, so did her nose. The photograph in Time showed Rosa wearing a conventional blindfold. She is seated, one hand on a newspaper, and sniffing. The entire newspaper page is comfortably within the range of a simple nose peek.

**Other DOP Claimants.** After the publicity about Rosa, Russian women of all sorts turned up, performing even more sensational feats of extrasensory vision. The most publicized of these was Ninel Kergueyeva Kalagina. The Leningrad newspaper Spetsna, 14 January 1944, reported on her remarkable platform demonstration at the Psychoneurological Department of the Lenin-Kirovsk District. The committee who examined Ninel's blindfold included S. G. Fajzberg (Ninel's discoverer), A. T. Alexandrov, rector of the University of Leningrad, and Leonid Vasiliev, whose laboratory at the University is the center of parapsychology research in Russia. No magicians were present, of course. While "securely blindfolded," Ninel read from a magazine and performed other sensational feats. Vasiliev was reported as having described her demonstration as "a great scientific event."

There were dozens of other DOP claimants. The magazine USSR (now Soviet Life), published here in English, devoted four pages to some of them in its February 1944 issue (2). Experiments on Rosa, this article said, made it unmistakably clear that her fingers were reacting to ordinary light and not to infrared heat rays. Filters were used which could block either light or heat. Rosa was unable to "see" when the light (but not heat) was blocked off. She "saw" clearly when the heat rays (but not light) were blocked off. "The fingers

have a retina," biophysicist Mikhail Seirinov is quoted as saying. "The fingers 'see' light."

Accounts of the woman also appeared in scientific publications. Goldberg contributed a report on his work with Rosa to *Voprosy Psichologii* in 1963 (3). Biophysicist N. D. Myshberg wrote an article about Rosa for *Priloga*, May 1963 (4). Myshberg reports that Rosa's fingers, just like the human eye, are sensitive to three color modes, and that, after special training at the neurological institute, she "succeeded in training her toes to distinguish between black and white." Other discussions of Rosa's exploits appeared in Soviet journals of philosophy and psychology.

Not only did Rosa read print with her fingers, she also described pictures in magazines, on cigarette packages, and on postage stamps. A *Life* correspondent reported that she read his business card by touching it with her elbow. She read print placed under glass and cellophane. In one test, when she was "securely blindfolded," scientists placed a green book in front of her, then flooded it with red light. Exclaimed Rosa: "The book has changed color!" The professors were dumbfounded. Rosa's appearance on a TV program called "Delay" flouted out new rivals. *Nedelnya*, the supplement of *Izvestia*, found a 9-year-old Kharkov girl, Lena Shirova, who staggered a group of scientists by reading print ("securely blindfolded") with fingers held a few inches off the page. Moreover, Lena read print just as easily with her toes and shoulders. She separated the black from the white chess pieces without a single error. She described a picture covered by a thick stack of books (see my remarks above about exploiting previously unmentioned information).

In the United States, *Life* (12 June 1964) published a long uncritical article by Albert Rosenfeld (5), the writer whose card Rosa had read with her elbow. The Russian work is summarized and hailed as a major scientific breakthrough. Colored symbols are printed on one page so the reader can give himself a DOP test. Gregory Nazran, who heads the psychology department at Queens College, New York, is quoted as saying that perhaps "some entirely new kind of force or radiation" has been detected. Nazran expected to see "an explosive outburst of research in this field. . . . To see without the eyes---imagine what that can mean to a blind man!"

Let us hope that Nazran, in his research, will seek the aid of knowledgeable mentalists. In a photograph of one of his DOP tests, shown in the *Life* article, the subject wears a conventional sleep-mask, with the usual apparatus. She is reaching through a cloth hole in the center of an opaque partition to feel one of two differently colored plates. But there is nothing to prevent her from reaching out with her other hand, opening the cloth a bit around her wrist, then taking a new peek through the opening.

The most annoying thing about such experimental designs is that there is a simple, but never used, way to make sure all visual clues are eliminated. A blindfold, in any form, is totally useless, but one can build a light-weight aluminum box that fits over the subject's head and rests on padded shoulders. It can have holes at the top and back for breathing, but the solid metal must cover the face and sides, and go completely under the chin to fit snugly around the front of the neck. Such a box eliminates at one stroke the need for a blindfold, the cumbersome screen with arm holes, various kit devices that go under the chin, and other clumsy pieces of apparatus designed by psychologists unfamiliar with the methods of mentalism. No test made without such a box over the head is worth taking seriously. It is the only way known to me by which all visual clues can be ruled out. There remains, of course, other methods of cheating, but they are more complicated and not likely to be known outside the circles of professional mentalism.

In its 1934 story Life did not remind its readers of the three pages it had devoted, in 1937, to Pat Marquis, "the boy with the X-ray eyes" (9). Pat was then 13 and living in Glendale, California. A local physician, Cecil Reynolds, discovered that Pat could "see" after his eyes had been taped shut and covered with a blindfold. Pat was carefully tested by reporters and professors, said Life, who could find no trickery. There are photographs of Pat, "secretly blindfolded," playing ping-pong, pool, and performing stroller feats. Naturally he could read. Reynolds is quoted as saying that he believed that the boy "saw" with light receptors in his forehead. Pat's powers were widely publicized at the time by other magazines and by the wire services. He finally agreed to being tested by J. B. Rhine, of Duke University, who caught him nose peaking (7).

The truth is that claims of extrasensory vision turn up with about the same regularity as tales of sea serpents. In 1895 A. N. Khorvitz, a Russian psychiatrist, published a paper on "A rare form of hyperaesthesia of the higher senses organs" (8), in which he described the DOP tests of a Russian woman named Sophia. There are many earlier reports of blind persons who could tell colors with their fingers, but "blindness" is a relative term, and there is no way now to be sure how blind those claimants really were. It is significant that there are no recent cases of persons known to be totally blind who claim the power to read ordinary print, or even to detect colors, with their fingers, although it would seem that the blind would be the first to discover and develop such talents if they were possible.

Jules Romaine's Work. Shortly after World War I the French novelist Jules Romaine, interested in what he called "paroptic vision," made an extensive series of tests with French women who could read while blindfolded. His book, Tiques Extra-Perception (9) should be read carefully by every psychologist tempted to take the Russian claims seriously, for it describes test after test exactly like those that have been given to today's Russians. There are the same lack of controls, the same ignorance of the methods of mentalists, the same speculations about the opening of new scientific frontiers, the same unguarded predictions about how the blind may someday learn to "see," the same scorn for those who remain skeptical. Romaine found that DOP was strongest in the fingers, but also present in the skin at any part of the body. Like today's Russian defenders of DOP, Romaine is convinced that the human skin contains organs sensitive to ordinary light. His subjects performed poorly in dim light and could not see at all in total darkness. Romaine thought that the success lining of the nose is especially sensitive to colors, because in dim light, when colors were hard to see, his subjects had a marked tendency to "sniff spontaneously."

The blindfolding techniques Romaine used are similar to those used by the more recent investigators. Adhesive tape is crossed over the closed eyes, then folded rectangles of black silk, then the blindfold. At times cotton wool is pushed into the space alongside the nose, at times a projecting bib is placed under the chin. (Never a box over the head.) Anatole France witnessed and commented favorably on some of Romaine's work. One can sympathize with the novelist when he complained to a U. S. reporter (10) that both Russian and American psychologists had ignored his findings and had simply "repeated one twentieth of the discoveries I made and reported."

It was Romaine's book that probably aroused magicians in the United States to devise acts of extrasensory vision. Marlan Tarbell, of Chicago, worked out a remarkable act of this type which he performed frequently (11). Stanley Jaks, a professional mentalist from Switzerland, later developed his method of copying a stranger's signature, upside down and backward, after powder puffs had been taped over his eyes and a blindfold added (12). Kuda Ben uses still other techniques (13). At the moment, amateurs everywhere are capitalizing on the new

were of interest is DOP. In my file is a report on Ronald Coyne, a 18-year-old Oklahoma boy who lost his right eye in an accident. When his left eye is "securely blindfolded," his empty right eye socket reads print without hesitation. Young Coyne has been appearing at revival meetings to demonstrate his miraculous power. "For thirteen years he has had continuous vision where there is no eye," reads an advertisement in a Miami newspaper for an Assembly of God meeting. "Truly you must say 'Mine eyes have seen the glory of God.'"

Tests in the United States. The most publicized DOP claimant in the United States is Patricia Stanley. Richard P. Youtz, of the psychology department at Harvard College, was discussing the Soviet DOP work at a faculty lunch one day. Someone who had taught high school in Owensboro, Kentucky, recalled that Patricia, then a student, had astounded everyone by her ability to identify objects and colors while blindfolded. Youtz trained Patricia to Flint, Michigan, and in 1963 he made several visits to Flint, tested her for about 60 hours, and obtained sensational results. These results were widely reported by the press and by such magazines of the occult as Espe (14). The soberest account, by science writer Robert K. Plumb, appeared in the New York Times, 4 January 1964 (15). Mrs. Stanley did not read print, but she seemed able to identify the colors of test cards and pieces of cloth by rubbing them with her fingers. Youtz's work, together with the Russian, provided the springboard for Leonard Wallace Robinson's article "We have more than five senses" in the New York Times Magazine, Sunday, 18 March.

Youtz's first round of tests, in my opinion, were so poorly designed to eliminate visual clues that they cannot be taken seriously. Mrs. Stanley wore a conventional sleep-mask. No attempt was made to plug the inevitable apertures. Her hands were placed through black velvet sleeves, with elastic around the wrists, into a lightproof box constructed of plywood and painted black. The box could be opened at the other side to permit test material to be inserted. There was nothing to prevent Mrs. Stanley from picking up a test card or piece of colored cloth, pushing a corner under the elastic of one sleeve, and viewing the exposed corner with a single nose peek. Youtz did have a double sleeve arrangement that might have made this difficult, but his account (16) of his first round of tests, on which Mrs. Stanley performed best, indicate that it was attached only on the rare occasions when a photomultiplier tube was used. Such precautions as the double sleeve, or continuous and careful observation from behind, seemed unnecessary because Mrs. Stanley was securely blindfolded. Moreover, there was nothing to prevent Mrs. Stanley from observing, by nose peeks, the test material as it was being placed into the light-tight box.

Here is a description of Mrs. Stanley's performance by the New York Times reporter who observed her: "Mrs. Stanley concentrates hard during the experiments. . . . Sometimes she takes three minutes to make up her mind. . . . She rests her forehead under the blindfold against the black box as though she were studying intently. Her jaw muscles work as she concentrates" (17). While concentrating, she keeps up a steady flow of conversation with the observers, asking for hints on how she is doing.

Youtz returned to Flint in late January 1964 for a second round of tests, armed with more knowledge of how blindfolds can be evaded (see exchanged several letters about it) (18) and plans for tighter controls. I had been unsuccessful in persuading him to adopt a box over the head, but even without this precaution, results of the second round were not above chance expectation. These negative results were reported by the New York Times (17), but not by any other newspaper or news magazine that had publicized the positive results of the first round of tests. Youtz was disappointed, but he attributed the failure to cold weather (18).

A third series of tests was made on 20 April for an observing committee of four scientists. Results were again negative. In the warm weather of June, Yost tested Mrs. Stanley a fourth time, over a 3-day period. Again, performance was at chance level. Yost attributes this last failure to Mrs. Stanley's fatigue (17). He remains convinced that she does have the ability to detect colors with her fingers and suspects that she does this by sensing delicate differences in temperature (20). Although Russian investigators had eliminated this as an explanation of Rosa's powers, Yost believes that his work with Mrs. Stanley, and later with less skillful Harvard students, will eventually confirm this hypothesis. He strongly objects to calling the phenomenon "vision." None of his subjects has displayed the slightest ability to read with the fingers.

Need for Careful Checking. In Russia, better-controlled testing of Rosa has strongly indicated noise pecking. Several articles have suggested this, notably those by L. Tepler, author of a well-known book on cybernetics, in the 3-7 March 1964 issue of *Neologiya*, and in the 25 May issue of the Moscow *Literaturnaya Gazeta*. Nodol Kalagina, Rosa's chief rival, was carefully tested at the *Nikol'sevskii* Psychoneurological Scientific Research Institute in Leningrad. B. Lebedev, the institute's head, and his associates summarize their findings as follows (21):

"In essence, Kalagina was given the same tasks as before, but under conditions of stricter control and in accordance with a plan prepared beforehand. And this was the plan: to alternate experiments in which the woman could possibly peck and experiment with experiments where pecking would be impossible. The woman of course did not know this. As was to be expected, phenomenal ability was shown in the first instance only. In the second instance [under controls] Kalagina could distinguish neither the color nor the form....

Thus the careful checking fully exposed the occasional "miracle." There were no miracles whatever. There was ordinary heat."

In a letter to *Science* (22), Joseph Zubin, a biometrics researcher at the New York State Department of Mental Hygiene, reported the negative results of his testing of an adolescent who "read fluently" after blindfolds had been secured around the edges with adhesive tape. Previous testing by several scientists had shown no evidence of visual clues. It became apparent, however, that the subject tested muscles in the blindfolded area until "a very tiny, inconspicuous chink appeared at the edge. Placing an opaque disk in front of the chink prevented reading, but not immediately. The subject had excellent memory and usually continued for a sentence or two after blocking of the reading material." Applying zinc ointment to the edges of the adhesive proved only temporarily effective, because muscle testing produced new chinks (made easier to detect by the white ointment). A professional magician, Zubin reports, participated in the investigations.

The majority of psychologists, both here and in the Soviet Union, have remained unimpressed by the latest revival of interest in DOP. In view of the failures of subjects to demonstrate DOP when careful precautions were taken to rule out pecks through minute apertures, and in view of the lack of adequate precautions in tests that yielded positive results, this prevailing skepticism appears to be strongly justified.

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11. See R. Tarbell, "X-ray eyes and blindfold effects" in *The Tarbell Course in Magic* (Tammun, New York, 1964), vol. 6, pp. 281-281. Tarbell speaks of his own work in this field as a direct result of his interest in Roussine's work, and briefly describes an eyeless vision act by a woman who performed under the stage name of Shirone in the early 1930's.
12. See M. Gardner, *Spring* 12, 324-327 (Feb. 1962); *Linking Ring* 24, 22-25 (Oct. 1964); also, G. Groth, "He writes with your hand," in *Fate* 2, 29-43 (Oct. 1952).
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18. For an exchange of published letters, see M. Gardner, *New York Times Magazine*, 3 Apr. 1964, and R. P. Yost, *Ibid.*, 26 Apr. 1964.
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## PHD-004 DERMO-OPTICAL PERCEPTION

Yost, Richard P., et al; *Science*, 183:1099-1116, May 26, 1964. (Copyright 1964 by the American Association for the Advancement of Science)

In "Dermo-optical perception: a peek down the nose" (1) Gardner takes exception to my research on tactual color discrimination, on the grounds that the various subjects (particularly Mrs. Shudyst) were able to see the stimuli through "nose-peeks" and were not making the judgments from sensations in the fingers and hands. Gardner's comments are made on an a priori basis,

since he has never seen my apparatus or witnessed my procedure, although his article conveys the impression that he has. His article combines details from my mimeographed reports with assumptions for which there appears to be no basis. Mrs. Stanley is not a magician. She is a housewife who, by chance, was found to have some tactical discriminating ability when she was in high school in 1939, ignored it for 24 years, and consented to some experiments in 1963. During the experiments, Mrs. Stanley was carefully observed. She was required to put her arms into the box containing the stimuli through thick black sleeves fastened around holes in the box and tight around her wrists, and she wore a sleep mask. She could not, as Gardner suggested, have poked the stimuli up a sleeve and used a "nose-peek," nor could she have observed the test material as it was being placed in the experimental box. Nor did she keep up "a steady flow of conversation with the observers, asking for hints on how she is doing." Nor did careful and continuous observation "seem unnecessary." Also, her ability was observed and confirmed by Donald DeGraaf, chairman of the physics department of Flint College of the University of Michigan.

My hypothesis of "wavelength temperature" discrimination seems more tenable. That a wide range of electromagnetic wavelengths, including the visible and infrared, does penetrate mammalian skin to a significant depth is shown by various investigations (2). Oppel and Hardy (3) showed that human skin has different absolute thresholds for different ranges of electromagnetic wavelengths. The sensitivity threshold, apparently in terms of subjective "temperature," is lower for wavelengths longer than 3 microns, as measured in gram-calories per square-centimeter per second. For wavelengths of 0.8 to 3 microns the threshold in the same terms is 50 percent higher. And for wavelengths of 1.4 to 0.1 microns, the visible wavelengths, the threshold is still higher, being 2.2 times the threshold value for 3 microns or greater.

In each of my reports (4, 5) I have stated as my hypothesis that the tactical discrimination ability evidenced by the subjects was a product or variation of the cutaneous temperature sense. This has now been confirmed by further experiments of mine (6) and independently by W. L. Moxon (7). When color discriminations are made with the hands and stimuli in a light-tight experimental box, the differences between the stimulus objects are related to the differential absorption, reflection, and emission of infrared wavelengths. The energy comes from heat emission by the hands in the range of 4 to 14 microns (2, 8).

In the 1963 investigations Mrs. Stanley was successful in her tactical discrimination judgments (85 to 88 percent,  $P < .001$ ) when the colored materials were covered with Wratten neutral density filters down to about 10-percent transmittance; also when colored materials were covered with 0.003-inch cover glass or with clear plastic about 0.010 inch thick. She was not successful (her judgments were at chance level) when the stimuli were covered with 1/16-inch picture glass; or when her finger temperature was below 34°C; or when plastic stimuli and her hands were under water at 32°C. Her judgments were also at chance level with bits of colored wood or pieces of colored sponge rubber. These results were obtained during 85 to 88 hours of testing in the summer of 1963. The subject was less successful, although her score was still above chance, when tested in January 1964, and was not successful on 28 April 1964 or during 3 days of testing in June 1964.

From tests of 133 women college students, done with 116-screen plus Hinföld, I estimate that 10 percent of the female college population have the ability to make statistically reliable discriminations of colored stimulus materials when the stimulus materials are illuminated (9). The hypothesis is again temperature discrimination. On the grounds of "parsimony," such explanations as "ESP" have been rejected. "Telepathy" has been excluded by double-blind experiments.

In view of the information now available, it is difficult to see how Gardner's comments on my investigations have any basis in fact. (Richard P. Youtz)

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I found Gardner's critique of DCP refreshing, but I feel compelled to come to the defense of Richard Youtz and his experimental subject. Having been invited by Youtz last August to test Mrs. Stanley's powers, I had the opportunity to observe her and her performance.

Indirect evidence leads me to the conclusion that Mrs. Stanley is not trying to cheat. When discovered by Youtz, she had not been employing her presumed powers for profit, and she agreed to ignore any attempts at commercial exploitation (she has been approached by television people). She does indeed talk while trying to discriminate the colors with her fingers, asking how she is doing, talking also about day-to-day topics. This, however, appears to be conversation to lessen the tension and discomfort of the sessions rather than perorification to misdirect the experimenter. Observing her, one gets the impression that she is a personable but not at all extraordinary housewife.

Gardner remarks that he was "unsuccessful in persuading" Youtz to put a box over Mrs. Stanley's head during the testing. It should be noted that Mrs. Stanley is the sole subject available for Youtz's experiments. She sometimes refuses to consent to experimental sessions because of chores at home. She likes to pause for a cigarette and coffee, or merely to rest, at random moments. Because of the nature of Youtz's hypothesis, some experimental sessions are run under conditions of high temperature and humidity. In the circumstances, considerable tact and flexibility are required of the experimenter in order to achieve the cooperation of his only subject. Youtz's present stereo-and-bib apparatus seems more than adequate to prevent peeking. If Mrs. Stanley were required to put her head into a box, she would just plain refuse to serve. One hopes that her attention has not been called to Gardner's article. Youtz has already had his troubles persuading her to continue.

On the basis of the evidence thus far I am inclined to agree with Youtz that Mrs. Stanley is sensitive not to electromagnetic energy but to thermal energy. The effects are subtle; the sole subject is short of time. Testing out the physical variables on which Mrs. Stanley's performance is undoubtedly based is a formidable long-term task. (Daniel J. Weinstein)

Gardner's article offers a reasonable explanation of certain reports that conflict with what is known about sensory processes, and calls attention to some of the precautions that are necessary (though not sufficient) in a serious investigation of such questionable phenomena as those reported. Gardner neglects to point out, however, that it is because those reports are incompatible with present

knowledge that they are likely to be explained by flaws in the experiments, such as inadequate precautions against trickery. Both character recognition and trichromatic color matching through "thermo-optical" means are among such questionable phenomena; not in this category, however, is the detection of differences in radiant heat exchange between the skin and different objects that may appear to be identical with one another except for color (hue, saturation, or lightness).

I describe elsewhere (1) a theoretical and empirical analysis of cutaneous sensitivity to differences in radiant heat exchange with diverse objects. Application of the Stefan-Boltzmann law shows that, under some conditions, radiant exchange between skin at body temperature and a good radiator at room temperature is approximately  $5.3 \times 10^{-3}$  watt/cm<sup>2</sup>, which is 3 to 15 times as great as reported values of threshold irradiance (2). Among the variables considered in the theoretical analysis are skin temperature, temperature and spectral emissivities of the objects to be discriminated, conduction, convection, and factors influencing the cumulative effects of thermal exchange. The computed effects of changes in radiant exchange on skin temperature were compared with empirical measurements. In spite of the inherent errors in such measurements, comparison reveals skin temperature changes many times as great as reported thresholds (2, 3).

The ability of human subjects to discriminate between objects on the basis of differences in their emissivities was tested under the following conditions: in a "completely" dark room (illuminance  $<11 \times 10^{-7}$  lu/m<sup>2</sup>) with electronic monitoring against physical contact between the subjects and the test objects; with skeptical subjects, with subjects having no previous interest in magic or in mentalism, and with a totally blind subject; with a plastic laboratory apron (optical density  $>10$ ) snugly tied around the subject's neck and bound around his head in a way that restricted vision as effectively as the box described by Gardner; and with a double-blind procedure to eliminate suggestion and to preclude even telepathy. Of the five subjects who were tested carefully, none failed to perform significantly above chance in the ten trials given. The three subjects further tested since the publication of Gardner's article have performed equally successfully while wearing a box of the kind he described.

Anyone can, in an hour or two, prove to himself his ability to discriminate via his cutaneous senses between radiant exchanges with objects of differing emissivities. After applying flat black paint to half of a square plate (about 15 cm on a side and 0.3 cm or more thick) of polished metal, he can discriminate the painted (highly emissive) side from the unpainted (poorly emissive) side merely by holding his hand half an inch from the surface and attending to thermal sensations. He can take any precautionary measures he deems necessary, but after two or three practice trials he will be able to perform the discrimination correctly on about 90 percent of the trials.

To avoid misunderstanding, I must add that the discrimination just described is not analogous to color vision; the multidimensional color space is compressed here into a single dimension, rate of heat exchange. Rate of heat exchange between observer and object, however, is correlated with the hue of the object as well as with its lightness. Thus, a general term that subsumes both properties, such as color sensitivity, serves to relate the sensory function to the visible differences between the objects discriminated. But, because the discrimination actually depends upon thermal exchanges that are only statistically correlated with visible properties, perhaps sensitivity sensitivity (or *e*-sensitivity) is a more accurately descriptive term. (W. L. Makous)

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I would like to add to Gardner's observations a note about some research he does not mention. I tested a group of 80 college students on a task which required them to detect a single odd color from among three colored papers covered by plastic (1). The observed mean percentage of correct identifications was 33.7, against a predicted chance level of 33.3, a statistically insignificant difference ( $t = 1.037$ ); increasing the relative differences in hue and brightness failed to produce significant improvements. In a follow-up study of three subjects whose detection performances were about as good as those reported by Youst (2), the subsequent daily scores varied from significantly above to significantly below chance.

The advocates of DOP seem to alternate between two hypotheses. One hypothesis implies that DOP is a previously undiscovered sensory channel possessed, in varying degree, by all human beings. The group data from my 80 subjects failed to support this hypothesis, thereby raising the question of why this alleged new sensory channel should behave differently from all other sensory channels. The other hypothesis, which is the one toward which convinced scientists have characteristically gravitated, is that only certain individuals are gifted with DOP. Each individual is usually identified by their statistically significant performances. On the basis of the follow-up study of high-scoring subjects, I have pointed out (1) that, when Youst (2) used the usual statistical test of significance on several hundred trials by a star performer, he reduced the standard error of the mean to the point where the increment of a few percentage points above chance appears to be significant (3). While this is technically legitimate, it is possible that during this period of time subjects may adapt to the situation, learn to detect stimulus differences on other dimensions, improve their ability to pattern their guessing behavior, and, as Gardner points out, perhaps learn how to raise peak, all of which might contribute to successively rising scores. Another possibility, evident from the data from my three subjects, is that the highly significant overall performance scores would mask the fact that the daily scores fluctuated widely from significantly above to significantly below chance. These possibilities make an overall test of significance very questionable indeed.

Since the "gifted person" hypothesis is so often used in the fringe areas of science, how are we to regard the many people whose performances on screening tests are significantly below chance? Are they to be included among the "ungifted"? It is certainly possible that continued testing with the ungifted might show patterns of above- and below-chance scores such as I found with initially high scorers.

Or is it possible that the convinced DOP researchers are focusing on the positive tail of a normal distribution?

The main problem with the gifted-person hypothesis is that it is so open-ended that it is not subject to refutation. It can always be said of critics of DOP that they have not been lucky enough to find a star subject. And being, unlike the DOP supporters, constrained by rules which require that hypotheses be expressed in such a way as to be both testable and refutable, the critics cannot assert that the null hypothesis is true, that is, that DOP does not exist in man. The final irony is that, despite the focus on the gifted-person hypothesis, in the discussion of the results the DOP supporters very often wander back to the original claim that DOP is a new sensory channel. (Robert Buckhout)

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The water witch. (Drawing by John C. Holden)

## PHT-001 (MARK TWAIN ON THOUGHT-TRANSFERENCE)

Clemens, S. L.: *Society for Psychical Research, Journal*, 3:166-167, 1884.

Mark Twain apparently had a tongue-in-cheek attitude toward psychic phenomena.

I should be very glad indeed to be made a Member of the Society for Psychical Research; for Thought-transference, as you call it, or mental telegraphy as I have been in the habit of calling it, has been a very strong interest with me for the past nine or ten years. I have grown so accustomed to considering that all my powerful impulses come to me from somebody else, that I often feel like a mere amanuensis when I sit down to write a letter under the coercion of a strong impulse: I consider that that other person is supplying the thoughts to me, and that I am merely writing from dictation. And I consider that when that other person does not supply me with the thoughts, he has supplied me with the impulse, anyway: I never seem to have any impulses of my own. Still, may be I got over by unconsciously surmising other people with impulses.

I have reaped an advantage from these years of constant observation. For instance, when I am suddenly and strongly moved to write a letter of inquiry, I generally don't write it---because I know that that other person is at that moment writing to tell me the thing I wanted to know,---I have moved him or he has moved me, I don't know which,---but anyway I don't need to write, and so I save my labour. Of course I sometimes act upon my impulses without stopping to think. My cigars come to me from 1,300 miles away. A few days ago,---September 30th,---it suddenly, and very warmly occurred to me that an order made three weeks ago for cigars had as yet, for some unaccountable reason, received no attention. I immediately telegraphed to inquire what the matter was. At least I wrote the telegram and was about to send it down town, when the thought occurred to me, "This isn't necessary, they are doing something about the cigars now---this impulse has travelled to me 1,300 miles in half a second."

As I finished writing the above sentences a servant intruded here to say, "The cigars have arrived, and we haven't any money downstairs to pay the expressage." This is October 4th,---you see how scarce my confidence was. The bill for the cigars arrived October 1st, dated September 30th---I knew perfectly well they were doing something about the cigars that day, or I shouldn't have had that strong impulse to wire an inquiry.

So, by depending upon the trustworthiness of the mental telegraph, and refraining from using the electric one, I saved 50 cents---for the pair. [I sit the pair.]

Companion instances to this have happened in my experience so frequently in the past nine years, that I could pour them out upon you to utter weariness. I have been saved the writing of many and many a letter by refusing to obey these strong impulses. I always knew the other fellow was sitting down to write when I get the impulse---so what could be the sense in both of us writing the same thing? People are always marvelling because their letters "cross" each other. If they would but squelch the impulse to write, there would not be any crossing, because only the other fellow would write. I am politely making an exception in your case; you have mentally telegraphed me to write, possibly, and I sit down at once and do it, without any shirking.

I began a chapter upon "Mental Telegraphy" in May, 1878, and added a paragraph to it now and then during two or three years; but I have never published it, because I judged that people would only laugh at it and think I was joking. I long ago decided to not publish it at all; but I have the old MS. by me yet, and I notice one thought in it which may be worth mentioning---to this effect: In my

own case it has often been demonstrated that people can have crystal-clear mental communication with each other over vast distances. Doubtless to be able to do this the two minds have to be in a peculiarly favourable condition for the moment. Very well, then, why shouldn't some scientist find it possible to invent a way to create this condition of rapport between two minds, at will? Then we should drop the slow and cumbersome telephones and say, "Connect me with the brain of the chief of police at Peking." We shouldn't need to know the man's language; we should communicate by thought only, and say in a couple of minutes what couldn't be inflated into words in an hour and a-half. Telephones, telegraphs and words are too slow for this age; we must get something that is faster.

#### PHT-002 SOME MISCALLED CASES OF THOUGHT TRANSFERENCE

J. J. Science, 9:115-116, 1887.

Such is the title of an article in The national review (January, 1887), by Ada Heather-Bigg and Marian L. Staehard. This article deserves to be read by every one interested in the subject, and especially by the members of the English society for psychic research. This society takes the position, that, having ruled out fraud and collusion, and still finding a larger ratio of successes than chance would allow, the only thing left is telepathy; and this is forthwith raised to the dignity of a new and omnipotent power explaining all the mysterious occurrences in hypnosis, in 'phantasms of the living,' in deathbed and other presentiments, and the like. The true logical conclusion is, that, such a thing as telepathy being so utterly opposed to the accumulated scientific knowledge of centuries, the probability of finding other sufficient modes of explaining the phenomena in question is extremely great: in other words, the inference is, not that telepathy is a fact, but that the modes of explanation thus far considered do not form a set of exhaustive alternatives.

This is the rational position taken by the writers of this article; and one might say of this, as they do of a similar point, that "it is a striking proof of the blinding effect of preconceived opinion on even careful investigators, that such cautious and careful inquirers as Messrs. Barrett, Garvey, and Myers should have failed to perceive this."

The notion of thought-transference was doubtless suggested by the commonplace and yet very impressive incident of two persons simultaneously expressing the same thought.<sup>1</sup> But knowing, as we do, how closely alike are our modern objections and interests, the wonder is, rather, that these coincidences are not more frequent and startling. This process is termed 'similar brain-branching' in the above article; and the reason why its importance is apt to be overlooked is because "as much of our mental activity goes on sub-consciously. Thus the resembling results are forced upon our notice, while the resembling processes get overlooked."

<sup>1</sup>Children are very much impressed by such coincidences, and the writer remembers distinctly how in such cases the two children concerned would observe the strictest silence, and, locking their little fingers together, would make a wish which was believed sure to come true.



G. H. Lewes tells a story to point. Walking in the country with a friend, he heard the sound of harness' hoofs behind them, and when the riders passed by, he once remarked that he was convinced that the riders were two women and a man, which they really were. His companion declared he had formed the same conjecture (evidently thought-transference, says the Psychic research society). Mr. Lewes passed over the matter, but could not think of a characteristic distinguishing the sound of a horsewoman from that of a horseman. Ah, however, it is a fact that men trot and women canter, the two different sounds had unconsciously registered themselves in the brains of himself and his friend.

This shows that (as must occur daily) "two persons may tend to function similarly in response to certain stimuli, yet neither of them be aware of the tendency," and it is just such phenomena that get utilized by the telepathists.

Guessing a number is a very popular mode of studying thought-transference; and, when the correct guesses are more frequent than the action of chance would predict, the hypothesis of telepathy is thought to be favored. From this conclusion we emphatically dissent, on the ground that an appreciable percentage of the successes must be put down to the credit of similar but independent brain-functioning. For it is a fact, admitting of easy verification, that the ordinary human mind (provided, always, that it be subjected to no other biasing influence beyond that involved in the verbal framing of the necessary questions) tends to select particular numbers in preference to others." In other words, these writers have independently discovered the 'number-habit' which Dr. C. S. Minot has so ably discussed in the Proceedings of the American Society for Psychical Research. This discovery was brought about by noticing that quite constantly an undue number of successes occurred at the beginning of many sets of number-guessings. The explanation is, that at first the subject regards the whole process as essentially that of the first number that pops into his head, that is, he follows his number-habit; but later, wondering at the successes, he suspects something, and adopts a more arbitrary mode of selection, whereupon the successes are less frequent.

They verified this supposition by simple experiments; and, to avoid the telepathist's objection that perhaps the tendency to choose particular numbers was 'transferred,' twenty or thirty friends were asked to put prescribed questions and tabulate the results. The results obtained were entirely confirmatory of the so-called number-habit, and "it is clear that this varying predilection for different numbers materially vitiates all reasoning based on the assumption that we shall indifferently choose any number." Not only are particular numbers favored, but there are decided tendencies to select numbers on certain principles: here, again, the results first reached by Dr. Minot are corroborated. For example: in 1,128 trials in which multiples of ten would have been selected 100 times by the action of chance, they were actually selected 207 times. When persons were asked to choose a number (no limits being set), it was found, that in 172 trials, 84 chose numbers under 20; and 59 of these, numbers under 10. Yet, if you set 1,000 as the limit unconsciously implied by each person, numbers under 10 would occur only 3.2%, and under 10 only 1.94 times. Again: when limits were set to the numbers to be thought of, there was a strong disposition to avoid early numbers, and select those near the furthest limits. The table recording the results of the numbers persons are most likely to choose is very suggestive, and should be compared with the tables given in Dr. Minot's report.

In short, as we recognized long ago by some psychologists and writers on probabilities, the human mind is not calculated to act like a die-box or a ruffling wheel, and to have numbers chosen in a different thing from having them given. In fact, it is possible to suggest a certain kind of number-preference by the framing of the question. When the question read, "Choose a number containing three figures," the digit 3 occurred more than twice as often as it should have

done by the action of chance. Of course, this phenomenon is not confined to numbers: guessing letters of the alphabet, names of people and towns, and the like, would be very apt to be unusually successful by reason of independent similar brain-functioning. In choosing letters, three tendencies are observed: 1<sup>st</sup>, to choose A, B, and C (of 172 people, 37 chose A, 31 B, and 14 C); 2<sup>nd</sup>, to choose one's own initial (this was done 27 times in 172 cases); 3<sup>rd</sup>, to choose Z (12 times in 172 cases).

The arguments in favor of superordinary thought-transference would apply as well to the common simultaneous discovery of new points in science by widely separated observers, or even to the similarity in customs of unrelated savage tribes (which Mr. Tylor so interestingly describes and so rationally explains), as to the number-coincidences of the usual 'telepathic' experiments. The same causes that led to the development of the decimal system, or to the selection of certain numbers as sacred or ill-omened, are still active in creating the preference for certain numbers which is so easily overlooked. Experiments taking this factor into account can be devised, and, when the results still have a residue of unexplained phenomena, it is time enough to begin to consider the remote possibility of real telepathy.

#### PHI-003 A PSYCHOLOGICAL INTERPRETATION OF THE RESULTS OF THE ZENITH RADIO EXPERIMENTS IN TELEPATHY

Goodfellow, Lois B.; *Journal of Experimental Psychology*, 20:601-635, 1935.

**Section I.--Preview.** Neither automatic nor telepathy, but the natural response of an audience to secondary cases caused the "highly successful" results of the Zenith radio experiments in telepathy. Approximately three-fourths of the audience's seventy-six attempts to receive an impression telepathically yielded results significantly different from chance expectation. Apparently, the audience was responding to definite factors--not chance. The most significant result of this study is the discovery of these factors.

This paper may be considered a study of the subtleties that influence an audience rather than a study of telepathy. It should be borne in mind that this interpretation is based on the data available and not on a systematic study planned by psychologists in the light of previous results. Nevertheless, the high reliability and the definiteness of the tendencies uncovered due to the large numbers of cases make the Zenith data a valuable contribution to psychology.

**Section II.--The Experiment.** Beginning September 28, 1937, and continuing until January 5, 1938, the Zenith Foundation (sponsored by the Zenith Radio Corporation) broadcast over a nation-wide network, every Sunday evening, a simple telepathic experiment. The program, consisting of dramatized examples of the retardation of progress through intolerance and the presentation of personal telepathic experiences, gained a huge radio audience. A few minutes of each program was devoted to the following simple telepathic test. At a given signal, the audience was asked to determine upon which of two symbols a group of telepathic readers in the studio was concentrating. This test was repeated a number of times on each program. The radio audience, having been requested to mail their results to the radio station, responded generously. The following script illustrates the type of instructions given to the audience.

**Narrator.**---Tonight the experiment will make use of two of the characters on the Duke University ESP cards. A square and a circle! I'll repeat the characters to be used tonight. A circle---and a square.

**Announcer.**—Behind a locked door in a room near the studio are ten telepathic senders. Five are men—five are women. By means of a specially-prepared selecting machine one of the two ESP characters will be chosen at random. The ten senders will concentrate upon the character selected—they will try to send the impression of either circle or square to you. During the intervals denoted by the taps of a bell—see if the single thought in the minds of these ten senders comes through space to you. The machine will operate five times.

**Narrator.**—It is best to write down your impression as soon as you receive it. Do not think about it or try to reason it out. Write down your impressions in consecutive order—as rapidly as you get them. The machine is now ready to select number one.

Spin . . . . . Stop . . . . . Bell . . . . . Interval . . . . . Bell

**Narrator.**—That was number one. The machine will now select number two. (Etc.)

The senders were ten students from Northwestern University. We attempted to secure people who were sympathetic toward the hypothesis of telepathy and who possessed vivid imagery. The senders worked in a small room adjacent to the studio where they were entirely unobserved. The choice of items to be sent was made by a roulette wheel and the actual selections were unknown to anyone except to the senders until after the closing of the polls. The tabulation of results was made by R. L. Bell and Company. The tabulation and checking methods used guaranteed a high degree of accuracy in the count of returns. (A sample of 5000 of the original reports submitted by radio listeners was rechecked in our laboratory to secure additional data, and showed perfect accuracy in the original count.)

The lengthy analysis of the data is omitted.

**Conclusions.**—An analysis of near a million responses from the radio audience, reveals the operation of marked extra-chance factors. The two most important of these factors are (1) the pattern or sequence used by individuals in recording their guesses, and (2) the set or predisposing influence of subtle suggestions found in the test instructions. When these factors are discounted, it becomes unnecessary to postulate telepathy to explain the results. The Zenith data resembles many of the data reported by telepathy experimenters in that the results can not be explained on a basis of chance. However, as has been demonstrated, telepathy is not the only alternative even when such factors as sensory cues, errors due to recording methods, and the selection of favorable data are eliminated. It would be interesting to know what an analysis of the type made in this paper would reveal in such data.

PHT-004 EXTRASENSORY ELECTROENCEPHALOGRAPHIC INDUCTION BETWEEN IDENTICAL THINGS

Dunn, T. D., and Behrendt, Thomas; *Sciences*, 158:567, October 15, 1958. (Copyright 1958 by the American Association for the Advancement of Science)

Previous studies of the effects of blackout in phobic driving of the alpha rhythm in the electroencephalogram (EEG) emphasized the fact that some subjects, when being stimulated in this manner, become ill (1). The non-scientific literature is replete with instances in which illness or trauma in one of a pair of identical twins affects the other, even though the twins are far apart and each is unaware of the situation affecting the other. From these isolated observations it was hypothesized that possibly phobic driving in one identical twin, with or without preceding illness, would produce a similar response in his sibling. Unfortunately, the low incidence of both phobic driving and identical twins makes it extremely difficult to find individuals combining these two characteristics. Therefore, it was decided to test the hypothesis with alpha rhythm, usually defined as rhythmic waves of approximately 10  $\mu$ v occurring with a frequency of 8 to 13  $\text{cp}/\text{sec}$ .

Alpha rhythm ordinarily can be elicited under the following circumstances: when the subject closes his eyes, when he stares at a uniform unpatterned background, or when he sits in the dark with his eyes open. Since eye closure in a lighted room elicits immediate and reproducible results it was chosen as the method for our investigations. A few of the subjects were known to us. Most were selected from among those who had answered advertisements placed in the newspapers. No specific criteria other than close similarity in appearance and a history of identity confusion were used to establish monozygosity. The twins were seated in separate lighted rooms 4 m apart and were instructed to open and close their eyes only on command. Electrodes were inserted subcutaneously over the occipital protuberances. A standard EEG electrode was used as a ground. The amplified signals were recorded on a Beckman Dynograph and a Honeywell Visirecorder. The subjects were asked to sit quietly, remain serene, and leave their eyes open except when instructed otherwise. Unselected subjects were recorded with one another, and with the twins, to rule out instrumental artifacts, such as "cross-talk" between the channels. Analysis of the records was by gross inspection. The evidence sought was the presence or absence of alpha patterns and their correlations in tracings obtained from the subjects.

Extrasensory induction is the appearance without conventional elicitation of an alpha rhythm in one twin while it is being evoked under standard conditions in the other. To date, extrasensory induction has been found in 2 out of 18 pairs of twins tested. These were intelligent, educated, serene Caucasian males 23 and 25 years of age. The remaining 16 pairs of twins in whom extrasensory induction could not be demonstrated included Caucasians and Negroes of various ages and of both sexes. Prominent characteristics of the 18 pairs were patent anxiety and apprehension about the testing procedure. By contrast, the aforementioned two pairs happened to possess a prior knowledge of biological sciences and were relatively unconcerned about the tests. To establish the validity of these findings, the tests were repeated on several different occasions. In no instance did the induction occur between unrelated subjects. Finally, none of the individuals tested displayed phobic driving. Thus extrasensory induction of brain waves exist between individuals when they are completely separated. It certainly is not a universal trait in all identical twins. Our series of experiments does not permit us to draw any conclusions regarding the incidence of this phenomenon.

Because of the paucity of controlled data, contrasted with the voluminous controversial information available on the subject of extrasensory perception, it appears unwise to draw any conclusions or to make any statements regarding these aspects of our investigations.

References and Notes.

1. T. D. Deane, D. W. Lewis, S. D. Weeks, J. F. Tools, Neurology 13, 336 (1963).
2. Supported by NIH grant HD 04223-04.



*Telepathy. (Drawing by John C. Holden)*

**PHT-006 EXTRASENSORY INDUCTION OF BRAIN WAVES**

Scott, Thomas R., et al; Science, 159:1240+, 1965. (Copyright 1965 by the American Association for the Advancement of Science)

Image and Dehaene believe they have demonstrated "extrasensory electroencephalographic induction between identical twins" (15 Oct., p. 367). If they have indeed established that alpha rhythms can be made to appear in one twin as a result of evoking it in the other, this finding is surely the most profound scientific discovery of the present century. Such coupling from one brain to another over a distance of 6 meters would constitute as great a mystery for physics as for biology or psychology. The authors do not appear to appreciate the revolutionary implications of their results. Otherwise, they would certainly not have failed to present their data in such a way that the reader could evaluate them. The authors have not supplied the following necessary information:

- 1) How many non-twin pairs were studied?
- 2) How long a time sample was obtained from each pair of subjects?
- 3) How many elicitations of alpha were performed with each pair of subjects?
- 4) What proportion of these elicitations displayed the "induction" effect?
- 5) What proportion of the time did alpha spontaneously occur?
- 6) The authors report that the records were analyzed by gross inspection. Were those doing the inspection aware or unaware of whether or not the records were obtained from twins or non-twins? Were they aware of the points in the record at which one of the twins was instructed to close his eyes?
- 7) The authors say the tests were repeated on "several different occasions." How many replications in "several," and how many opportunities were provided for the effect to show itself or fail to appear?

In reading *Science* one comes to expect a standard of reporting far higher than this in matters of much less fundamental importance. It is paradoxical that this report should have been published completely unsupported by any of the usual experimental safeguards. (Thomas H. Scott)

.... A great variety of factors influence the appearance of the alpha rhythm, and there is a very real possibility of contamination by one or more of these. While alpha itself is not under voluntary control, some of these factors are, including the one--eye closure--that the authors used to induce it. And, as the parapsychologists Hulse and Pratt (1) put it, "If a test [of ESP] is to be at all crucial, there is no excuse for using conditions that leave the question of sensory cues as one to be answered by judgment or interpretation." The report is almost devoid of the procedural detail that is essential to an adequate judgment of whether or not such sensory cues were, in fact, excluded. For instance, the first twin supposedly was instructed from time to time to close his eyes. What instructions were issued to the other twin, beyond being asked to sit quietly and keep his eyes open? Was he given any kind of warning signal that a trial was about to start? Where was the recording apparatus? Any auditory signal or any distraction from the visual "task" of keeping the eyes open can bring on alpha (2). On the other hand, was the second twin allowed to sit for a long time without any further instruction? If he did so without any anxiety or apprehension, as the authors believe, then the danger arises of boredom developing, and boredom is known to bring on alpha (2). Were eye closures of both twins monitored? Since eye closure induces alpha, it is essential that we know whether the second twin's eyes were, in fact, open at the time the first twin was closing his; the records reproduced in the article show only the eye-closure record for one subject, the reader. It would also be helpful to know whether the two successful pairs, who "happened to possess a prior knowledge of biological sciences and were relatively unprejudiced about the tests," were among the subjects whom the authors say they know. Just how much did the successful subjects know about the purposes of the experiment?

The report also suffers grossly from a lack of firm data. . . . Two electroencephalographic records are offered as proof of the principal conclusions of the paper. One shows simultaneous alpha rhythm in both twins when only one was supposed to have his eyes closed. Since no sample of the prestimulation EEG is given, we are at a loss to interpret the post-stimulation records. The fact that the presumed mesoepileptic twins gave highly similar records is, itself, not remarkable, since it has been known for a long time that the EEG records of identical twins are indistinguishable from each other (3). The proper control for the phenomenon the authors wish their figure to show would be the demonstration of a lack of alpha in the second twin when the first twin has not closed his eyes. Instead, we are given an irrelevant (in this context) record showing that the

first twin's eye closure did not influence alpha in an unrelated subject. . . .  
(Victor G. Latise and Bernard Weiss)

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2. I. Oswald, Sleeping and Waking (Elsevier, Amsterdam, 1953), pp. 73-75.
3. H. Davis and P. A. Davis, Arch. Neurol. Psychiat., 36, 1214 (1936).

The report of Duane and Behrendt. . . . has so heated the mail to my usually quiet ivory tower that I now need insurance. One nonscientist even asked "Ought I not to resign from the AAAS?" Should the editors have accepted this paper? The pro answer is: Gallies. Science is hindered when the Establishment undertakes censorship. The contra answer is: Space is too precious nowadays to allow for the printing of raw data, and these data are raw. For they state merely an empirical relation, an empty correlation, that lies out of further relation to any understood body of scientific fact. Besides, there is a literature which these authors do not cite and seem not to know. It seems clear that Soal's marvelous Welsh schoolboys confused by what now seems clearly to have been trickery to fool many important investigators [S. G. Soal and H. T. Bowden, The Mind Readers (London, Faber and Faber, 1939)]. Those boys were in separate rooms. How well shielded were the twins of Duane and Behrendt from each other? Did the recipient twin have his eyes continuously open or continuously closed? Could he have known when the sending twin was asked to close his eyes? Identical twins are accustomed to cooperate, and these twins were the only ones who knew the biology of what was going on. Anyhow, the major difficulty is that these twins (two out of 15 pairs) presented the experimenters with a correlation that they could not explain. So it has always been. The parapsychist (as does his complement) pits his ingenuity against the inscrutability of nature, and when the parapsychist fails he has succeeded, for he has discovered the inexplicable! (Edwin G. Borjg)

#### PHT-006 MORE ON EXTRASENSORY INDUCTION OF BRAIN WAVES

Tart, Charles T., et al; Science, 151:28-30, January 7, 1966. (Copyright 1966 by the American Association for the Advancement of Science)

Science has published a number of articles that were highly critical of ESP research in the past. I am therefore rather surprised at the publication of Duane and Behrendt's report, "Extrasensory electroencephalographic induction between identical twins" (15 Oct., p. 357). The research described by Duane and Behrendt fails to meet some elementary criteria for parapsychological research, and I am certain that the report would have been rejected on first reading by all of the four reputable parapsychological journals (1).

The reported experiment has three major flaws. First, with only a single wall and 5 meters of space separating the subjects, the "receiving" twin may have been responding (subliminally?) to the experimenter's voice as he instructed the "sending" twin to open and close his eyes. Second, "gross inspection"

as a means of scoring data in such a controversial area is obviously unacceptable. Third, the authors do not report even the most basic sort of descriptive data, such as number of trials under various conditions, much less any objective, statistical basis of their results.

Dunne and Behrendt note that they will not draw any conclusions "because of the paucity of controlled data, contrasted with the voluminous controversial information available on the subject of extrasensory perception." The authors have not added further controversial data with such an inadequately controlled study, and they overlook the existence of a number of well-controlled studies of psychophysiological responses to ESP (2).

Speaking as a psychologist who is familiar with the reputable ESP literature and who has done some minor studies in the field, I feel the readers of *Science* should realize that Dunne and Behrendt's report is below the usual standards for ESP research.... and should not be taken as at all representative. (Charles T. Tart)

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A few additional facts about our experiment are hereby provided in answer to questions raised by a number of readers (Letters, 2 Dec.).

The twins were not in shielded rooms; conceivably they could have sent coded signals to one another. Neither they nor our technicians knew what we were testing. Induction, when present, occurred in both directions. Irregular eye-opening and -closing periods of 5 to 30 seconds were established on command. The command was either a whisper or a tap on the shoulder. The subjects were closely monitored to insure that they were following instructions. The event marker (in the later experiments) was inaudible. In the successful twin transmissions seemed to occur always. The first set of twins was tested on only one day, because immediately thereafter one twin became unavailable. The second set was tested on five different occasions for a total of approximately 45 minutes. Some of the records (not all) were read by one of us without prior knowledge of the conditions under which they were obtained. These statements do not answer all possible questions which could be raised, nor do they alter the reliability or the validity of the original report. In retrospect, the biggest defect in our experimental procedure was that we did not rule out completely conventional forms of communication between the twins, and we did not perform a statistical analysis to eliminate spontaneous alpha rhythms.

Our previous research led us to the proposal of an interesting hypothesis. Preliminary experimentation has indicated that we may be on the right track. There are roughly 1 million identical twins in the U.S. At least several thousand devices capable of recording electroencephalographic waves are located in various laboratories and hospitals throughout the nation. Obviously the opportunity to test, repeat, and extend this experiment exists in all corners of the land. Only hard, quantitatively acceptable results will grove or rebuke the hypothesis. We intend to seek such data, and it is our hope that others will do likewise. (T. D. Dunne and T. Behrendt)



## PHT-007 INVESTIGATING THE PARANORMAL

Anonymous; *Nature*, 253:559-560, October 18, 1974.

We publish this week a paper by Drs. R. Targ and H. Puthoff (page 602) which is bound to create something of a stir in the scientific community. The claim is made that information can be transferred by some channel whose characteristics appear to fall "outside the range of known perceptual modalities". Or, more bluntly, some people can read thoughts or see things remotely.

Such a claim is, of course, bound to be greeted with a pre-conditioned reaction amongst many scientists. To some it simply confirms what they have always known or believed. To others it is beyond the laws of science and therefore necessarily unacceptable. But to a few---though perhaps to more than is realized---the questions are still unanswered, and any evidence of high quality is worth a critical examination.

The issue, then, is whether the evidence is of sufficient quality to be taken seriously. In trying to answer this, we have been fortunate in having the help of three independent referees who have done their utmost to see the paper as a potentially important scientific communication and not as a challenge to or confirmation of prejudices. We thank them for the considerable effort they have put in to helping us, and we also thank Dr. Christopher Evans of the National Physical Laboratory whose continued advice on the subject is reflected in the content of this leading article.

A general indication of the referees' comments may be helpful to readers in reaching their own assessment of the paper. Of the three, one believed we should not publish, one did not feel strongly either way and the third was guardedly in favour of publication. We first summarise the arguments against the paper.

(1) There was agreement that the paper was weak in design and presentation, to the extent that details given as to the precise way in which the experiment was carried out were disconcertingly vague. The referees felt that insufficient account had been taken of the established methodology of experimental psychology and that in the form originally submitted the paper would be unlikely to be accepted for publication in a psychological journal on these grounds alone. Two referees also felt that the authors had not taken into account the lessons learnt in the past by parapsychologists researching this tricky and complicated area.

(2) The three referees were particularly critical of the method of target selection used, pointing out that the choice of a target by "opening a dictionary at random" is a naive, vague and unnecessarily controversial approach to randomisation. Parapsychologists have long rejected such methods of target selection and, as one referee put it, weaknesses of this kind reveal "a lack of skill in their experiments, which might have caused them to make some other mistake which is less evident from their writing".

(3) All the referees felt that the details given of various safeguards and precautions introduced against the possibility of conscious or unconscious fraud on the part of one or other of the subjects were "uncomfortably vague" (in one case phrase). This in itself might be sufficient to raise doubt that the experiments have demonstrated the existence of a new channel of communication which does not involve the use of the senses.

(4) Two of the referees felt that it was a pity that the paper, instead of concentrating in detail and with meticulous care on one particular approach to extra-sensory phenomena, produced a mixture of different experiments, using different subjects in unconnected circumstances and with only a cursory overall

theme. At the best these were mere "a series of pilot studies.... than a report of a completed experiment".

(b) Their own these highly critical comments could be grounds for rejection of the paper, but it was felt that other points needed to be taken into account before a final decision could be made.

(1) Despite its shortcomings, the paper is presented as a scientific document by two qualified scientists, writing from a major research establishment apparently with the unqualified backing of the research institute itself.

(2) The authors have clearly attempted to investigate under laboratory conditions phenomena which, while highly implausible to many scientists, would nevertheless seem to be worthy of investigation even if, in the final analysis, negative findings are revealed. If scientists dispute and debate the reality of extra-sensory perception, then the subject is clearly a matter for scientific study and reportage.

(3) Very considerable advance publicity---it is fair to say not generated by the authors or their institute---has preceded the presentation of this report. As a result many scientists and very large numbers of non-scientists believe, as the result of anecdote and hearsay, that the Stanford Research Institute (SRI) was engaged in a major research programme into parapsychological matters and had even been the scene of a remarkable breakthrough in this field. The publication of this paper, with its stated claims, suggestions of a limited research programme, and modest data, is, we believe, likely to put the whole matter in more reasonable perspective.

(4) The claims that have been made by, or on behalf of, one of the subjects, Mr. Uri Geller, have been hailed publicly as indicating total acceptance by the SRI of allegedly sensational powers and may also perhaps now be seen in true perspective. It must be a matter of interest to scientists to note that, contrary to very widespread rumour, the paper does not present any evidence whatsoever for Geller's alleged abilities to bend metal rods by stroking them, influence magnets at a distance, make watches stop or start by some psychokinetic force and so on. The publication of the paper would be justified on the grounds of allowing scientists the opportunity to discriminate between the cautious, limited and still highly debatable experimental data, and extravagant rumour, fed in recent days by inaccurate attempts in some newspapers at pre-cognition of the contents of the paper.

(5) Two of the referees also felt that the paper should be published because it would allow parapsychologists, and all other scientists interested in researching this arguable field, to gauge the quality of the Stanford research and assess how much it is contributing to parapsychology.

(6) *Nature*, although seen by some as one of the world's most respected journals cannot afford to live on respectability. We believe that our readers expect us to be a home for the occasional 'high-risk' type of paper. This is hardly to assert that we regularly fly in the face of referees' recommendations (we always consider the possibility of publishing, as in this case, a summary of their objections). It is to say that the unusual must now and then be allowed a toe-hold in the literature, sometimes to flourish, more often to be forgotten within a year or two.

The critical comments above were sent to the authors who have modified their manuscript in response to them. We have also corresponded informally with the authors on one or two issues such as whether the targets could have been forced by standard magnetic tricks, and are convinced that this is not the case. As a result of these exchanges and the above considerations we have decided to publish in the belief that, however flawed the experimental procedure and however difficult the process of distilling the essence of a complex series of events into a scientific manuscript, it was on balance preferable to publish

and maybe stimulate and advance the controversy rather than keep it out of circulation for a further period.

Pubtubing in a scientific journal is not a process of receiving a seal of approval from the establishment; rather it is the serving of notice on the community that there is something worthy of their attention and scrutiny. And this scrutiny is bound to take the form of a desire amongst some to repeat the experiments with even more caution. To this end the fine Scientist does a service by publishing this week the results of Dr. Joe Hanson's own investigations into a wide range of phenomena surrounding Mr. Geller. If the subject is to be investigated further--and no scientist is likely to accept more than that the SRI experiments provide a prima facie case for more investigations--the experimental technique will have to take account of Dr. Hanson's strictures, those of our own referees and those, doubtless, of others who will be looking for alternative explanations.

Perhaps the most important issue raised by the circumstances surrounding the publication of this paper is whether science has yet developed the competence to confront claims of the paranormal. Supposedly paranormal events frequently cannot be investigated in the calm, controlled and meticulous way that scientists are expected to work and so there is always a danger that the investigator, swept up in the confusion that surrounds many experiments, abandons his critical inspection in order to go along with his subject's desires. It may be that all experiments of this sort should be exactly prescribed beforehand by one group, done by another unassociated group and evaluated in terms of performance by the first group. Only by increasing austerity of approach by scientists will there be any major progress in this field.

**PHT-008 INFORMATION TRANSMISSION UNDER CONDITIONS OF SENSORY SHIELDING**

Targ, Russell, and Pathoff, Harold; Nature, 251:602-603, October 16, 1974.

We present results of experiments suggesting the existence of one or more perceptual modalities through which individuals obtain information about their environment, although this information is not presented to any known sense. The literature<sup>1-3</sup> and our observations lead us to conclude that such abilities can be studied under laboratory conditions.

We have investigated the ability of certain people to describe graphical material or remote scenes shielded against ordinary perception. In addition, we performed pilot studies to determine if electroencephalographic (EEG) recordings might indicate perception of remote happenings even in the absence of correct overt responses.

We concentrated on what we consider to be our primary responsibility--- to resolve under conditions as unambiguous as possible the basic issue of whether a certain class of paranormal perception phenomena exists. So we conducted our experiments with sufficient control, utilizing visual, acoustic and electrical shielding, to ensure that all conventional paths of sensory input were blocked. At all times we took measures to prevent sensory leakage and to prevent deception, whether intentional or unintentional.

Our goal is not just to catalogue interesting events, but to uncover patterns of cause-effect relationships that lend themselves to analysis and hypothesis in the forms with which we are familiar in scientific study. The results presented here constitute a first step towards that goal; we have established under known conditions a data base from which departures as a function of physical and psychological variables can be studied in future work.

**Remote Perception of Graphic Material.** First, we conducted experiments with Mr. Uri Geller in which we measured his ability, while located in an electrically shielded room, to reproduce target pictures drawn by experimenters located at remote locations. Second, we conducted double-blind experiments with Mr. Pat Price, in which we measured his ability to describe remote outdoor scenes many miles from his physical location. Finally, we conducted preliminary tests using EEGs, in which subjects were asked to perceive whether a remote light was flashing, and to determine whether a subject could perceive the presence of the light, even if only at a non-cognitive level of awareness.

In preliminary testing Geller apparently demonstrated an ability to reproduce simple pictures (line drawings) which had been drawn and placed in opaque sealed envelopes which he was not permitted to handle. But since each of the targets was known to at least one experimenter in the room with Geller, it was not possible on the basis of the preliminary testing to discriminate between Geller's direct perception of envelope contents and perception through some mechanism involving the experimenters, whether paranormal or subliminal.

So we examined the phenomenon under conditions designed to eliminate all conventional information channels, overt or subliminal. Geller was separated from both the target material and anyone knowledgeable of the material, as in the experiments of ref. 4.

In the first part of the study a series of 13 separate drawing experiments were carried out over 7 days. No experiments are deleted from the results presented here.

At the beginning of the experiment either Geller or the experimenters entered a shielded room so that from that time forward Geller was at all times visually, acoustically and electrically shielded from personnel and material at the target location. Only following Geller's isolation from the experimenters was a target chosen and drawn, a procedure designed to eliminate pre-experiment eavesdropping. Furthermore, to eliminate the possibility of pre-experiment target forcing, Geller was kept ignorant as to the identity of the person selecting the target and as to the method of target selection. This was accomplished by the use of three different techniques: (1) pseudo-random technique of opening a dictionary arbitrarily and choosing the first word that could be drawn (Experiments 1-4); (2) targets, blind to experimenters and subject, prepared independently by SRI scientists outside the experimental group (following Geller's isolation) and provided to the experimenters during the course of the experiment (Experiments 5-7, 11-12); and (3) arbitrary selection from a target pool decided upon in advance of daily experimentation and designed to provide data concerning information content for use in testing specific hypotheses (Experiments 8-10). Geller's task was to reproduce with pen on paper the line drawing generated at the target location. Following a period of effort ranging from a few minutes to half an hour, Geller either passed when he did not feel confident or indicated he was ready to submit a drawing to the experimenters, in which case the drawing was collected before Geller was permitted to see the target.

To prevent memory eavesdropping of the target information, Experiments 1 through 10 were carried out using a shielded room in SRI's facility for EEG research. The acoustic and visual isolation is provided by a double-walled steel room, locked by means of an inner and outer door, each of which is secured with a refrigerator-type locking mechanism. Following target selection when Geller

was inside the room, a one-way audio monitor, operating only from the inside to the outside, was activated to monitor Geller during his efforts. The target picture was never discussed by the experimenters after the picture was dropped and brought near the shielded room. In our detailed examination of the shielded room and the protocol used in these experiments, no sensory leakage has been found.

The conditions and results for the 10 experiments carried out in the shielded room are displayed in Table 1 and Fig. 1. All experiments except 4 and 5 were conducted with Geller inside the shielded room. In Experiments 4 and 5, the procedure was reversed. For those experiments in which Geller was inside the shielded room, the target location was in an adjacent room at a distance of about 4 m, except for Experiments 8 and 9, in which the target locations were respectively, an office at a distance of 475 m and a room at a distance of about 7 m.

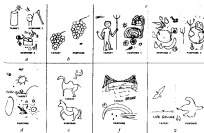


Fig. 1. Target pictures and responses drawn by Geller under shielded conditions.

Table 1. Perceptual perspective of graphic material.

<u>Experiment</u>	<u>Date</u> (month, day, year)	<u>Center Location</u>	<u>Target Location</u>	<u>Target</u>	<u>Figure</u>
1	8/4/73	Shielded room 1*	Adjacent room (4.1 m)**	Fluorescobar	1a
2	8/4/73	Shielded room 1	Adjacent room (4.1 m)	Grapes	1b
3	8/5/73	Shielded room 1	Office (475 m)	Devil	1c
4	8/5/73	Room adjacent to shielded room 1	Shielded room 1 (3.2 m)	Solar system	1d
5	8/6/73	Room adjacent to shielded room 1	Shielded room 1 (3.2 m)	Rabbit	No drawing
6	8/7/73	Shielded room 1	Adjacent room (4.1 m)	Tree	No drawing
7	8/7/73	Shielded room 1	Adjacent room (4.1 m)	Envelope	No drawing
8	8/9/73	Shielded room 1	Barrows room (8.75 m)	Camel	1e
9	8/9/73	Shielded room 1	Adjacent room (4.1 m)	Bridge	1f
10	8/9/73	Shielded room 1	Adjacent room (4.1 m)	Angull	1g
11	8/9/73	Shielded room 1***	Computer (54 m)	Kilo (computer CRT)	2a
12	8/10/73	Shielded room 2	Computer (54 m)	Church (computer memory)	2b
13	8/10/73	Shielded room 2	Computer (54 m)	Arrow (through beam (computer CRT, zero intensity))	2c

\* EEG Facility shielded room (see text).

\*\* Perceiver-target distance measured in meters.

\*\*\* Radio Systems Laboratory shielded room (see text).

A response was obtained in all experiments except Numbers 5-7. In Experiment 5, the person-to-person link was eliminated by arranging for a scientist outside the usual experimental group to draw a picture, lock it in the shielded room before Geller's arrival at SRI, and leave the area. Geller was then led by the experimenters to the shielded room and asked to draw the picture located inside the room. He said that he got no clear impressions and therefore did not submit a drawing. The elimination of the person-to-person link was examined further in the second series of experiments with this subject.

Experiments 6 and 7 were carried out while we attempted to record Geller's EEG during his efforts to perceive the target pictures. The target pictures were, respectively, a tree and an envelope. He found it difficult to hold adequately still for good EEG records, and that he experienced difficulty in getting impressions of the targets and again submitted no drawings.

Experiments 11 through 13 were carried out in SRI's Engineering Building, to make use of the computer facilities available there. For these experiments, Geller was secured in a double-walled, copper-screen Faraday cage 54 m down the hall and around the corner from the computer rooms. The Faraday cage provides 120 dB attenuation for plane wave radio frequency radiation over a range of 15 kHz to 1 GHz. For magnetic fields the attenuation is 45 dB at 15 kHz and decreases to 3 dB at 40 Hz. Following Geller's isolation, the targets for these experiments were chosen by computer laboratory personnel not otherwise associated with either the experiment or Geller, and the experimenters and subject were kept blind as to the contents of the target pool.

For Experiment 11, a picture of a letter was drawn on the face of a cathode ray tube display screen, driven by the computer's graphics program. For Experiment 12, a picture of a church was drawn and stored in the memory of the computer. In Experiment 13, the target drawing, an arrow through a heart (Fig. 5a), was drawn on the face of the cathode ray tube and then the display intensity was turned off so that no picture was visible.

To obtain an independent evaluation of the correlation between target and response data, the experimenters submitted the data for judging as a 'blind' basis by two SRI scientists who were not otherwise associated with the research. For the 10 cases in which Geller provided a response, the judges were asked to match the response data with the corresponding target data (without replacement). In those cases in which Geller made more than one drawing as his response to the target, all the drawings were combined as a set for judging. The two judges each matched the target data to the response data with an error. For either judge such a correspondence has an a priori probability, under the null hypothesis of no information channel, of  $P = (10!)^{-1} = 3 \times 10^{-7}$ .

A second series of experiments was carried out to determine whether direct perception of envelope contents was possible without some person knowing of the target picture.

One hundred target pictures of everyday objects were drawn by an SRI artist and sealed by other SRI personnel in double envelopes containing black cardboard. The hundred targets were divided randomly into groups of 20 for use in each of the three days' experiments.

On each of the three days of these experiments, Geller passed. That is, he declined to associate any envelope with a drawing that he made, expressing dissatisfaction with the existence of such a large target pool. On each day he made approximately 12 recognizable drawings, which he felt were associated with the entire target pool of 100. On each of the three days, two of his drawings could reasonably be associated with two of the 20 daily targets. On the third day, two of his drawings were very close replications of two of that day's target pictures. The drawings resulting from this experiment do not depart significantly from what would be expected by chance.

In a simpler experiment Geller was successful in obtaining information under conditions in which no persons were knowledgeable of the target. A double-blind experiment was performed in which a single 3/4 inch die was placed in a 3 x 4 x 2 inch steel box. The box was then vigorously shaken by one of the experimenters and placed on the table, a technique found in control used to produce a distribution of die faces differing non-significantly from chance. The orientation of the die within the box was unknown to the experimenters at that time. Geller would then write down which die face was uppermost. The target pool was known, but the targets were individually prepared in a manner blind to all persons involved in the experiment. This experiment was performed ten times, with Geller passing twice and giving a response eight times. In the eight times in which he gave a response, he was correct each time. The distribution of responses consisted of three 2s, one 4, two 5s, and two 6s. The probability of this occurring by chance is approximately one in  $10^6$ .

In certain situations significant information transmission can take place under shielded conditions. Factors which appear to be important and therefore candidates for future investigation include whether the subject knows the set of targets in the target pool, the actual number of targets in the target pool at any given time, and whether the target is known by any of the experimenters.

It has been widely reported that Geller has demonstrated the ability to bend metal by paranormal means. Although metal bending by Geller has been observ-

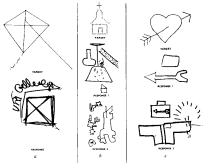


Fig. 2. Computer drawings and response drawn by Uri Geller. A. Computer drawing stored on video display; B. computer drawing stored in computer memory only; C. computer drawing stored on video display with zero latency.



Table 2. Distribution of correct selections by Judges A, B, C, D, and E in remote viewing experiments.

Descriptions Chosen by Judges	Places visited by Judge				
	1	2	3	4	5
Boomer Tower	1 ABCDE	2	3	4	5
Baylands Nature Preserve	ABC	E			
Bodie Telescope	ACD				D
Redwood City Marina		BE			
Redwood City Plaza	CD	ABDE	E		
Bridge Toff Plaza			ABD		DCE
Drive-In Theatre		B	A	C	
Arts and Crafts Garden Plaza				ABCE	E
Church					AB
Stowwells Park	CE				AB

Of the 45 selections (5 Judges, 9 choices), 24 were correct. Bold type indicates the description chosen most often for each place visited. Correct choices lie on the main diagonal. The number of correct matches by Judges A through E is 7, 6, 3, and 3, respectively. The expected number of correct matches from the five judges was five; in the experiment 24 such matches were obtained. The a priori probability of such an occurrence by chance, even sergretively assuming assignment without replacement of the pairs of the judges, is  $P = 8/11^{10}$ .

ed in our laboratory, we have not been able to combine such observations with adequately controlled experiments to obtain data sufficient to support the paranormal hypothesis.

**Remote Viewing of Natural Targets.** A study by Ours<sup>2</sup> led us to determine whether a subject could describe randomly chosen geographical sites located several miles from the subject's position and demarcated by some appropriate means (remote viewing). This experiment carried out with Price, a former California police commissioner and city councilman, consisted of a series of double-blind, demonstration-of-ability tests involving local targets in the San Francisco Bay area which could be demarcated by several independent judges. We planned the experiment considering that natural geographical places or man-made sites that have existed for a long time are more potent targets for paranormal perception experiments than are artificial targets prepared in the laboratory. This is based on subject opinions that the use of artificial targets involves a 'trivialization of the ability' as compared with natural pre-existing targets.

In each of nine experiments involving Price as subject and SRI experimenters as a target demarcation team, a remote location was chosen in a double-blind protocol. Price, who remained at SRI, was asked to describe this remote location, as well as whatever activities might be going on there.

Several descriptions yielded significantly correct data pertaining to and descriptive of the target location.

In the experiments a set of twelve target locations clearly differentiated from each other and within 30 min driving time from SRI had been chosen from a target-rich environment (more than 300 targets of the type used in the experimental series) prior to the experimental series by an individual in SRI management, the director of the Information Science and Engineering Division, not otherwise associated with the experiment. Both the experimenters and the subject were kept blind as to the contents of the target pool, which were used without replacement.

An experimenter was dressed with Price at SRI to wait 30 min to begin the narrative description of the remote location. The SRI locations from which the subject viewed the remote locations consisted of an outdoor park (Experiments 1, 2), the double-walled copper-screen Faraday cage discussed earlier (Experiments 3, 4, and 6-9), and an office (Experiment 5). A second experimenter would then obtain a target location from the Division Director from a set of travelling orders previously prepared and randomized by the Director and kept under his control. The target demarcation team five to four SRI experimenters then proceeded directly to the target by automobile without communicating with the subject or experimenter remaining behind. Since the experimenter remaining with the subject at SRI was to ignore both as to the particular target and as to the target pool, he was free to question Price to clarify his descriptions. The demarcation team then remained at the target site for 30 min after the 30 min allotted for travel. During the observation period, the remote-viewing subject would describe his impressions of the target site into a tape recorder. A comparison was then made when the demarcation team returned.

Price's ability to describe correctly buildings, docks, roads, gardens and so on, including structural materials, colour, ambience and activity, sometimes in great detail, indicated the functioning of a remote perceptual ability. But the descriptions contained inaccuracies as well as correct statements. To obtain a numerical evaluation of the accuracy of the remote viewing experiment, the experimental results were subjected to independent judging on a blind basis by five SRI associates who were not otherwise associated with the research. The judges were asked to match the nine locations, which they independently visited, against the typed manuscripts of the tape-recorded narratives of the remote

viewer. The transcripts were unlabelled and presented in random order. The judges were asked to find a narrative which they would consider the best match for each of the places they visited. A given narrative could be assigned to more than one target location. A correct match requires that the transcript of a given date be associated with the target of that date. Table 2 shows the distribution of the judges' choices.

Among all possible analyses, the most conservative is a permutation analysis of the plurality vote of the judges' selections assuming assignment without replacement, an approach independent of the number of judges. By plurality vote, six of the site descriptions and locations were correctly matched. Under the null hypothesis (no remote viewing and a random selection of descriptions without replacement), this outcome has an a priori probability of  $P = 3.8 \times 10^{-4}$ , since, among all possible permutations of the integers one through six, the probability of six or more being in their natural position in the list has that value. Therefore, although Peirce's descriptions contain inaccuracies, the descriptions are sufficiently accurate to permit the judges to differentiate among the various targets to the degree indicated.

**EEG Experiments.** An experiment was undertaken to determine whether a physiological measure such as EEG activity could be used as an indicator of information transmission between an isolated subject and a remote stimulus. We hypothesized that perception could be indicated by such a measure even in the absence of verbal or other overt indicators.<sup>6, 7</sup>

It was assumed that the application of remote stimuli would result in responses similar to those obtained under conditions of direct stimulation. For example, when normal subjects are stimulated with a flashing light, their EEG typically shows a decrease in the amplitude of the resting rhythm and a driving of the brain waves at the frequency of the flashes<sup>8</sup>. We hypothesized that if we stimulated one subject in this manner (a sender), the EEG of another subject in a remote room with no flash present (a receiver), might show changes in alpha (8-11 Hz) activity, and possibly EEG driving similar to that of the sender.

We informed our subject that at certain times a light was to be flashed in a sender's eyes in a distant room, and if the subject perceived that event, concomitantly or unconsciously, it might be evident from changes in his EEG output. The receiver was seated in the visually opaque, acoustically and electrically shielded double-walled steel room previously described. The sender was seated in a room about 7 m from the receiver.

To find subjects who were responsive to such a remote stimulus, we initially worked with four female and two male volunteer subjects, all of whom believed that success in the experimental situation might be possible. These were designated 'receivers'. The senders were either other subjects or the experimenters. We decided beforehand to run one or two sessions of 16 trials each with each subject in this selection procedure, and to do a more extensive study with any subject whose results were positive.

A Grass PS-2 photostimulator placed about 1 m in front of the sender was used to present flash trains of 16 s duration. The receiver's EEG activity from the occipital region (Oz), referenced to linked mastoids, was amplified with a Grass 8P-1 preamplifier and associated driver amplifier with a bandpass of 1-150 Hz. The EEG data were recorded on magnetic tape with an Ampex SP 206 recorder.

On each trial, a tone burst of fixed frequency was presented to both sender and receiver and was followed in one second by either a 16 s train of flashes or a null flash interval presented to the sender. Thirty-six such trials were given in an experimental session, consisting of 18 null trials--no flashes following the tone--12 trials of flashes at 4 l.p.s. and 12 trials of flashes at 16 l.p.s., all

randomly intermixed, determined by entries from a table of random numbers. Each of the trials generated an 11-s ECG epoch. The last 4 s of the epoch was selected for analysis to minimize the desynchronizing action of the warning cue. This 4-s segment was subjected to Fourier analysis on a LINC 8 computer.

Spectrum analyses gave no evidence of ECG driving in any receiver, although in control runs the receivers did exhibit driving when physically stimulated with the flashes. But of the six subjects studied initially, one subject (M. H.) showed a consistent alpha blocking effect. We therefore undertook further study with this subject.

Data from seven sets of 36 trials each were collected from this subject on three separate days. This comprises all the data collected to date with this subject under the test conditions described above. The alpha band was identified from average spectra, then scores of average power and peak power were obtained from individual trials and subjected to statistical analysis.

Of our six subjects, M. H. had by far the most monochromatic ECG spectrum. Figure 3 shows an overlay of the three averaged spectra from one of this subject's 36-trial runs, displaying changes in her alpha activity for the three stimulus conditions.

Mean values for the average power and peak power for each of the seven experimental sets are given in Table 3. The power measures were less in the 16 l.p.s. case than in the 8 l.p.s. in all seven peak power measures and in six out of seven average power measures. Note also the reduced effect in the case in which the subject was informed that no sender was present (Run 3). It seems that overall alpha production was reduced for this run in conjunction with the subject's expressed apprehension about conducting the experiment without a sender. This is in contrast to the case (Run 7) in which the subject was not informed.

Table 3. EEG data for M. H. showing average power and peak power in the 8-12 Mc band, as a function of flash frequency and sender.

Flash Frequency	0	8	16	0	8	16
Sender:	Average Power			Peak Power		
J. L.	84.8	84.1	76.8	337.7	323.2	283.6
R. T.	43.3	48.8	37.0	160.7	161.0	125.0
No sender (subject informed)	22.1	35.7	28.2	97.8	98.7	81.7
J. L.	84.2	85.3	81.8	391.4	378.5	343.3
J. L.	88.8	88.8	82.8	240.8	178.0	184.6
R. T.	38.8	34.8	30.3	145.2	78.2	122.1
No sender (subject not informed)	88.8	83.8	82.1	318.1	188.6	202.8
Averages	84.8	85.8	82.1	214.5	168.8	153.6
	-12% -24% ( $P < 0.04$ )			-21% -35% ( $P < 0.001$ )		

Each entry is an average over 12 trials.

Siegel's two-tailed  $t$  approximation to the nonparametric randomization test<sup>10</sup> was applied to the data from all sets, which included two sessions in which the sender was removed. Average power on trials associated with the occurrence of 16 f.p.s. was significantly less than when there were no flashes ( $n = 3, 09$ ,  $d.f. = 118$ ,  $P < 0.05$ ). The second measure, peak power, was also significantly

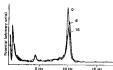


Fig. 3 Occipital EEG spectra, 0-20 Hz, for one subject (H.M.) acting as a receiver, showing amplitude changes in the 2-17 Hz band as a function of stroke frequency. Three cases: 0, 8, and 16 f.p.s. (12 trial averages)

less in the 16 f.p.s. conditions than in the null condition ( $n = 3, 16$ ,  $d.f. = 118$ ,  $P < 0.05$ ). The average response in the 4 f.p.s. condition was in the same direction as that associated with 16 f.p.s., but the effect was not statistically significant.

Spectrum analyses of control recordings made from saline with a 12 k $\Omega$  resistance in place of the subject with and without the addition of a 10 Hz, 50  $\mu$ V test signal applied to the saline solution, revealed no indications of flash frequencies, nor perturbations of the 10 Hz signal. These controls suggest that the results were not due to system artifacts. Further tests also gave no evidence of radio-frequency energy associated with the stimulus.

Subjects were asked to indicate their conscious assessment for each trial as to which stimulus was generated. They made their guesses known to the experimenter via one-way telegraphic communication. An analysis of these guesses has shown them to be at chance, indicating the absence of any supraliminal cueing, so arousal as evidenced by significant alpha blocking occurred only at the subconscious level of awareness.

We hypothesize that the protocol described here may prove to be useful as a screening procedure for latent remote perceptual ability in the general population.

**Conclusion.** From these experiments we conclude that:

- A channel exists whereby information about a remote location can be obtained by means of an as yet unidentified perceptual modality.
- As with all biological systems, the information channel appears to be imperfect, containing noise along with the signal.
- While a quantitative signal-to-noise ratio in the information-theoretical sense cannot as yet be determined, the results of our experiments indicate that the functioning is at the level of useful information transfer.

It may be that remote perceptual ability is widely distributed in the general population, but because the perception is generally below an individual's level of awareness, it is repressed or not noticed. For example, two of our subjects (H.H. and P.F.) had not considered themselves to have unusual perceptual ability before their participation in these experiments.

Our observation of the phenomena leads us to conclude that experiments in the area of so-called paranormal phenomena can be scientifically conducted, and it is our hope that other laboratories will initiate additional research to attempt to replicate these findings.

This research was sponsored by The Foundation for Parapsychology Investigation, New York City. We thank Mrs. Judith Satch, Dr. Edgar D. Mitchell of the Institute of Noetic Sciences—as well as our SHI associates, Mr. Donnar Cox, Mr. Earle Jones and Dr. Dean Brown—for support and encouragement. Constructive suggestions by Mrs. Jean Mayo, Dr. Charles Tart, University of California, and Dr. Robert Granzin and Dr. David Galin of the Langley Porter Neuropsychiatric Institute are acknowledged.

<sup>1</sup> Pratt, J., Hyne, J. B., Stuart, C., and Greenwood, J., Extra-Sensory Perception after Sixty Years (Dorcy Hall, New York, 1949).

<sup>2</sup> Soal, K., and Bateman, F., Modern Experiments in Telepathy (Faber and Faber, London, 1944).

<sup>3</sup> Venturi, L. L., Experiments in Mental Suggestion (SHI Publications, Kensington, England, 1963).

<sup>4</sup> Masse, J. R., and Granzin, M., *J. Parapsychology*, 37, 25-37 (1972).

<sup>5</sup> Oats, K., ASPR Newsletter, No. 14 (1974).

<sup>6</sup> Tart, C. T., Physiological Correlates of Psi Cognition, *Int. J. Parapsychology*, V, No. 4 (1968).

<sup>7</sup> Dean, E. D., *Int. J. Neuropsychiatry*, 2 (1966).

<sup>8</sup> Hill, D., and Pass, G., Electroencephalography: A Symposium on its Various Aspects (Macmillan, New York, 1963).

<sup>9</sup> Siegel, S., Nonparametric Statistics for the Behavioral Sciences, 182-186 (McGraw-Hill, New York, 1946).

The results reported by Tart and Pathoff raised a storm of comment within the scientific community. Not only was their methodology questioned but the wisdom of Nature in publishing anything on the paranormal was criticized. A further study, equally controversial, by the same authors appears in IEEE, Trans. 44:329-354, 1974.

# SECTION PI: INFORMATION PROCESSING

The normal mind processes information in impressive and not fully understood ways, even when modern digital computers are used for comparison. The abnormal mind, however, is even more spectacular. Indeed, some feats of memory and calculation are incredible; yet, there they are. Calculating prodigies, for example, seem to expose mental facilities deep within the brain that may be everyone's property, if only their use were understood. The apparent ability of the subconscious to process information independently of the conscious mind seems to confirm this.

Eidetic images are regarded here as a form of information retention: i.e., temporary, high-quality data banks. Somehow, a few individuals, mostly children, can retain remarkably detailed images of scenes even after the scene has been removed. Eidetic images are not afterimages, and their reality is a real psychological and physiological mystery.

- PIQ     Calculating prodigies, infant savants
- PIG     Anomalies of genius, relation of genius and mental instability, the savants phenomenon
- PII     Eidetic images
- PIM     Memory feats, including photographic memory
- PIU     Unconscious thinking, information processing by the subconscious mind





## PIC-001 ARITHMETICAL PRODIGIES

Scriptura, E. W.: *American Journal of Psychology*, 4:1-52, 1891.

From Scriptura's classic and very long review, we select only some of the most interesting cases plus the author's generalizations at the end.

A great deal has been said and written about these phenomenal persons in a very uncritical manner; on the one hand they are regarded as almost supernatural beings, while on the other hand no notice has been taken of their acuteness. Nevertheless, we can perhaps gain light on the normal processes of the human mind by a consideration of such exceptional cases. The first object of the present article is to give a short account of these persons themselves, and to furnish for the first time an approximately complete bibliography of the subject. Thereupon the attempt will be made to make such a psychological analysis of their powers as will help in the comprehension of them, and will perhaps furnish more than one hint to the practical instructor in arithmetic.

**African Slave Dealers.**—Perhaps brought to the front or produced by the necessity of competing with English traders armed with pencil and paper, many of the old-time slave-dealers of Africa seemed to have been ready reckoners, and that, too, for a practical purpose,—a point overlooked by more than one of the later calculators. "It is astonishing with what facility the African brokers reckon up the exchange of European goods for slaves. One of these brokers has perhaps ten slaves to sell, and for each of these he demands ten different articles. He reduces them immediately by the head into bars, coppers, pieces, according to the medium of exchange that prevails in the part of the country in which he resides, and immediately strikes the balance." The ship-captains are said to have complained that it became more and more difficult to make good bargains with such sharp arithmeticians. It was also an African who was the first to appear in this role in America.

**Tom Feller.**—The first hard evidence in regard to Feller consists of the following: A letter read before the Pennsylvania Society for the Abolition of Slavery by Dr. Bush of Philadelphia, which is published, more or less completely in three places; and the obituary which appeared in the *Columbian Centinel*. On the foundation of these documents several later accounts have been given.

Thomas Feller, known as the Virginia Calculator, was stolen from his native Africa at the age of fourteen and sold to a planter. When he was about seventy years old, two gentlemen, natives of Pennsylvania, viz., William Harshbarger and Samuel Coates, men of probity and respectable characters, having heard, in travelling through the neighborhood in which the slave lived, of his extraordinary powers in arithmetic, sent for him and had their curiosity sufficiently gratified by the answers which he gave to the following questions: First, Upon being asked how many seconds there were in a year and a half, he answered in about two minutes, 47,344,000. Second. On being asked how many seconds a man has lived who is 70 years, 17 days and 12 hours old, he answered in a minute and a half 2,219,500,888. One of the gentlemen who employed himself with his pen in making these calculations told him he was wrong, and that the sum was not so great as he had said—upon which the old man hastily replied: 'top, massa, you forget de leap year. On adding the amount of the seconds of the leap year the amount of the whole in both their sums agreed exactly.' Another question was asked and satisfactorily answered. Before two other gentlemen he gave the amount of nine figured multiplied by nine. He began his application to figures by counting ten and proceeded up to one hundred. He then proceeded to count the number of hairs in a cow's tail and the number of grains in a bushel of wheat.

Warville says in 1788, "he has had no instruction of any kind, but he calculates with surprising facility." In 1790 he died at the age of 80 years, having never learned to read or write, in spite of his extraordinary power of calculation.

**Jedburgh Boyton.**—Jedediah Boyton was born in 1782, at Elrines, in Derbyshire, England, where he died in 1778. Although his father was schoolmaster of the parish and his grandfather had been the vicar, his education was by some chance so neglected that he was not able to spell his own name. All his attainments were the result of his own pure industry: the only help he had was the learning of the multiplication table in his youth; "his mind was only stored with a few constants which facilitated his calculations; such as the number of minutes in a year, and of hair's-breadth in a mile." He labored hard with his spade to support a family, but seems to have shown not even usual intelligence in regard to ordinary matters of life. The testimony as to his arithmetical powers is given by two witnesses. George Saxe says: "I proposed to him the following random question: In a body whose three sides are 23, 345, 769 yards, 8, 842, 700 yards, and 54, 945 yards, how many cubical 1/16ths of an inch? After once naming the several figures distinctly, one after another, in order to assure himself of the several dimensions and fix them in his mind, without more ado he fell to work amidst more than 300 of his fellow-laborers, and after leaving him about five hours, on some necessary business (in which time I calculated it with my pen) at my return, he told me he was ready: Upon which, taking out my pocket-book and pencil, to note down his answer, he asked which I would begin at, for he would direct me either way. . . . I chose the regular method. . . . and in a line of twenty-eight figures, he made no hesitation nor the least mistake." "He will stride over a piece of land or a field, and tell you the contents of it, almost as exact as if you measured it by the chain. . . . He measured in this manner the whole lordship of Elrines, of some thousand acres, . . . and brought the contents, not only in acres, rods and perches, but even in square inches; . . . for his own amusement he reduced them to square hair's-breadths, computing I think 48 to each side of the inch." Various other problems were solved by him with like facility on later occasions, before a different witness.

From May 17 to June 16, 1785, he was (to use his own expression) drunk with reckoning, by which a kind of stupor was probably meant. The cause was the effort to answer the following question: In 242, 086, 989, 360 cubic miles how many barley-corns, vetches, peas, wheat, oats, rye, beans, listels, and how many hairs, each an inch long, would fill that space, reckoning 48 hairs in breadth to an inch on the flat? His table of measures, which he founded on experiment, used to answering this was:

200 Barley Corns,	} are contained in one solid inch.
300 Wheat Corns,	
512 Rye Corns,	
180 Oats,	
40 Peas,	
25 Beans,	
80 Vetches,	
100 Listels,	
2304 Hairs 1 inch long.	

Quite curious is Boyton's notation for higher numbers. His system is: Units, thousands, millions, thousands of millions, millions of millions, thousand millions of millions, tribes, thousands of tribes, etc., to thousand millions of millions of tribes; cramps, thousands of cramps, etc., to thousand million of million of cramps; tribes of cramps, etc., to tribes of tribes of cramps.

In regard to subjects outside of arithmetic, his mind seemed to have retained fewer ideas than that of a boy ten years old. On his return from a sermon he

never brought away one sentence, having been busied in dividing some lines or some space into the smallest known parts. He visited London in 1754, and was tested by the Royal Society. On this visit he was taken to see King Richard III performed at Drury Lane playhouse, but his mind was employed as at church. During the drama he fixed his attention upon the number of steps; he attended to Mr. Garrick only to count the words that he uttered. At the conclusion of the play they asked him how he liked it. He replied "such an actor went in and out so many times and spoke so many words; another so many, etc. He returned to his village and died poor and ignored.

**Amperé.** --- The first talent shown by Andre Marie Amperé, 1775, at Lyons, 1834, at Marcellines, was for arithmetic. While still a child, knowing nothing of figures, he was seen to carry on long calculations by means of pebbles. To illustrate to what an extraordinary degree the loss of calculation had set down upon the child, it is related that being deprived of his pebbles during a serious illness, he supplied their places with pieces of a biscuit which had been allowed him after three days strict diet.

As soon as he could read he devoured every book that fell into his hands. His father allowed him to follow his own inclination and contented himself with furnishing him the necessary books. History, travels, poetry, romances and philosophy interested him almost equally. His principal study was the encyclopedia in alphabetical order, in twenty volumes folio, each volume separately in its proper order. This colossal work was completely and deeply engraved on his mind. "His mysterious and wonderful memory, however, astonished me a thousand times less than that force called by flexibility which enables the mind to assimilate without confusion, after reading in alphabetical order matter so astonishingly varied." Half a century afterwards he would repeat with perfect accuracy long passages from the encyclopedia relating to blazonry, falconry, etc.

At the age of eleven years the child had conquered elementary mathematics and had studied the application of algebra to geometry. The parental library was not sufficient to supply him with further books, so his father took him to Lyons, where he was introduced to higher analysis. He learned of himself according to his fancy, and his thought gained in vigor and originality. Mathematics interested him above everything. At eighteen he studied the *Mécanique analytique* of Lagrange, nearly all of whose calculations he repeated; he said often that *he knew* at that time as much mathematics as he ever did.

In 1793 his father was butchered by the revolutionaries, and young Amperé was completely paralyzed by the blow. Rousseau's botanical letters and a chance glance at Horace roused him after more than a year from an almost complete idiosyncrasy; and he gave himself up with unrestrained zeal to the study of plants and the *Agoutan* poets. At the age of twenty-one his heart suddenly opened to a new passion and then began the romantic story of his love, which is preserved in his *Amour* and his letters. Amperé became professor of mathematics, chemistry, writer on probabilities, poet, psychologist, metaphysician, member of the Academy of Sciences of Paris, discoverer of fundamental truths of electro-dynamics, and a defender of the unity of structure in organized beings.

Just as he began by learning completely the encyclopedia of the 18th century, he remained encyclopedic all his life, and his last labors were on a plan for a new encyclopedia.

**Gauss.** --- The arithmetical prodigies might be divided into two classes, the one-sided and the many-sided. The former would include those who like Buxton, Colburn and Daise were mere "reckoning-machines," the other would consist of men in whom the calculating power was only a part of gifts of mathematical talent like Safford, or even of the highest mathematical genius like Gauss.

Carl Friedrich Gauss was born in 1777, in Brunswick. He was the off-

spring of a poor family that had in no wise distinguished themselves, although his mother seemed to have been of finer mental build than the paternal stock. Moreover his maternal uncle was a man of unusual talent; completely uneducated he learned to produce the finest damask; in Gauss's opinion "a natural genius had been lost in him." At an early age the genius of Gauss began to show itself.

With the assistance of friends and of persons of the nobility he was enabled to get a school-education. At the age of eleven he entered the gymnasium where he mastered the classical languages with incredible rapidity. In mathematics also he distinguished himself. It is said that a new professor of mathematics handed back thirteen-year-old Gauss's first mathematical exercises with the remark that it was unnecessary for such a mathematician to attend his lessons in the future. The Grand Duke, hearing of his talent, sent for him. The court was entertained by the calculations of the fourteen-year-old boy, but the duke recognized the genius and gave him his support. It is to be regretted that we have not fuller accounts of his early calculations, but his later achievements have so completely occupied the world of science that less attention has been paid to his calculating powers. It is curious to think that if he had had the misfortune to have been gifted with nothing else, he would probably have distinguished himself as Descartes or Montenus did; he might even have proclaimed himself in the Colburn fashion, as a miraculous exception from the rest of mankind; as it is, he was only the greatest mathematician of the century.

After leaving the gymnasium in 1795, he entered the University of Göttingen. As early as 1793, he discovered the method of the least squares, and in 1796 he invented the theory of the division of the circle.

In 1798 he promoted in absentia as Dr. phil. at the university of Helmstedt.

In 1801, at the age of twenty-four, his *Disquisitiones arithmeticae* were published; the work was quickly recognized as one of the milestones in the history of the theory of numbers. From this point on his life was a series of most brilliant discoveries till his death at Göttingen, 1855.

It is much to be regretted that no adequate life of Gauss has yet been written; nevertheless, the story of his discoveries is too well known to need mention. We are here interested in his talent for calculation, for Gauss was not only a mathematical genius,—he was also an arithmetical prodigy, and that, too, at an age much earlier than any of the others.

An anecdote of his early life, told by himself, is as follows: His father was accustomed to pay his workmen at the end of the week, and to add on the pay for overtime, which was reckoned by the hour at a price in proportion to the daily wages. After the master had finished his calculations and was about to pay out the money, the boy, scarce three years old, who had followed unnoticed the acts of his father, raised himself and called out in his childish voice: "Father, the reckoning is wrong, it makes so much," naming a certain number. The calculation was repeated with great attention, and to the astonishment of all it was found to be exactly as the little fellow had said.

At the age of nine Gauss entered the reckoning class of the town school. The teacher gave out an arithmetical series to be added. The words were scarcely spoken when Gauss threw his slate on the table, as was the custom, exclaiming, "There it lies!" The other scholars continue their figuring while the master throws a pitying look on the youngest of the scholars. At the end of the hour the slates were examined; Gauss's had only one number on it, the correct result alone. At the age of ten he was ready to enter upon higher analysis. At fourteen he had become acquainted with the works of Euler and Lagrange, and had grasped the spirit and methods of Newton's *Principia*.

He was always distinguished for his power of reckoning, and was able to carry on difficult investigations and extensive numerical calculations with incredible ease. His unsurpassed memory for figures set those who met him in astonish-

ment; if he could not answer a problem at once, he stored it up for future solution. At once, or after a very short pause, he was able to give the properties of each of the first couple thousand numbers. In mental calculation he was unsurpassed. He had always in his mind the first decimals of all the logarithms, and used them for approximate estimation while calculating mentally. He would often pause a calculation for days and weeks, and—what distinguishes him from all other calculators,—during such a calculation he continually invented new methods and new artifices.

Perhaps the best picture of his genius is given by Wattershagen: "Gauss showed a remarkable, perhaps unprecedented, combination of peculiar talents. To his eminent ability to work out in himself abstract investigations on all sides and from all standpoints, there were joined a marvelous power of numerical calculation, a peculiar sense for the quick apprehension of the most complicated relations of numbers, and an especial love for all exact observations of nature."

From Gauss's opinion of Pfaff we get a hint of what he regarded as the essential of genius, "never to leave a matter till he had investigated wherever possible."

Sarah Colburn.—Autobiographies do not always furnish the most trustworthy evidence in regard to the man himself; when, moreover, the author is contented that he is nothing less than a modern miracle; and, finally, when having had no scientific and little literary education, he at a later date writes the remains of his youth, we are obliged to supply the lacking critical treatment of the narrative. The main source of information in regard to Colburn's youthful powers consists of his memoirs published by him in 1833. Only one contemporary account of his earliest exhibitions in America is to be found, we must rely mostly on his own statements, probably derived from recollections of his friends, and on a "Prospectus," a sort of advertisement, published in London in 1813.

Sarah Colburn, 1804, 1848, of Cabot, Vt., was considered a very backward child. In the year 1810, a short time after a six weeks attendance at the district school, in which he had learned no arithmetic (unless from the recitations of other boys in the class-room), his father heard him saying "5 times 7 are 35," "6 times 8 are 48," etc., and upon examining him and finding him perfect in the multiplication table, he asked the product of 23 x 97, to which 2261 was instantly given in answer. The account given by Sarah herself, when stated in plain terms, amounts to this; nevertheless, one is tempted to ask for the authority on which the statements were made. If Sarah remembered the exact figures herself till the time of writing his memoirs, then his power of memory for long periods must have been extraordinary, yet he never mentions such powers. On the other hand, if these statements are made from the stories current about him, the general untrustworthiness of such evidence does not allow us to put too much faith in the figures.

Before long Sarah's father took him to Montpelier, Vt., where he was exhibited. Of his performances here Colburn gives only three specimens. "Which is the most, twice twenty-five, or twice five and twenty (2 x 25 or 2 x 27) 20? Ans.—Twice twenty five. Which is the most, six dozen dozen, or half a dozen dozen (6 x 12 x 12 or 6 x 12)? Ans.—6 dozen dozen. It is a fact, too, that somebody asked how many black bears would make five white ones? Ans.—5, if you skin them." It is at once apparent that these questions do not demand any extraordinary calculating powers, but on the other hand, a sharpness of wit and an analytical quickness of comprehending puzzles that would be phenomenal in a joker and riddle-maker of ripe years. If it is really true that the child answered the last of these questions, then the real miracle is that he should on not a single other occasion of his life have shown a sign of the Yankee quickness and shrewdness here implied.

On the journey to Boston, Zerah's wonderful gifts convinced A. H. Eq. that "something had happened contrary to the course of nature and far above it;" he was compelled by this "to reassess his infidel foundation, and ever since has been established in the doctrine of Christianity." At Boston he gave public exhibitions. "Questions in multiplication of two or three places of figures, were answered with much greater rapidity than they could be solved on paper. Questions involving an application of this rule, as in Reduction, Rule of Three, and Practice, seemed to be perfectly adapted to his mind." The extraction of the roots of exact squares and cubes was done with very little effort; and what has been considered by the Mathematicians of Europe as an operation for which no rule existed, viz., finding the factors of numbers, was performed by him, and in course of time he was able to point out his method of obtaining them. "Questions in Addition, Subtraction and Division were done with less facility, on account of the more complicated and continued effort of the memory [sic.] In regard to the higher branches of Arithmetic, he would observe that he had no rules peculiar to himself; but if the common process was pointed out as laid down in the books, he would carry on the process very readily in his head."



The genius. (Drawing by John C. Hildred)

Among the questions answered at Boston were the following: "The number of seconds in 2000 years was required?"

720,000 days,	
17,520,000 hours	Answer.
1,051,200,000 minutes,	
63,072,000,000 seconds,	

"Supposing I have a corn-field, in which are 7 acres, having 27 rows in each acre; 64 hills in each row; 8 ears on a hill, and 100 kernels on an ear; how many kernels on the corn-field? Answer: 8,128,300."

At this time he was a child only six years old, unable to read and ignorant of the name or properties of one figure traced on paper. The exercise of his faculty under such circumstances causes him later to exclaim: "For it ever has been, and still is, as much a matter of astonishment to him as it can be to any other one; God was its author, its object and aim are perhaps still unknown."

Shortly afterward, on a steambath journey up to Albany, a gentleman taught Zerah the names and the powers of the nine units, of which he had been previously ignorant. In June, 1811, he visited Portsmouth and answered the following:

"Admitting the distance between Concord and Boston to be 65 miles, how many steps must I take in going this distance, allowing that I go three feet at a step? The answer, 114,489, was given in ten seconds. "How many seconds in eleven years? Answer, in four seconds, 346,084,344. What sum multiplied by itself will produce 206,007? In less than four seconds, 206."

Next summer Zerah's father took him to England and made efforts to secure the patronage of the nobility. At a meeting of his friends he undertook and succeeded in raising the number 4 to the sixteenth power, 281,474,978,710,105. He was then tried as to other numbers, consisting of one figure, all of which he raised as high as the tenth power, with so much facility that the persons appointed to take down the results was obliged to enjoin him not to be too rapid. With respect to numbers of two figures, he would raise some of them to the sixth, seventh and eighth power, but not always with equal facility; for the larger the products became the more difficult he found it to proceed. He was asked the square root of 246,929, and before the number could be written down he immediately answered 327. He was then requested to name the cube root of 268,328,008, and with equal facility and promptness he replied 643 [Extracted from a Prospectus printed in London, 1815]."

"It had been asserted, . . . that  $4,234,267,297$  is  $237^2 \times 3$  was a prime number. . . . Euler detected the error by discovering that it was equal to  $641 \times 6,760,617$ . The same number was proposed to this child, who found out the factors by the mere operation of his mind."

Colburn is undoubtedly the one referred to as the Russian boy in the Gentleman's Magazine of 1812. He showed himself to the merchants of the London Stock Exchange; one of them gave the boy a guinea of William III, and demanded to know how many pears, months and days had elapsed since its coinage; all of which he answered promptly. This is confirmed by a passage in a letter from a friend of S. R. Morse: "Zerah Colburn . . . has called on us. . . He has excited much astonishment here, and, as they are very unwilling just at this time to allow any cleverness to the Americans, it was said in some of the papers that he was a Russian."

The father and son, after a visit to Ireland and Scotland, returned to London. In 1814 they proceeded to Paris, where the people manifested very little interest in his calculations. This neglect he can only explain by a national defect of character or a crushing historical event. "Whether it were principally owing to the native frivolity and lightness of the French people, or to the painful affect produced by the defeat of their armies and the restoration of the exiled Louis XVIII, cannot be correctly stated; probably it was owing to the former, etc."

He was introduced to and examined by the members of the French "Institute," among whom was La Place. "Three months had now elapsed that he had not been exhibited, but had given his attention to study; even in this short space it was observable that he had lost in the quickness of his computations." Before long his calculating power left him entirely.

By the exertions of Washington Irving, at that time in Paris, the boy obtained admission to the Lycéeum Napoleonicum (or Royal College of Henri IV.) Zerah gives an interesting account of this institution, which was under strict military discipline, and also of Westminster School, to which he was placed on his return to England.

Being in financial straits the father suggests the stage, and so Zerah makes an unsuccessful attempt at acting. Thereafter, in 1821, he starts a private school, which was given up after somewhat more than a year. After his return to America he joined the Congregational church, but soon went over to the Methodists and began to hold religious meetings. He was ordained deacon, and labored thenceforth as an itinerant preacher, till, in 1825, he was appointed "Professor of the Latin, Greek, French and Spanish Languages, and English Classical Literature in the seminary styled the Norwich University." Here he died at the age of 38, leaving a wife and three children.

It is to be remarked that Colburn's calculating powers, such as they were, seemed to have absorbed all his mental energy; he was unable to learn much of anything, and incapable of the exercise of even ordinary intelligence or of any practical application. The only quality for which he was especially distinguished was self-appreciation. He speaks, for example, of Hilder as "the person who approached the nearest to an equality with himself in mental arithmetical." Again, "he thinks it no vanity to consider himself first in the list in the order of time, and probably first in the extent of intellectual power."

Colburn possessed bodily as well as mental peculiarities. His father and great-grandfather had a supernumerary digit on each hand and each foot; Zerah and three (or two?) brothers possessed these extra numbers, while they were wanting in two brothers and two sisters. These digits are attached to the little fingers and little toes of the hands and feet, each having complete metacarpal and metatarsal bones. Zerah leaves it a matter of doubt "whether this be a proof of direct linear descent from Philitine blood or not (see 1 Chronicles xi. 6)." A portrait of Colburn was made in Philadelphia in 1818, and placed in the museum, and another was engraved in London in 1822. The origin of the portrait prefixed to his memoirs is not given; it shows a large head, with unusual development of the upper parts; the forehead is rather small and angular, the occiput is small; the eyes are quite large with projecting orbital arch. Gall, who examined the boy without any previous intimation of his character, "readily discovered on the sides of the eyebrows certain protuberances and peculiarities which indicated the presence of a faculty for computation."

George Hilder, --- Geo. Hilder, 1806, 1878, was the son of an English stonemason. His first and only instruction in numbers was received at about 6 years of age, from his elder brother, from whom he learned to count up to 10 and then to 100.

"I amused myself," he says, "by repeating the process [of counting up to 100], and found that by stopping at 10, and repeating that every time, I counted up to 100 much quicker than by going straight through the series. I counted up to 10, then to 10 again=20, 2 times 10=20, 3 times 10=30, 4 times 10=40, and so on. This may appear to you a simple process, but I attach the utmost importance to it, because it made me perfectly familiar with numbers up to 100; . . . at this time I did not have one written or printed figure from another, and my knowledge of language was so restricted, that I did not know there was such a word as 'multiply'; but having acquired the power of counting up to 100 by 10 and by 5, I set about, in



my own way, to acquire the multiplication table. This I arrived at by getting peas, or marbles, and at last I obtained a treasure in a small bag of shot; I used to arrange them in squares, of 5 on each side, and then on counting them throughout I found that the whole number amounted to 25; by that process I satisfied my mind, not only as a matter of necessity, but as a matter of conviction, that 5 times 5 were 25; and that fact once established has remained there undisturbed until this day, ..... in this way I acquired the whole multiplication table up to 12 times 12; beyond which I never went; it was all that I required."

Most of the child's time was spent with an old blacksmith. On one occasion somebody by chance mentioned a sum and the boy astonished the bystanders by giving the answer correctly. "They went on to ask me up to two places of figures, 13 times 17 for instance; that was rather beyond me at the time, but I had been accustomed to reason on figures, and I said 13 times 17 means 10 times 10 plus 10 times 7, plus 13 times 3 and 3 times 7. ...."

While remaining at the forge he received no instruction in arithmetic beyond desultory scraps of information derived from persons who came to test his powers, and who often in doing so gave him new ideas and encouraged the further development of his peculiar faculty, until he obtained a mastery of figures that appeared almost incredible. "By degrees I got on until the multiple arrived at thousands. Then, ... it was explained to me that 10 hundreds meant 1000. Narration beyond that point is very simple in its features; 1000 rapidly gets up to 10,000 and 20,000, as it is simply 10 or 20 repeated over again, with thousands at the end, instead of nothing. So by degrees I became familiar with the numeration table, up to a million. From two places of figures I got to three places; then to four places of figures, which took me up of course to tens of millions; then I ventured to five and six places of figures, which I could eventually treat with great facility, and as already mentioned, on one occasion I went through the task of multiplying 12 places of figures by 12 figures, but it was a great and distressing effort."

Before long he was taken about the country by his father for the purpose of exhibition. This was so profitable for the father that the boy's education was entirely neglected. Even at the age of ten he was just learning to write; figures he could not make. Some of the questions he had answered were the following: "Suppose a cistern capable of containing 170 gallons, to receive from one cock 54 gallons, and at the same time to lose by leakage 20 gallons in one minute; in what time will the said cistern be full?" "How many drops are there in a pipe of wine, supposing each cubic inch to contain 4888 drops, each gallon 231 inches and 128 gallons in a pipe?" "In the cube of 24, how many times 12228?" Among others the famous Harrold curve is 1817 to see the "Calculating Boy."

Shortly afterward he was sent to school for a while. Later he was privately instructed, and then attended the University of Edinburgh, obtaining the mathematical prize in 1823. Later he entered the Ordnance Survey, and then was employed by the Institution of Civil Engineers. He was engaged in several engineering works of importance; he is also to be regarded as the founder of the London telegraphic system. His greatest work was the construction of the Victoria (London) Dock. Babbage was excited in mood of the great railway contests in Parliament, and was accounted "the best witness that ever entered a committee room." He was a prominent member, Vice President, then President of the Institution of Civil Engineers. In his later years there was no appreciable diminution in Babbage's power of retaining statistics in his memory and of rapidly dealing with figures. Two days before his death the query was suggested that taking the velocity of light at 193,000 miles per second, and the wave length of the red rays at 38,400 to an inch, how many of its waves would strike the eye in one second. His friend, producing a pencil, was about to calculate the result, when Mr. Babbage said, "You need not work it; the number of vibrations will be 444,422,651,286,000."

The fact that Bidder became a highly educated man, and one of the leading engineers of his time; that his powers increased rather than diminished with age; and above all, that he has given a clear and trustworthy account of how he obtained and exercised his talent, renders his testimony of the highest worth, and provides the solution of many of the dark problems met with in the cases of Dase, Colburn, and others. Indeed, he seems to fill out just what is lacking in each case: Dase never gave a good account of the way in which he worked; Colburn could not till later explain his methods, and then only in the clumsy way to be expected from a young man of little education; finally, just the part we cannot understand in Buxton is here explained in full.

In 1816 a witness to his powers states that he displayed great facility in the mental handling of numbers, multiplying readily and correctly two figures by two, but failing in attempting numbers of three figures. This same witness was present at an examination of the boy in 1818 by several Cambridge men. The first question was a sum in simple addition, two rows with twelve figures in each row; the boy gave the correct answer immediately. After more than an hour the question was asked, "Do you remember the sum in addition I gave you?" He repeated the twenty-four figures with only one or two mistakes. At this time he could not explain the processes by which he worked out long and intricate sums. "It is evident that in the course of two years his powers of memory and calculation must have been gradually developed."

This development seems to have been steady. The following series shows the increasing rapidity with which the answers came:

1816 (16 years of age). What is the interest of £4,444 for 4,444 days at  $4\frac{1}{2}\%$  per annum? Ans. in 2 min., £2,434, 988, 5- $\frac{1}{4}$ d.

1817 (17 years of age). How long would a stream 1 mile cube be filling, if receiving from a river 120 gallons per minute without intermission? Ans. in 2 minutes--years 14, 388, days 283, hours 12, minutes 48.

1818 (18 years of age). Divide 485, 892, 432, 863 by 3, 975. Ans. within 1 min., 51, 628, 828.

1818 (18 years of age). If the pendulum of a clock vibrates the distance of  $3\frac{3}{4}$  inches in a second of time, how many inches will it vibrate in 3 years, 18 days, 3 hours, 1 minute, 56 seconds, each year being 365 days, 3 hours, 48 minutes, 53 seconds? Ans. in less than a minute, 2, 565, 628, 784- $\frac{3}{4}$  inches.

1819 (19 years of age). To find a number whose cube less 19 multiplied by its cube shall be equal to the cube of 6. Ans. instantly, 3.

Sir Wm. Herschel put the following question to the boy: Light travels from the sun to the earth in 8 minutes, and the sun being 96, 000, 000 miles off, if light would take 9 years and 4 months travelling at the same rate from the nearest fixed star, how far is that star from the earth, reckoning 365 days and 6 hours to each year, and 28 days to each month? Ans., 49, 655, 748, 000, 000 miles.

Curious enough is the fact that Bidder and Colburn met in Derbyshire, and underwent a comparative examination, the result of which is said to have been to the total defeat of Colburn.

Prof. Elliot, of Liverpool, who knew Bidder from the time they were fellow-students in Edinburgh, says he was a man of first-rate business ability and of rapid and clear insight into what would pay, especially in railway matters. As a proof of this statement we can accept the fact that Bidder became a wealthy man.

The Bidder family seem to have been distinguished for mental traits resembling George Bidder's in some part or another. Bidder was noted for his great mathematical ability and his great memory. One of his brothers was an excellent mathematician and an actuary of the Royal Exchange Life Assurance Office. Mr. Thomas Throld, an elder brother, was a Unitarian minister.

He was not remarkable as an arithmetician, but he possessed the Bidder memory and showed the Bidder inclination for figures, but lacked the power of rapid calculation. He could quote almost any text in the Bible, and give chapter and verse. He had long collected all the dates he could, not only of historical persons, but of everybody; to know when a person was born or married was a source of gratification to him.

One of George Bidder's nephews at an early age possessed remarkable mechanical ingenuity.

Most interesting of all is the partial transmission of his peculiar faculties to his son, George Bidder, Q. C., and through him to two grandchildren. The second son was a first-class man in classics at Oxford, and Fellow of his college. The other Bidder, however, possessed the peculiar faculties of the family in such proportions that he far exceeded the others in calculating powers.

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The duty of a psychological analysis of the powers of arithmetical prodigies would be to determine the processes of which such powers consist and to establish a series of gradations from the normal to the abnormal. It lies, however, outside of our present task to investigate the fundamental arithmetical processes, though just these cases seem to offer a means of clearing up some of the obscurity; we shall not go beyond facts such as, accuracy of memory, arithmetical association, etc., which for our purposes can be regarded as not requiring further analysis.

Speaking of the ability to reckon rapidly, Gauss remarks: "Two things must be distinguished here, a powerful memory for figures and a real ability for calculation. These are really two qualities entirely independent of each other, which can be united but are not always so." Bidder's opinion was "that mental calculation depends on two faculties of the mind in simultaneous operation--computing and registering the result." Nevertheless, there are some other important facts in the psychology of the ready reckoners; we shall accordingly consider them in respect to memory, arithmetical association, inclination to mathematics, precocity and imagination.

**Memory.** Perhaps aside from precocity the most remarkable fact in regard to ready reckoners is their power to do long calculations wholly in the mind without making a mistake; next to this would be placed the wonderful rapidity which some of them have shown.

**Accuracy of Memory.**---The performance of long calculations in the mind depends above all on the accuracy of the memory for a sufficient length of time. For longer periods of time there seems considerable variation among the several calculators, and indeed this power is not an absolute necessity.

Buxton had perhaps the most accurate memory of all. For example, he gave from memory an account of all the gle or strong beer that he had on free coast since he was 12 years of age; this list included 57 different persons and 2199 gallons. "He will leave a long question half wrought and at the end of several months resume it, beginning where he left off, and proceeding regularly till it is completed." Buxton was very slow and clumsy, but extremely accurate in his calculations, a fact which shows that his powers depended on an accurate memory.

Much the same is related of Fuller. "Though interrupted in the progress of his calculation and engaged in discourse upon any other subject, his operations were not thereby in the least deranged so as to make it necessary for him to begin again, but he would go on from where he had left off, and could give any or all of the stages through which the calculation had passed."

Of Dues it is related that, "after spending half an hour on fresh questions, if asked to repeat the figures he began with, and what he had done with them, he

would go over the whole correctly." Half an hour after using the two numbers mentioned on p. 45, it was asked if he remembered them. "He instantly repeated the two numbers together (as a number containing 25 figures) forwards and backwards; 9 quadrillions, 351 thousand, 728 billions, etc."

Dr Colburn has no account that represents him as having a good memory for a long time, yet he, as well as all the others, must have possessed extensive multiplication tables stored up indelibly in their minds. This is not to be confused with what we ordinarily call accuracy of memory, by which we mean that a thing or a number once seen is always retained. We may, however, extend the term and speak of acquired accuracy, where the retention results from a proper impression on the mind by means of association and repetition. Rüdler and probably several of the others, possessed wonderful memories, especially for figures; the acquisition of such a memory was due to their peculiar training, and, we suspect, to a lack of the ordinary mind-killing processes found in our schools. Rüdler says: "As regards memory I had in boyhood, at school and at college many opportunities of comparing my powers of memory with those of others, and I am convinced that I do not possess that faculty in a remarkable degree. It, however, I have not any extraordinary amount of memory I admit that my mind has received a degree of cultivation in dealing with figures in a particular manner which has induced in it a peculiar power; I repeat, however, that this power is, I believe, capable of being attained by any one disposed to devote to it the necessary time and attention."

Although an accurate memory for a long time may not be possessed by every rapid calculator, he must be able to retain before the mind with absolute accuracy the results of the various processes performed till he has finished the problem. This we can pre-suppose in the case of every one of the arithmetical prodigies, and indeed it seems to have been the one thing in which Buxton was superior to ordinary mortals.

One secret of such an accurate memory while performing a calculation, lies in relieving it of unnecessary burdens. It will be noticed that the ready-reckoners often divided a multiplier into two factors and multiplied first by one and then the other, e. g. :  $432 \times 56$  would be  $432 \times 8 = 3456$ ;  $432$  and  $8$  can be now forgotten and  $3456 \times 7 = 24192$ ; whereas in the ordinary way  $432 \times 8 = 3456$ , must be held in memory, while  $432 \times 56 = 24192$  is performed, in order that the partial products may be added together.

There are other means used to lighten the work of the memory. Every one of those about whom we know anything in this respect gave his answers and probably did his work from left to right. Colburn's explanation shows how he began with the highest denominations: "The large numbers found first are easily retained because consisting of so many ciphers."

Rüdler explains why beginning at the left is easier and necessary. "I could neither remember the figures [in the ordinary way of multiplying], nor could I, unless by a great effort, on a particular occasion, recollect a series of lines of figures; but in mental arithmetic you begin at the left hand extremity, and you conclude at the unit, allowing only one fact to be impressed on the mind at a time. You modify that fact every instant as the process goes on; but still the object is to have one fact and one fact only, stored away at one time." In doing the example  $373 \times 378$ , "I multiply  $200$  in  $300 = 60, 000$ ; then multiplying  $200$  into  $70$ , gives  $14, 000$ . I then add them together, and obliterating the previous figures from my mind, carry forward  $74, 000$ ," etc.

"For instance, multiplying  $173 \times 397$ , the following process is performed mentally:

100 x 297	29,700		
70 x 299	21,000	69,700	
70 x 99		6,990	67,000
70 x 7			490
3 x 299			900
3 x 99			297
3 x 7			21
			68,881

The last result in each operation being alone registered by the memory, all the previous results being consecutively obliterated until a total product is obtained."

In trying to follow the method used by these men we are hampered by our inability to keep the hundreds, thousands, etc., in their proper places. When a person asks you suddenly how many figures in a million, can you answer him instantly? In his instruction for a ready computer De Morgan gives the following rule: "The memorizer learns to connect each primary decimal number, 99, 199, 299, etc., not with the place in which the unit falls, but with the number of figures following. Call ten a one-figure number; a hundred a two-figure number; a million a six-figure, and so on."

Various other little helps were used. Bidder reveals some of them: e. g., "in questions involving division of time, distances, weight, money, etc., I is converted to hear its rate the number of seconds in a year, inches or barley-corns in a mile, ounces and pounds in a cwt. and ton, pence and farthings in a pound sterling, etc., etc. These were always ready for use when they could be applied with advantage. . . . Suppose it is required to find the number of barley-corns in 227 miles, the ordinary process, viz.,  $1,760 \times 227 \div 3 \times 12 \times 3 \times 111,878,880$ , when worked out, requires 24 figures; while, mentally, I should multiply 229,000, the number of barley-corns in a mile, by 227." When we consider that certain such questions continually recur among those answered by the prodigies, the assistance of such facts is apparent. Bidder always remembered the divisions of any number he had examined.

Extraordinary as their powers were these men are not the only ones distinguished for remembering numbers. After a whole day's public sale, Hortensius could tell from memory all the things sold and their prices. Probator could dictate a whole column of statistics from memory. It is related that Alex. Gwin at 8 years of age knew the logarithms of all numbers from 1 to 1000. He could repeat them in regular order or otherwise.

Of Distable it is said that he possessed an "extraordinary power of memory, by means of which he had at every moment completely before him what he had previously thought and worked out."

Euler had a prodigious memory for everything; this gave him the power of performing long mathematical operations in his head. While instructing his children, the extraction of roots obliged him to give them numbers which were squares; these he recited out in his head. Troubled by amnesia, Öz might be calculated the first six powers of all the numbers under 20, and recited them several days afterwards.

.....

Imagination. One peculiarity in the imaginative power of the arithmetical prodigies is worthy of remark, namely their visual images. Bidder said, "If I perform a sum mentally it always proceeds in a visible form in my mind; indeed, I can conceive of no other way possible of doing mental arithmetic." This was a special case of his vivid imagination. He had the faculty of carrying about with him a vivid mental picture of the numbers, figures and diagrams with which he was occupied, so that he saw, as it were, on a plate the elements of the problem he was working. He had the capacity for seeing, as if photographed on his retina, the exact figures, whether arithmetical or geometrical, with which

he was occupied at the time. This faculty was also inherited, but with a very remarkable difference. The younger bidder thinks of each number in its own definite place in a number-form, when, however, he is occupied in multiplying together two large numbers, his mind is so engrossed in the operation that the idea of locality in the series for the moment sinks out of prominence. Is a number form injurious to calculating powers? The father seems to have arranged and used his figures as he pleased; the son seems to be hindered by the tendency of the figures to take special places. It would be interesting to know if the grandchild, who possesses such a vivid imagination and in whom the calculating power is still further reduced, also possesses a number-form. The vivid, involuntary visualizing seems to indicate a lack of control over the imagination, which possibly attends to figures, and this perhaps makes the difference.

Colburn said that when making his calculations he saw them clearly before him. It is said of Buxton that he preserved the several processes of multiplying the multiplicand by each figure of the lower line in their relative order, and placed as on paper until the final product was found. From this it is reasonable to suppose that he preserved a mental image of the sum before him.

Of the other calculators we have no reports. Children in general do their mental problems in this way. Talus relates of one, that he saw the numbers he was working with as if they had been written on a slate.

The well-known case of Goethe's phantoms, the case of Petria, who works out sums by aid of an imaginary sliding rule, the chess-players who do not see the board, etc., are instances of the power of producing vivid visual imaginations that can be altered at will.

## PIC-002 INADI, THE CALCULATOR

Anonymous; Scientific American, 44:200, 1882.

A few years ago we spoke in these pages of a twelve-year-old child who had been presented to the Society of Anthropology as a prodigy of a new kind, and who performed the longest and most complicated calculations in his head. The name of this child was Jacques Inadi. After going the rounds of country cafes, where he succeeded in earning his living by amusing the curious with his extraordinary calculations, Inadi, who is now twenty-four years of age, has put himself under the direction of a manager, who gives public exhibitions of him in one of the concert halls of Paris. The faculties of this young man are extraordinary, and it has appeared to us that his history merits a detailed study. We shall have recourse in great part to a very complete work upon the calculator that has just been published by Dr. Marcel Hauckin.

Inadi was born on the 13th of October, 1867, at Ocrato, in Piedmont. In the country of his nativity, he, like Henri Mendham, another celebrated calculator, began by guarding sheep. He soon followed his father, who played the organ in the various cities of the south of France, and it was by instinct, and without any one having taught him anything, that the faculty of making mental calculations came to him.

He began to exhibit himself in a cafe at Marseilles. His reputation soon increased, and in 1880 he came to Paris. He was then twelve and a half years of age. He was submitted to examination by Broca in the session of the Society of Anthropology of the 4th of March. After this epoch he made the tour of the country, as we have said, and it was but a short time since that he returned to



*August Inaudi, the rapid calculator*

Paris. He was presented to the Academy of Sciences at the session of the 5th of February, 1892.

Dr. Marcel Baudela, who has submitted Inaudi to a special examination, describes the latter's astonishing operations in the following words:

We must now make known what extraordinary feats Inaudi is capable of performing. Standing upon the stage near the proempter's box, he turns his back to the blackboards placed in the rear of the stage, and upon which the manager writes the known quantities of the problems given, in order to permit the audience to take account of the calculations effected. With his hands crossed upon his chest, he listens with extreme attention to the question addressed to him, repeats it, and has it repeated, if necessary, until he understands it perfectly. He furnishes a correct solution almost immediately, without ceasing to look straight into the faces of the spectators, without writing anything (he never writes in calculating), and without being disturbed, whatever noise he made. Do you wish an example? He adds in a few seconds seven numbers of from eight to ten figures, and all this mentally, through means peculiar to him. He subtracts two numbers of twenty-one figures in a few minutes, and as quickly finds the square root or the cubic root of a number of from eight to twelve figures, if such number is a perfect square. It takes him a little more time when in this extraction of square or cubic roots there is a remainder. He finds, too, with incredible celerity, the sixth or seventh root of a number of several figures. He performs an example in division or multiplication in less time than it takes to state it. What is still more astonishing, an hour after performing all these mental operations, and after finding a solution of problems that are very difficult to solve by arithmetic, he recalls, with most remarkable precision, all the figures that he has had to operate upon.

Our figure represents Inaudi at the moment of his experiments. While the calculators standing behind him are performing upon the blackboards the examples given by the spectators, Inaudi, without ever looking at the boards, talks

with the spectators and immediately solves other small problems. Some one asks him, for example, "On what day did the 11th of January, 1787, fall?" He answers at once: "On Thursday." And the answer is correct, as is verified by the spectator who asked the question and who has brought an old almanac with him. At moments, Inaudi stops his conversation, and, with his arms folded, he is observed to reckon upon one of his arms with his fingers, as shown in our engraving. He then asks for a few minutes of silence, in order that he may verify the calculation that he made amid the noise and while he was talking. Errors on his part are not frequent, as Dr. Baudouin remarks.

He is rarely deceived, and when he makes a result it has every chance of being accurate. If he is deceived, he quickly recognizes his error, for he says that he always proves the operations that he has had to perform.

Evoca, in 1880, was unable to get an insight into his processes of multiplication, and this he confessed without any circumlocution. Now that Inaudi possesses a well developed intelligence, he explains them without trouble. While we begin to reckon from right to left in multiplication, he proceeds, on the contrary, from left to right.

Sup we have to multiply 345 by 527. The series of operations performed by Inaudi is as follows:

1.	300 x 500	150,000
2.	300 x 27	8,100
3.	527 x 40	21,080
4.	527 x 5	2,635
	Total	181,815

Altogether, four multiplications and one addition. All this is done in a few seconds; much more rapidly than if a skilled mathematician had taken the pen. But Inaudi is not merely a calculating machine, for he is also capable of doing the work of a true mathematician and of finding by arithmetical and tentative methods the solution of problems that are usually solved only by algebra. The manager insists upon this point, and he is right, and he adds that it has been thus only for the last two years. From this point of view Inaudi has solved in our presence quite complete problems, which, worked out in this way, necessitated more than sixty successive operations that seem to pass before his eyes with amazing rapidity, like the figures of a kaleidoscope incessantly in motion. The difficulties that he has recently surmounted in this sort of exercises at the Academy of Sciences before the eyes of Messrs. Darboux, Bertrand, and Poincaré, at the Sorbonne, and at the minister's office in the presence of the minister of public instruction, Mr. Bourgeois, are truly colossal. The strongest mathematicians of our time, even Mr. Poincaré, whose competency in such matters is well known, have been obliged to recognize the fact. Let us add, further, that he is capable of retaining figures for months, provided that it is profitable to do so, or that he wishes to for any reason whatever. Then he classifies them in a special manner. It takes him a minute to commit to memory a number of twenty-four figures. Inaudi has had several predecessors, and it is not the first time that the members of the Academy of Sciences have studied analogous prodigies. As long ago as 1840, Henri Mondoux, a young calculator, was presented to them. Like Inaudi, he was a young shepherd. Born in the neighborhood of Tours, of poor parents, Mondoux from his earliest childhood had amused himself in counting pebbles while guarding sheep. He combined with them the numbers that he represented in this way, but he was unacquainted with figures. After having for a long time practiced alone in the fields, he offered to those whom he met to solve various problems. Mr. Jacoby, a teacher, remarked him and had him instructed, and a short time afterward took him to Paris and presented him to the Academy of Sciences. The mathematician Cauchy made a report upon him,



in which he expressed his admiration to the highest degree. Menoux was exhibited to the public in his shepherd's costume. He wore a blue blouse, a soft hat, and wooden shoes. A little before that the Academy had examined a twelve-year-old child, Vito Mangiameli, who was born in Sicily. Arago proposed some difficult problems to this child, who solved them mentally with the greatest ease.

"Lightning" calculators may claim as their ancestor the Englishman, J. Barton, who toward the middle of the last century enjoyed a great celebrity. He, too, was an illiterate person, who began his reputation in his childhood. He calculated the longest and most complicated interest accounts.

Prof. Charcot, who submitted Inaudi to a close examination, was struck with the almost absolute identity of the conditions of birth and precocious development exhibited by "lightning" calculators. Almost all of them have drawn their extraordinary aptitudes from themselves, and have been illiterate. There is here a natural gift, as is, in a way, that wonderful gift that we call genius, and which inspires great artists or great mathematicians.

#### PIC-002 A QUICK CALCULATOR

Anonymous; *Knowledge*, 11:70, 1888.

Reuben Fields, a most extraordinary individual, has returned to his home in Kentucky, after an absence of some years in the West. Fields is known far and wide as the "Mathematical Prodigy," and, indeed, he is a wonderful creature. Perfectly illiterate, not being able to tell one letter or figure from another, he bears the same relation to the science of mathematics that Blind Tom does to music. Fields is now about twenty-eight years of age, and his ability to quickly and correctly solve the most difficult problems was discovered when he was eight years old. That faculty continued to develop until he is able to solve, with amazing rapidity, any problem in simple or compound fractions, or anything in the higher branches of mathematics. For instance, the moon is a certain number of miles from the earth; a grain of corn is so long; how many grains will it take to connect the points? The answer to this or any other problem comes like a flash. He can also tell to a second the time of day or night! This marvellous man has been tested by the most expert mathematicians, and his answers to problems have been found to be invariably correct. He claims that his power is a direct gift from the Creator, and liable to be taken away from him if not properly used. The possessor of this gift never went to school a day in his life, and never did a day's work, except to occasionally aid merchants in inventorying their goods, and in this business he has been known to keep a score or more of clerks busy looking up columns of figures. He is a very large man, and has a look the reverse of intelligent. Having no occupation, he lives among his acquaintances, putting up wherever night overtakes him. He is very proud of his gift, and frequently compares himself to Samson. Fields gave an exhibition of his powers before Governor Crittenden and other distinguished men of Missouri on a late visit West, and they consider him one of the greatest wonders of the century.

## PIC-004 ANOTHER MATHEMATICAL PRODIGY

Allicon, F. T. : Scientific American, 84-276, 1892.

Having read in your last issue an account of what may properly be called a mathematical prodigy, I think it may not be uninteresting to your readers to hear of another, which, in some respects, surpasses anything of the kind ever related.

Samuel Field is a native of La Fayette County, Missouri, a very strong, heavy set man, about forty-five years old. He never went to school, even a day, for the sole reason that he was always regarded as idiot. He can neither read nor write, and his reasoning powers have never developed beyond those of a child of the most ordinary intellect. In the face of these facts, however, he has the keenest perception of the relation of numbers and quantities, and is able, as if by instinct, to solve the most intricate mathematical problems. He does not know figures on a blackboard, but he understands them perfectly in his mind. No one has ever been able to "catch him" in multiplication or in division. He has been given problems as "The circumference of the earth is, in round numbers, 25,000 miles. How many days need, allowing twelve to the inch, will it require to reach around it?" Within a minute he returns the answer: 18,898,000,000. If the distance to the sun or to any of the planets is taken, he answers with as great ease. If given the day of the month and the year on which an event occurred, he instantly gives the day of the week. But what is yet more remarkable is that he can tell the time at any hour, day or night, without ever missing it even a minute. If awakened out of a deep sleep in the darkness of night, and asked the time, he gives it at once. Once in my office I asked him the time. He replied at once: "Sixteen minutes after three." In order to test him, I drew him off upon some other question, not letting him know my object, and when seventeen minutes had passed, I looked at my watch, and asked him the time. He said: "Twenty-seven minutes to four."

## PIC-005 [13-MONTH-OLD CALCULATING PRODIGY]

Anonymous: Science, 17:333, 1891.

Dr. R. V. Cleveland, in the Allynet and Neurologist for July 1890, describes an infant prodigy, Oscar Moore. Two little colored children were reciting the multiplication table at their home, in a little cabin in Texas, as they had repeatedly done before, and one of them asserted that four times twelve was fifty eight, whereupon a thirteen months old baby, Oscar Moore, who had never spoken before, corrected the error by exclaiming, "Four times twelve are forty-eight!" There was consternation in that humble home until the family became reconciled to the freak. Oscar was born in Waco, Texas, in 1889; his father is an emancipated slave, his mother is a relative. He was born blind, the other senses are unusually acute; his memory is the most remarkable peculiarity. He is intelligent and manifests great repetitiveness; his memory is not parrot-like. When less than two years of age he would recite all he heard his sister read while passing her lessons. He sings and counts in different languages, has mastered an appalling array of statistics, and is greatly attracted by music. The writer concludes that Oscar is not mentally defective, but may possess extraordinary mental powers.

## PIG-001 HIGHER REACHES OF PERSONALITY: INSPIRATION AND GENIUS

Tyrrell, G. S. M.: *The Personality of Man*, London, 1946, pp. 30-34.

It is a highly significant, though generally neglected, fact that those creations of the human mind, which have borne pre-eminently the stamp of originality and greatness, have not come from within the region of consciousness. They have come from beyond consciousness, knocking at its door for admission: they have flowed into it, sometimes slowly as if by seepage, but often with a burst of overwhelming power. This fact did not escape the keen observation of Socrates: "I soon found," he said, "that it is not by wisdom that the poets create their works, but by a certain natural power and by inspiration, like soothsayers and prophets, who say many fine things, but who understand nothing of what they say."

How comes it that the finest products of the mind are, in this sense, extraneous? What is there outside consciousness which can produce them? They come, not only with power, but often with something exotic and other-worldly about them. Sometimes they bring with them a sense of exquisite joy. In his *Throm in Intellectual Beauty*, Shelley says:

Sudden thy shadow fell on me;  
I shrieked and clapped my hands in ecstasy.

And there is also a sense of revelation. In *Mont Blanc* he exclaims:

Has some unknown omnipotence unbar'd  
The vale of life and death?

The task of consciousness is not to create but to seize this influx and express it. The difficulty is immense. What comes with baffling "altogetherness" has to be spread out in sequence and put into words. Trelawny records how Shelley had wandered off into the pine forests near Pisa, where he found him, propped against a tree with several sheets of manuscript beside him. "It was a frightful scream," he says; "words came out with the finger and one upon the other, over and over in tiers and all run together. . . . It might have been taken for a sketch of a marsh overgrown with bull-rushes, and the hints for wild ducks; such a dash-off dash as self-conceited artists mistake for a manifestation of genius. On my observing this to him he answered: 'When my brain gets heated with thought it spouts bolts and throws off images and words faster than I can skin them off.'"

"Poetry," declared Shelley, "is not like reasoning, a power to be asserted according to the determination of the will. A man cannot say: 'I will write poetry. The greatest poet even cannot say it.'" One after another the great writers, poets and artists confirm the fact that their work comes to them from beyond the threshold of consciousness. It is not as though this material came passively floating towards them. It is impetuous, dynamic and wild. Blake said of his poem, *Hilton*: "I have written this poem from immediate dictation, twelve or sometimes twenty or thirty lines at a time, without premeditation, and even against my will."

Keats said that the description of Apollo in the third book of *Hyperion* came to him "by chance or magic—to be, as it were, something given to him." He said also that he had "not been aware of the beauty of some thought or expression until after he had composed and written it down. It had then struck him with astonishment and seemed rather the production of another person than his own.

George Eliot told J. W. Cross that in all that she considered her best writing, there was a "not herself" which took possession of her, and that she felt her own personality to be merely the instrument through which this spirit, as it were, was acting.

George Sand, in a letter to Flaubert, says: "The wind plays my old harp as it lists. . . . It is the other who sings as he thins, well or ill, and when I try to think about it, I am afraid and tell myself that I am nothing, nothing at all."

Madame Guyon confesses that "before writing I did not know what I was going to write; while writing I saw that I was writing things I had never known."

Goethe said of his poems: "The songs made me; not I there. . . ."

Wordsworth told Dorothy Price that the line in his ode beginning: "Fallings from us, vanishing," which has since puzzled so many readers, refers to those trance-like states to which he was at one time subject. During these moments the world around him assumed unreal and the poet had occasionally to use his strength against an object, such as a gatepost, to reassure himself. "And when the power would not come, the conscious mind was helpless. "William tired himself with hammering at a passage," wrote Dorothy Wordsworth. It was useless if the power was denied.

Dickens declared that when he sat down to his book, "Some beneficent power showed it all to him." And Thackeray says in the Roundabout Papers: "I have been surprised at the observations made by some of my characters. It seems as if an occult Power was moving the pen."

"Nothing, in his autobiography, relates how in a difficulty he learned to treat his personal 'Gerson.' When his story, The King of Alib, again and again went dead under his hand and he could not tell why, he put it away and waited. Then, when he was meditating upon something else, his Gerson said: "Treat it as an illustrated manuscript," and his problem was solved." The "Gerson" behaves more like a somebody than a something, indicating that there is an extension of our personality which normally we do not know. And what a humor it is when the conscious mind has to take over the work of the subconscious flood!

"Dostoevsky said: "I. . . . write every scene down at once just as it first comes to me and rejoice in it; then I work at it for months and years." Again the separation between the conscious mind and the source of inspiration is brought out in the case of H. L. Stevenson, who owed so much to his "Brownies." "How often have these sleepless Brownies done him honest service and given him, as he sat idly taking his pleasure in the bonnie, better tales than he could fashion for himself." "And for the Little People, what shall I say they are but just my Brownies, God bless them! who do me half of my work for me while I am fast asleep, and in all human likelihood, do the rest for me as well when I am wide awake and heedily suppose I do it for myself." As for his conscious self, "The man with the conscious and the variable banking account," he says: "I am sometimes tempted to suppose he is no story-teller at all but a creature as matter of fact as any cheese-monger or any cheese, and a realist headed up to the ears in actuality; so that, by that account, the whole of my published fictions should be the single-handed product of some Brownie, some Familiar, some unseen collaborator whom I keep locked in a back garret, while I get off the prints and he let a share (which I cannot prevent him from getting) of the printing."

De Musset echoes this thought when he says: "On ne travaille pas, on écrit, c'est comme un inconscient qui parle à l'éveillé." And Lamartine, when he says "Ce n'est pas moi qui écris; ce sont mes idées qui posent leur mot."

Nor is it necessarily matter of high or spiritual quality which comes from beyond the threshold of consciousness. Lewis Carroll writes: "I was walking on the hillside alone one bright summer day when suddenly there came into my head one line of verse—one solitary line—"For the Shark was a Boojum, you see." I know not what it meant then; I know not what it means now; but I wrote it down and some time afterwards the rest of the stanza occurred to me, that being its last line—and so by degrees, at odd moments, during the next year or two, the rest of the poem pieced itself together, that being the last stanza."

Out of this treasure-house much else may come besides the gems of literature and music. Lord Kelvin had a power of distinction. He had "at times to devise explanations of that which had come to him in a flash of intuition." "Edison had 'a weird ability to guess correctly.'" "Poincaré states that Klinefelter, when faced with a problem, has 'a definite vision of its possible solution.'" "Sir Francis Galton thought without the use of words: 'It is a serious drawback to me in writing,' he says, 'and still more in explaining myself, that I do not so easily think in words as otherwise. It often happens that after being hard at work and having arrived at results that are perfectly clear and satisfactory to myself, when I try to express them in language I feel that I must begin by putting myself upon quite another intellectual plane. I have to translate my thoughts into a language that does not run very evenly with them.'" Here again consciousness figures, not as the originator of thought, but as its struggling expositor.

There have been men possessing extraordinary powers of grasping intuitively the result of a calculation. Birkler could determine mentally the logarithm of any number to seven or eight places, and could instantly give the factors of any large number. "He could not," he said, "explain how he did this; it seemed a natural instinct with him." Myers gives a list of thirteen such persons, two of whom were men of outstanding ability (Gauss and Asperger), three of high ability (including Birkler) and one, Dase, little better than an idiot. "The Dase could not be made to have the most basic idea of a proposition in Euclid"; yet he received a grant from the Academy of Sciences at Hamburg on the recommendation of Gauss, for mathematical work. In twelve years he compiled tables which would have occupied most men for a lifetime. It is interesting to observe that the powers of seven out of this list persisted only for a few years.

If we turn to music, we find the same thing. Tchaikovsky writes: "Generally speaking, the germ of a composition comes suddenly and unexpectedly." "It would be vain to try to put into words that innumerable series of ideas which comes over me directly a new idea awakens in me and begins to assume a definite form. I forget everything and behave like a madman. Everything within me starts pulsing and quivering; hardly have I begun the sketch ere one thought follows another." "In the midst of this magic process, Tchaikovsky continues, "is frequently happens that some external interruption wakes me from my semi-somnambulistic state;... dreadful indeed are such interruptions. Sometimes they break the thread of inspiration for a considerable time so that I have to seek it again-- often in vain." "If that condition of mind and soul, which we call *inspiration*, lasted long without intermission, no artist could survive it."

Mozart says of his inspiration: "Nor do I hear in my imagination the parts successively, but I hear them, as it were, all at once.... What a delight this is I cannot tell!"

"Wagner discovered the opening of the *Ring* during half-sleep on a couch in a hotel in Spiez; and in a letter to Frau Wesendonck he refers to the blissful dream-state into which he falls when composing."

"George Sand, after describing Chopin's creation as miraculous and coming on his piano suddenly complete or singing in his head during a walk, says that afterwards 'began the most heart-rending labour I ever saw. It was a series of efforts, of interruptions, and of breathings to seize again certain details of the theme he had heard, he would 'shut himself up in his room for whole days, weeping, walking, breaking his pens, repeating and altering a bar a hundred times' and spending six weeks over a single page to write it at last as he had noted it down at the very first."

"Saint-Saëns had only to listen as Socrates to his Diogenes."

F. W. H. Myers, in his excellent chapter on *Genius in Human Personality*, says that, to be genius, a work must satisfy two requirements. "It must involve something original, spontaneous, unobtainable, unexpected; and it must also in

some way win for itself the admiration of mankind."<sup>11</sup>

Does genius, then, consist of the entry of something into consciousness from beyond the conscious threshold? That in part may be; but it is surely not in itself sufficient to constitute genius. Things may enter into consciousness from without which are not of a particularly admirable kind. Genius, on the other hand, has been defined by Carlyle as "an infinite capacity for taking pains."<sup>12</sup> But taking pains will not by itself induce inspiration; it is more likely to kill it. What, then, constitutes genius? I suggest that it is the combination of the two at their best. First the idea must well into consciousness from without; then consciousness must labour to express it. This needs an "infinite capacity for taking pains."<sup>13</sup> The technical ability must work on the inspiration. Technical skill alone can produce a flawless piece of work, but not true greatness. That comes from beyond. Yet that which comes from beyond, if bereft of worthy expression, is not great, though it may be suggestive of greatness. Perhaps Coleridge's *Rhyme King* was an example of this latter. In genius, inspiration and intelligence are united.

Where does the material which forms the content of an inspiration come from? Has it entered the mind at some time through the bodily senses? Or does it come from sources unknown to us? Let us consider next some examples of what occurs in states of religious raptures. (pp. 36-38)

#### FIG 002 SUPERIOR INTELLIGENCE IN PATIENTS WITH NERVOUS AND MENTAL ILLNESSES

Schott, Emmett L. : *Journal of Abnormal and Social Psychology*, 26:94-104, 1931.

A careful review of the psychological and psychiatric literature reveals that very little has been written on the subject of superior intelligence and instability from the living case study approach which we give to it in this paper. In fact, to our knowledge, there are no published reports of psychological observations including formal psychometric evaluations on a group of individuals of superior intelligence who, during the period of observations, have suffered from some nervous or mental disorder of more or less marked degree. However, a wealth of interesting articles and books are available on various phases of the closely related subject of the alleged relation between genius and insanity. A consideration of these works makes us realize more and more the scientific advantages of attacking the problem with living subjects for observation instead of depending upon biographical material that may have been written by personal friends, or even enemies who were perhaps less personally acquainted with the individual in question. Sometimes reliable information regarding the mental condition of men and women of eminence has been found in their diaries, letters, and other writings, but too often these materials are limited and colored by innumerable factors. Hence, we have undertaken this study with the hope of gaining some first-hand information on certain phases of a problem concerning which there has been considerable controversy because data are lacking.

The problem to which we refer can be pointed out more clearly by mentioning the studies which have been made in related fields and by giving a summary of the various points of view. We have noted in a previous report that Terman divided the earlier studies of genius into three stages--the method of the first

stage being primarily impressionistic and anecdotal; of the second, inductive; and of the third, direct, as in Cattell's "American Men of Science", the first edition of which appeared in 1899. All of these studies were lacking in material with regard to juvenile traits. After these three stages, as Terman stated, the next step forward was the thorough investigation of gifted children. Several of the studies made in the last fifteen years have been of this type. A noteworthy feature is that some of the relatively new systems of psychometric evaluations have been employed extensively in a number of these recent investigations.

Dr. Eva C. Reid has provided one of the most complete summaries of the points of view which were upheld prior to 1912 in the different writings on genius and insanity. In her paper entitled "Manifestations of Manic Depressive Insanity in Literary Geniuses" we find references and statements quoted from numerous writers who held that genius is directly allied to insanity. Many of them concluded that there was a very close relation between a high type of intellectual ability and mental derangement. A splendid phrasing of this view which is quoted from Dryden by Reid and others is as follows:

"Great wits to madness sure are near allied,  
And this partitions do their boards divide."

A second point of view with a number of adherents is that genius is a neurosis. These writers reasoned that "genius is the highest expression of intellectual activity, which is due to the overstimulation of the nervous system and, in that sense, is neurotic". Still another group of individuals advanced the opinion that persons of the genius type are moral- insane. In her article Dr. Reid gives names of many distinguished persons together with statements from various sources showing that at some time each had suffered, according to one or more investigators, from a form of nervous or mental disease. It is interesting to note that among these names are Socrates, Christ, Seneca, Luther, Rousseau, Byron, Heine, Crosswell, Charles and Mary Lamb, Byron, Shelley, Dickens, Darwin, and many others equally familiar to most of us. This article is concluded by intensive studies of ten recognized literary geniuses among whom are Keats, Coleridge, Ruskin, Burns and Poe. All of these men, according to Dr. Reid's data, suffered mainly from manic depressive insanity and many of them certain inscriptions in addition. As a psychiatrist, she interprets moral weakness, lack of will power, and other tendencies toward instability as symptoms of the psychosis from which these men suffered. She concluded that among literary men manic depressive psychosis was the most frequent type of mental disease.

A second study from the psychiatric point of view is that of Dr. Rossow in "Intellectual Efficiency in Relation to Insanity". In his summary he states that "grave neuropathic conditions, . . . are not incompatible with the highest degree of intellectual efficiency. . . ." In the cases reported by him "it seems that the morbid elements of personality have been among the factors of high quality of the intellectual products". To quote further, "In milder psychoses and neuroses should be included then the percentage of neuropathic persons among them would undoubtedly be relatively high though still by no means high enough to render the neuropathic genius anything but an exception to the general rule. There are too many who must be counted as normal by the strictest standards to permit the conclusion which some have drawn that a deep and essential relationship exists between general genius and insanity."

Another outstanding article that gives a summary of the literature on the subject of genius which appeared between 1914 and 1920 is the one by Terman and Chase entitled "The Psychology, Biology and Pedagogy of Genius". Again, in 1924 we have a complete annotated bibliography on all related phases of this subject appearing in the Twenty-third Yearbook of the National Society for the Study of Education. This rather intensive interest on the part of educators has been accompanied by much experimental school work with gifted children. The

crowning educational and psychological works of recent years are those of Hoffingworth, Cox and Terman and his associates. These have rapidly become rather widely read. The view put forth, particularly by Terman and Cox, that "genius is exceptionally stable and well balanced" or that "the instability of genius is a myth" has been gaining acceptance.

In a series of three articles appearing in 1928 and 1929, Witry and Lehman question the extreme points of view--namely that "genius is directly related to insanity" and that "the instability of genius is a myth", stating that both may be based on hasty generalizations. They make a direct attack on the statement of Terman and his associates that "From the gifted children, I. Q. of 140 and above, are to come our future men and women of genius in all lines". They point out that "it has not been proven that every gifted child is necessarily a genius" and also that "it has not been proven that every recognized genius was a gifted child". They are likewise as strong in giving criticisms of the opposite point of view, and their criticisms are backed up by specific cases, none of which however, are subjects which they have studied personally. It is relative to this controversy that we hope our study contributes data of some significance.

Throughout the past four years we have personally made psychological observations on approximately 2,000 adults. All of these individuals were at one time patients under observation and treatment in the Division of Neuropsychiatry of the Henry Ford Hospital in Detroit. Some of them have been in the hospital on several different occasions. All of them have suffered from some nervous or mental disorder ranging in severity from the very mild forms to the most serious psychoses. In addition to having rather detailed notes and abbreviated formal psychometric examinations on many of them, 450 of this number have been given complete examinations with the Stanford Revision and Extension of the Binet-Simon Test. A frequency chart of the I. Q.'s of these 450 adults shows a moderately normal type of distribution skewed slightly toward the lower end of the scale. The median I. Q. was 92.4;  $Q_1$  was 78.87; and  $Q_3$  was 78.1. At the upper end of the I. Q. distribution for these adults we have sixteen cases with I. Q.'s of 120 and over. It is with these sixteen subjects that we have concerned ourselves primarily in this study.

If an adult gains an I. Q. of more than 120 on the Stanford Binet scale he must pass every test on the examination. The arrangement is such that this gives him a mental age of nineteen years and six months and an I. Q. of 120. All of the sixteen patients under consideration not only passed all of these tests but showed that they could meet far more difficult standards. For example they scored from 85 to 92 words on the vocabulary test where only 75 are required to pass at the superior adult level. They also repeated nine and ten digits forward and eight backward where only eight and seven respectively are required in the highest tests on the scale. They did these things with such ease in most cases that we felt justified in weighting the I. Q.'s in accordance with the method given by Terman. This gives each an I. Q. of at least 130. We were able to secure reliable I. Q. ratings on several of these cases from schools where tests had been given to them during their childhood or adolescent years. The I. Q.'s thus obtained were all above 100. Comparing the results of our own Stanford-Binet examinations of the other patients of this group with those known to have had I. Q.'s above 140 at an earlier time, we found such marked similarity in performance that we felt certain that all sixteen of them would without question deserve I. Q. ratings of 140 or over. If we had had adequately standardized tests for very superior adults this would quite probably have been true.

Assuming then that we have a group of individuals comparable in I. Q. to the groups studied by Terman and others--I. Q. 100 and above, and bearing in mind what has been said about men and women of genius coming from such groups, let us see what we have at close range. It so happens that nine of our subjects are



women and nine of them are men. The age range for the women is from eighteen to twenty-five years and for the men from nineteen to fifty-four with a median of twenty-two for the women and twenty-nine for the men.

The occupations of these individuals prior to hospitalization were as follows: student, ---3; small business for self, ---2; stenographer, ---2; factory foreman, ---2, and one each for railway mail clerk, school teacher, stage dancer and radio singer, librarian, automobile inspector, and florist's assistant.

Educationally, two of these patients were University graduates; one had left school in the fourth year of college; one in the third year; four in the second and one in the first year of college; seven did not attend after finishing high school; one had left in the eleventh grade and one had finished only the grade school. The median would thus be ready for college entrance. In general, the educational achievement records of these patients, in so far as we were able to get them, had been of superior type. Some exceptions, however, were obviously misfits, misunderstood and maladjusted people.

The primary psychiatric diagnoses of these cases is that approved by Dr. Theo. J. Fieldt, Chief of the Division of Neuropsychiatry of the Henry Ford Hospital. The following distribution of diagnoses was found:

Psychoneurosis	5
(Anxiety type, ---2; Hysterical type, ---1; Hypochondriacal type, ---1; and Anxiety-Hysteria, ---1)	
Psychopathic Personality, Acquired	3
Constitutional Psychopathic Personality	3
(Inadequate type with schizoid trends, ---2; with Homosexual tendency, ---1)	
Manic Depressive Psychosis	2
(Tested in hypomanic phase)	
Anxiety State, Mild	1
Symptomatic Mental Depression	1
Epilepsy, Idiopathic, Grand Mal	1
Encephalitis, Chronic Epidemic	1
Central Nervous System Syphilis	1
(Tabetic type)	
Total	18

The nervous and mental symptoms in the last three of these are definitely associated with recognized organic disease, while the others are more strictly psychiatric disorders.

When we think of the diagnoses in light of the occupations we are struck first by the fact that three of the patients were in business for themselves. This may be significant in suggesting personality types. In turn the question is raised as to how much the pressure of responsibility and the competitive struggle for existence had to do with nervous and mental illnesses. The fact that five of these patients were students gives some idea of how important the need may be for psychiatric and psychological guidance in schools. We also see a challenge in the fact that three of these patients have what is termed acquired psychopathies. They are persons of high intellect, perhaps unrecognized, misunderstood, treated indifferently or even ridiculed by their associates in certain environments to such an extent that they drift into morbid pathological states of mind.

In passing it is interesting to note that Witty and Lebranz state that the genius "has a higher metabolic rate than the normal person". If they would permit us to offer our eighteen patients as candidates for the genius group, we have some facts contrary to their statement. Ten individuals of the group had metabolic ratings included in their hospital studies. These ranged from minus 14 to plus 20 per cent. Only three of them were above zero. The average, taken according

to sign was minus 2.5. This is within the accepted average range of minus 10 to plus 10 per cent, but is in the opposite direction from the implication in the statement by the authors mentioned above. However, Dr. Henry gives laboratory evidence to show that metabolic processes vary with different emotional states "regardless of the personality disorder". Hence, there is obviously need for further investigation on this point.

Without going into the detailed case records of these patients in this paper, let us consider the outstanding facts to see to what conclusions they lead. We have gifted individuals of exceptionally superior intelligence as measured by a widely accepted scale. Seven of them were known to have mild but definite reproductive family background. All of them had suffered or were suffering from a recognized nervous or mental disorder of more or less marked degree during the time of their observation. Since nearly every type and degree of nervous and mental disorder was represented in the group of 456 patients from which the gifted cases were selected, it would appear that we have a fairly reliable sampling of subjects. Eighteen is 4 per cent of the total number of cases. Terman states that in unselected groups of the population 1 per cent reach 130 I. Q. or above; 2 per cent reach 125 or above; 3 per cent reach 120 or above; and 5 per cent reach 115 or above. Are we then justified in concluding that superior intelligence is neither more nor less prevalent among nervous and mentally ill persons than it is among the population at large?

In our own study of gifted high school seniors made in the state of Missouri under the direction of Dr. W. H. Pyle our findings were in accord with those of Terman and his associates. That is, we found that in those youths with very high I. Q.'s instability was not present. Hence, we have become more critical in accepting the opposite opinion and have observed with increased interest that there are apparently as many people of very high I. Q. among the nervous and the mentally ill as there are among a similar number of unselected individuals of average health. Yet this conclusion stands out more convincingly when we consider how various factors of selection, particularly teachers' estimates, might exclude available individuals from studies of gifted children in the school population.

To summarize---the study of these 150 adult neuropsychiatric cases shows a moderately normal distribution of intelligence quotients in persons with nervous and mental illnesses. In this group the percentage of individuals with very superior intelligence is found to be equal to that in the general population---that is about 4 per cent. Such data indicate no causal relationship between intelligence and instability, but rather an independent variability.

#### FIG-003 PSYCHOTIC ILLNESS AND ARTISTIC PRODUCTION

Carstairs, G. M.; Nature, 124:1912-1914, June 16, 1932.

Mental illness is no respecter of persons. It afflicts rich and poor, intelligent and stupid, the gifted and the untalented alike. From the patient's point of view, its visitation is usually unobtrusive, bringing suffering and handicap; in this it has some resemblance to the mixed blessing of unusual artistic sensibility. Like the artist, the psychotic sees the world differently from ordinary man; for him it often assumes a personal, or a threatening, implication---but above all it is full of the unexpected.

In our everyday life we tend to surround ourselves with familiar things, familiar sights, sounds, routines, gestures; and familiarity dulls perception.

We notice this when we first arrive in a strange country--the sights and sounds of that first day are more vividly registered than they will be in a few days' time. The artist and the schizophrenic in their different ways seem to preserve that acuteness of perception which Sir Herbert Read has described as "the innocent eye"; but the schizophrenic's awareness is not just the freshness of a child's outlook on the world. It is a heightened awareness indeed, but one heightened by dread. He is aware of an element of threat in his surroundings. This is especially true during the active stage of the illness, which will sometimes recur with renewed intensity after a period of relative calm.

The depressed patient lives in a world drained of life, colour and hope. He is painfully aware that he himself has changed, and he is filled not with self-pity (although his state arouses compassion in others), but with self-loathing which may lead to self-destruction. Fortunately, severe depression is a disorder of limited duration; the sufferer can emerge from the depths and return to active life again. This was the experience of one of the earliest painters whose mental illness has been fully documented.

Hugo van der Goes (1440-82), an early Flemish master, twice experienced depressive illnesses of psychotic intensity. He achieved celebrity while still a young man and his work was in demand in places as far apart as Vienna and Edinburgh. His Trinity Altar from Holywoodhouse includes portraits of James III of Scotland and of Queen Margaret of Denmark among the attendant figures. Van der Goes was a man of restless energy, but he was not a happy man. He was subject to bouts of depression and, like many depressives, he began to drink to excess in an attempt to relieve his feelings. At the age of thirty-five he temporarily renounced his vocation and retired to a monastery. It was not until five years later, however, that he became frankly deranged, crying out in despair that he was doomed. The monks, mindful no doubt of David's playing to Saul in similar circumstances, tried to cure him by playing music before him; but it was only gradually that he returned to something like his former state. In 1481 he was able to paint again; his Death of the Virgin (Bruges) was completed in that year but it was probably his last work; in the following year his madness returned and he died soon afterwards. He himself protested that it was his fame and success which caused his mind to become unbridled; but this sounds like the typical self-depreciation of the melancholic. Critics, wise after the event, have discerned qualities of tension and seriousness in his work; but it is surely remarkable for the technical mastery which survived rather than for any revelation of his serious illness.

It was a different matter in the case of Piranesi(1720-78). He too was a man noted for precocious gifts and exceptional energy. Born in Venice, a son of a stone-mason, he was already drawing the buildings around where he lived at the age of eight and his work was the talk of the town by the time he was fifteen. He was apprenticed to an uncle who was an architect, but his early years were punctuated by violent disputes both in Venice and in Rome, where he studied for a time under Tiepolo. He quarrelled with his uncle, with his father and with Vasari, who taught him engraving.

At the age of twenty-one he made a characteristically impetuous marriage, after a courtship lasting five days, and set up the engraver's workshop which was to establish his lasting fame. From this date until his death at the age of fifty-eight he produced nearly 1,200 etchings, many of great complexity. For several generations his visions of the antiquities of Rome were the models for teaching in every European school of architecture. In 1745, however, appeared an extraordinary series of etchings--the Concert d'Invention, or Imaginary Piranesi. Tradition has it that they were the product of visions seen in the delirium of a fever.

His years later, when at the height of his career, Piranesi returned once again to the Carnery and brought out a second edition in which the fantastic prisons are even more eloquently inhuman, vast and sinister than before. This juxtaposition of belligerent impetuosity, violent energy and preoccupation with human despair and hopelessness suggests very strongly that Piranesi was a manic-depressive who experienced episodes of melancholia.

The great Spanish painter Francisco Goya (1746-1828) was another man in whom spells of furious energy alternated with fits of black despair. Like Piranesi, he was an impetuous quarrelsome man, involved in duels and pursued by Irish hussars. He is remembered for his ruthlessly candid appraisal of the pride and jolly of the very society of which he was an idol. At times he was seemingly almost overwhelmed by the malignant folly of mankind, as when he created his series of etchings The Disasters of War, a satirical commentary on the Napoleonic invasion of Spain; at times too in his Capriccios he hinted at disturbing personal visions, as in the title page "The Sleep of Reason begets Monsters". Goya lived to be over eighty, and even in his old age he was haunted by fits of melancholy, during one of which he painted the series of Pinturas Negras, of which one of the most terrible is Charges Desecrating His Children with macabre humour. Goya chose to hang this picture in his dining-room.

Melancholia is a condition which we can readily understand: we have all sometimes felt depressed. But schizophrenia brings about bizarre and quite unfamiliar distortions of reality. In its early stages it can sometimes stimulate a more intense though usually rather sinister awareness of the mystery behind normal phenomena. One is compelled to wonder in what does this 'mystery' lie: perhaps it is an attribute of the beholder. Earlier in the present century painters of the surrealist school—men like Dalí, Magritte and Yves Tanguy—were quite frankly avowed of the schizophrenic's faculty of living in a dream-like state, even though the dream should often prove a nightmare. In the early 1920's the term 'paranoid' had a positive value in aesthetic parlance, and surrealists made it their aim to paint frankly psychotic imagery. This was their tribute to the 'magical' quality of schizophrenic phantasy, a quality which was attributed to its origin in the unconscious mind.

The onset of an acute schizophrenic reaction can be accompanied by distortions of perception. Patients will describe strange lights in the sky, a changed appearance of familiar objects. Volunteer subjects who have taken hallucinogenic drugs such as mescaline or lysergic acid diethylamide have described a rainbow-like appearance around the edge of things. Perhaps this is what Edward Munch saw when he painted his Shaking and The Shriek. A similar vision is apparent in the early stages of the remarkable series of paintings of cats executed by Louis Wain in the course of his schizophrenic illness. Wain's cats undergo remarkable transformations under the influence of his mental disorder; at first realistic, charming and full of life, they become stylized, fragmented into angular symmetrical patterns, horrible and bizarre, and finally disintegrate into a shapeless kaleidoscopic mass.

Another item in the Guttmann-Blaug collection provides an involuntary record of a violent schizo-affective episode in the life of an anonymous Victorian flower-painter, between the years 1863 and 1865. His paintings are at first rationally drawn, staid and cold. Then, in May 1864 they change; warm colours and ripe sensuous forms appear, while on the facing page of his book he apostrophizes the woman he loves. The succeeding paintings become more and more ecstatic and confused: a woman's form appears among the foliage, a snake and a solitary eye. The confusion reaches a climax—and then quite suddenly it is over: a new series of neat, dispassionate flower-paintings (dated 1865) supersedes.

Another patient from Maudsley Hospital was an art student who already showed considerable technical skill; but during her schizophrenic illness her paintings became slipshod, hasty, almost incoherent; she began to write in phrases and words to emphasize her fear of overwhelming disintegration. Later, as her personality rallied again, she expressed herself much more coherently in a finger-painting of two nightmare faces.

These series of paintings have shown the artists' struggle with the illness which threatened to overwhelm them. In a lesser degree, perhaps, all art is an attempt to exorcise an inner disease; certainly Freud was not alone in his experience that a period of restlessness and inner ill-health seemed to be the prelude to all his bursts of creative work.

Some of the greatest art has been the fruit of suffering; never more so perhaps than in the tortured magnificence of the works of Van Gogh's last four years.

There are a number of defenses against the schizophrenic nightmare. One of these is to rally one's intellectual resources in an attempt to define and contain the threats which arise in phantasy; this is the obsessional defense. Few painters have been so constantly assailed by those monsters begotten in the sleep of reason as Hieronymus Bosch. In painting after painting executed with astonishing precision of detail he has conjured up a whole universe of demons. His bestiary, of course, is drawn largely from the traditions of the Middle Ages; but he depicted them with a new sense of urgency because he was persuaded that the fate of the world and the destiny of mankind hung in the balance. It has long been known that he believed the alchemists to be in league with the devil to overthrow the world, hence the profusion of alchemical symbolisms in his works; but recent research has revealed that he was a member of a secret millennial cult, the Brethren of the Free Spirit, and their counter-symbols can also be found in his paintings.

A few years ago I had occasion to treat a young, self-taught Canadian painter, whose pictures showed certain affinities with those of Bosch, except that where Bosch was obsessed with the transient destruction of humanity, this patient was for a time pre-occupied exclusively with his own tortured ruminations, his own phantasies and his sense of being trapped and helpless. He depicted these feelings elegantly in a series of paintings, particularly in one entitled *The Maze*, in which he drew his own prostrate form with his skull open to reveal a maze, enclosed with no escape. In each compartment of the maze he showed one of his recurrent, usually painful, obsessive memories.

This patient won through, after some years, to a relative peace of mind. He is still painting, but his work has lost its former tragic intensity. Bosch, if one can judge by his works, never ceased to be tormented by his acute awareness of the peril which threatened mankind. His favorite image, to be found in many of his works, is the owl which represents human folly.

Where, I wonder, is the contemporary artist who can turn his "innocent eye" on the nightmare realities of this era with its threat of nuclear annihilation? We need a Goya or a Hieronymus Bosch to-day to quicken our sense of the urgency of the human predicament before it may prove too late.

FIG-004 [SINGING IDIOTS]

Anonymous; *Science*, 17:200, 1891.

Esquirol called attention to the fact that idiots without the power of speech could sing. Dr. Witherboth of Stettin compared 100 idiotic children with 50 normal children in regard to vocal range, sense of harmony, and memory for melody; and 27 per cent of the idiots and 80 per cent of the normal children were classed as musical to the highest degree, 11 per cent of the idiots and 3 per cent of the normal children were without musical ability. This remarkable relative development of the musical sense in idiots, says the *Pedagogical Seminary*, is the more striking as there is no evidence of any other artistic talents. The practical outcome of Witherboth's observations is to emphasize the necessity of vocal culture in the training of idiots.

FIG-005 THE RELATIONSHIP BETWEEN HIGHEST MENTAL CAPACITY AND PSYCHIC ABNORMALITIES

Juhn, Adele; *American Journal of Psychiatry*, 106:296-307, 1943.

I. Introduction. It was the challenge of Lombroso's well-known book, "Criminal and Mental Illness," which stimulated this investigation. The hereditary background of persons of unusual intellectual ability who had made outstanding contributions and discoveries in science and arts, as well as the incidence of psychic disturbances in these highly gifted individuals and their ancestors, relatives, and descendants was the subject chosen for this study. It was begun as early as 1927 and completed in 1943. Although the original German manuscript—covering over 300 pages and now in print—deals exclusively with artists and scientists of German-speaking countries of the past 200 years (1650 to 1900), we felt that the results of this study should be made accessible to the readers of the English-speaking countries since the great achievements of the leading German artists and scientists of the 16th and 19th centuries were dedicated to all mankind and were in their far-reaching influence not limited by national boundaries. In fact, many of the chosen geniuses are well known in England and the United States. The present contribution is a translation of an abstract of the original.

The magnitude of this study is illustrated by the fact that 19,000 persons were investigated; 284 of these were highly gifted personalities. About 5,000 people were interviewed personally in the course of 17 years. The creative personalities were divided into two main groups, 119 artists and 161 scientists. Further subdivisions include within the scientist group 51 cases in theoretical science, 112 in natural sciences, 9 in technical applied sciences, and 9 statesman. Among the theoretical sciences are included 9 scientists in history, 11

in jurisprudence, 2 in educational sciences, 2 in languages, 2 in philosophy, and 4 in theology. In the natural science group are included 5 astronomers, 19 botanists, 14 chemists, 4 geologists, 12 mathematicians, 23 physicians, 4 mineralogists, 13 physicists, and 5 zoologists.

The subgroup of the artists included 12 architects, 18 sculptors, 37 poets, 24 painters, and 26 musicians (composers only). The selection of the highly gifted personalities was based on the opinion of experts in the several fields. The geographic boundaries were those of Germany prior to World War I, German Austria, German Switzerland, and the Baltic States.

The long analytical section of this paper is omitted.

**IX. Scope and Summary.** The hereditary background and the physical and mental health conditions of 294 geniuses and their families were investigated. We regret the meagreness character of the reported results and realize that the reader would be more attracted by references to definite personalities in the row of geniuses; the confidential nature of information obtained by personal interview, however, put us under obligation to omit names and personal circumstances.

Without repetition of the details given in the preceding chapters, the most important results are summarized in the following conclusions:

1. There is no definite relationship between highest mental capacity and psychic health or illness, and no evidence to support the assumption that the genesis of highest intellectual ability depends on psychic abnormalities. The high number of mentally healthy geniuses speaks against such a claim and corroborates the slogan "genius and insanity." Psychoses, especially schizophrenias, proved to be detrimental to creative ability. Milder psychic abnormalities within the limits of psychoneurosis such as the combination of emotional instability and psychic tension exerted in some instances a stimulating influence.

2. The geniuses were not at a disadvantage in comparison with the average population relative to life duration, fertility, and disposition to organic diseases in the sense of a diminished vitality as the price of intellectual supremacy.

3. There seems to be a tendency in the parents of high mental faculty to manifest itself in first- and second-born children.

4. The families of geniuses do not "die out." The supreme mental ability of a genius is reflected in the remarkably high number of intellectually prominent individuals among his children and grandchildren.

5. The process by nature of making a genius is obviously a very complex one and involves different not clearly understood mechanisms. A direct hereditary transmission is probable in the fields of music, painting, mathematics, and technical invention. In general, there must be a preparatory ground in form of certain talents in the ancestors, and in combination with optimal character traits without the disharmony of strong conflicting tendencies. Manual dexterity in the ancestors of artists, rhetorical talents in those of the poets, and philocephic-theologic-didactic talent in the ancestors of scientists are conspicuous predisposing factors for the formation of a genius.

6. Eminent artistic talents were frequently found in combinations such as music and poetry, music and painting, and painting, sculpture and architecture.

7. There seems to be a relative incompatibility or comparability between the makeup of a genius and certain psychic dispositions. The schizothymic constitution is more prevalent among the artists and the cyclothymic constitution among the scientists, especially those in the natural science group.

8. The geniuses and their families show a much higher incidence of psychosis and psychoneurosis than the average population. Among the geniuses themselves, schizophrenia occurred only in the artists, and manic-depressive insanity only in the scientists, in a frequency 10 times the incidence of the average population. The accentrics (schizothymics) were correspondingly more prevalent among the artists, and the emotionally unstable psychopaths (psychodynamic) were more frequent among the scientists.

9. A comparison between the artists and scientists showed a relative biologic inferiority of the artists exhibited by the higher number of psychic abnormalities among themselves and their families, the lower fertility and shorter life span, the higher number of single persons and illegitimate children, the increased infant mortality, and the higher divorce rate. No difference between the two groups existed relative to physical health.

10. The incidence of below-average intellect and imbecility is remarkably low in the descendants of the geniuses, whereas the suicide rate appears to be high.

11. The wives of the geniuses were, in the overwhelming majority, excellent marriage companions and contributed directly or indirectly to the outstanding accomplishments of their husbands.

12. The geographic-racial descent of the geniuses revealed a selective distribution of certain talents. The artists were most numerous in the southern and southeastern parts within the German-speaking boundaries, and the scientists in the northern and western districts. No district, however, was exclusively limited to either of the two groups. The greatest total number of geniuses came from the thickly populated and racially mixed middle regions of Germany and Switzerland. The optimal mixture of rythmic races seemed to be a favorable factor for the formation of geniuses.



## PI-001 EIDETIC IMAGERY: A CROSS-CULTURAL WILL-O'-THE-WISP?

Doob, Leonard W.; *Journal of Psychology*, 69:13-34, 1968.

**A. Introduction.** Presumably any aspect of behavior merits cross-cultural investigation to determine its incidence and correlates in different societies and hence to provide fresh insight into the most but challenging problem of the universality and applicability of scientific principles and generalizations. Although dream content has been included in such studies, almost no systematic attention has been paid to people's normal, waking images. They have been dismissed as private, subjective phenomena whose content must be heavily culturally coloring more, it has been assumed, need be said.

Relatively unnoticed, however, is the undocumented view, promulgated a long time ago, that among nonbarbaric people a so-called primitive form of imagery, eidetic imagery, must be more prevalent than it is in the West. Although they may be associated with any sense modality, eidetic images (EI) are usually defined visually: they are images which are reported to appear in front of the eyes (whether or not the eyes are open), to persist after stimulation by an external stimulus for a period of time generally longer than an ordinary after-image, to be searchable, and to be colored positively rather than negatively (i.e., the image from a red object is red, not green). Over a half century of research in the West, especially in Germany, has shown that by and large EI are negatively correlated with age and hence discoverable among children but only very, very rarely among adults. Scattered anecdotes, however, suggest that African adults may have a 'photographic memory'; thus, this investigator was once told, students at a university in West Africa allegedly reproduced, during an examination, pages from the assigned books so accurately that they hyperreproduced words at the end of lines in the exact manner of the original texts. The most recent and also probably the best summary of previous research in the West has been provided in German by Traxel, who, therefore, is cited in this article whenever necessary and possible.

EI lend themselves to cross-cultural research because, fortunately, they can be objectively investigated: unlike even simple measures assessing personality traits, those testing EI are almost as noncultural as the simple observation necessary to decide whether a person from any society has sneezed at a given moment; the grief comes when the significance attached to the act is appraised. In addition, the research apparently involves no serious interviewing problems: it is easy to induce Ss to cooperate when they are asked merely to look at a series of drawings and photographs and report what they see afterwards. Here, nevertheless, is no research utopia devoid of monetary: each S must be slowly, apologetically tested under conditions that are as fully uniform as possible.

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**E. Summary.** Haphazardly selected samples of children and adults in five African societies were tested for eidetic images in a more or less uniform manner closely resembling that used in two investigations of normal and of retarded American children. Although the incidence varied markedly, the phenomenon itself transcended culture: it was spontaneously reported in similar terms everywhere. The images neither aided recall appreciably nor reduced the attention required during the perception of the original pictures; but they and other related images seemed to increase confidence in the act of recall. No consistent or very significant relation was found between eidetic images and a variety of demographic factors or psychological processes; of four variables manipulated experimentally in one of the societies, that of sex had a facilitating effect on the arousal of the images. The tentative conclusion is reached that

images of this general type, being concrete rather than abstract, may represent a survival from an earlier stage in the development of man and that normally they may be but need not be activated when the individual is experiencing some special kind of difficulty in coping with the environment.

#### PII-003 HYPNOTISM AND EIDETIC IMAGERY

Anonymous; Science News, 108:189, September 13, 1965.

Would you like to have a photographic memory? Perhaps you used to. Perhaps you can regain it. A person with a photographic memory, or eidetic imagery, is able to briefly examine a visual stimulus, such as a picture or design, and later project an exact duplication of it onto a blank surface. Sophisticated and stringent testing procedures suggest that 8 to 28 percent of all children may have eidetic imagery. Very few, however, retain the ability; and the phenomenon is almost nonexistent among adults. Neil S. Walker of Western Illinois University has used the fact that only children have eidetic imagery as a basis for testing the validity of hypnotic age regression. In other words, if people can actually regress to their childhood, then some of them should be able to demonstrate eidetic imagery ability while regressed. The test should be reliable because eidetic imagery is thought to be nonshakable.

Random-dot stereograms are used to test for the eidetic ability. Each stereogram set consists of two separate patterns. Each pattern is made up of 18,000 dots arranged in a formless array. When two complementary patterns are superimposed, a meaningful image is seen. A person with a photographic memory can look at one pattern, then at the other and come up with the total picture.

The subjects in Walker's experiment were 20 college students who were highly susceptible to hypnosis. They were shown the stereograms while under three conditions: normal waking, neutral hypnosis and hypnotic age regression to the age of seven. Two of the subjects seemed to have eidetic imagery ability while regressed, suggesting that they had actually reverted to a more primitive system of information processing. These findings, although still preliminary and unreplicated, suggest that hypnotic age regression is a valid phenomenon and that some adults may be able to revive eidetic imagery through hypnosis.

#### PII-004 SOME UNUSUAL VISUAL AFTER-EFFECTS

Warren, Howard C.; Psychological Review, 58:453-462, 1951.

Delayed After-Sensations.—During the summer of 1948 a large map of the battle front in France was tacked to the wall of my room. Just before going to bed I usually traced the day's progress in various parts of the front on this map, moving the eyes slowly to and fro. The room was dark except for a movable electric light which, as I turned it, illuminated one part or another of the map. The map was of the sort that features swamps and forests as well as roads and boundaries.

Several times after studying the map for perhaps half an hour I awakened quickly and turned out the light. I then noticed in the field of vision (with eyes closed) rather distinct pictures which bore considerable likeness to the tracings on the map. There were networks of lines like the roads, and patches like the swamp markings. These pictures were not stationary, but moved slowly to and fro. At no time was there a recognizable reproduction of any part of the map.

I have noticed a similar phenomenon several times after reading at night in bed in a rather dark room with the page of the book brightly illuminated. After the light is out I see impressions resembling printed words and letters. These after-effects are not stationary, but seem to move very much as the printed page moves in the visual field in reading. I have never been able to identify positively any printed word. Occasionally there is a strong suggestion of some familiar word, such as 'the'; but I am never sure that the significant part of the impression is not supplied by the central imaging process. Occasionally when playing solitaire card-games in the evening I have had after-visions resembling playing-cards after going to bed; the impressions are always too indistinct to identify any particular card.

The most satisfactory experience of this type occurred recently. I was examining under the microscope some slides showing sections of the cerebellum. It was late in the afternoon; the room was quite dark except for an electric stand-light centered on the mirror and reflected through the slide to the eye-piece. On account of wearing spectacles the field seen in the microscope is comparatively limited.

I was observing the cerea cells and axons especially, and moved the slide slowly from side to side in a zigzag, so as to inspect the whole section on the slide. Three slides were examined in this way, for about half an hour. Then, being sleepy, I turned out the light and lay down on a couch; the room was in twilight darkness. I fell asleep almost at once and slept some 15 minutes.

On waking I looked at my wrist watch, but immediately closed my eyes. I was fully awake. In the center of the visual field I observed a small circular area of intense brightness, corresponding to the bright field of the eye-piece previously before the eyes. The rest of the field was dark. The bright field was filled with black spots, like nerve cells, which were supplied with long fibers like axons. The contents of the bright field moved slowly to and fro in a manner corresponding to the zigzag motion of the microscope slide. I observed this after-visualization very carefully for several minutes. The lighted area (about the focus) seemed about as bright as the field of the original. The moving figures were very distinct, and were unmistakably similar to nerve-cell bodies and fibers. The entire impression was apparently peripheral; none of the significant features were furnished (so far as I can judge) by central imagery elements. While I could not identify any momentary impression as an exact reproduction of any definite portion of the slide, the arrangement of cells and other elements was strikingly like that in the original.

These moving after-visions lasted about 15 minutes. I opened my eyes two or three times during the observation, and the after-visions always returned on closing them again. An engagement prevented the observation from being continued to determine its maximum duration. I wish to emphasize strongly the distinctness of the figures seen, their motion, and the fact that they appeared unmistakably of retinal origin.

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As a child I had the capacity of receiving very distinct and vivid visual impressions. In our household family prayers were held daily. Time after time, with eyes closed, I observed the play of colors before me. The impressions often took the form of colored patterns, somewhat like kindergarten designs.

These patterns were continually moving or changing their colors or form. The effects were somewhat like those seen in a kaleidoscope except that the patterns were much more regular. They arose and changed of their own accord and were not subject to voluntary control. Often they were as vivid and clear-cut as actual sensations. These phenomena occurred from the age of eight far earlier to twelve or more, so that this report after forty years is of little value without corroboration. I am personally convinced that they were retinal phenomena.

Later I was accustomed, with a cousin of my own age, to try to 'see stories' with closed eyes in the dark. Whether the stories he told were actually visualized I cannot say. In my own case they were a sort of visual imagery, often quite vivid, but not so 'real' as after-sensations or as the patterns just described. Sometimes the changes were voluntary, at other times they seemed to be independent of every effort. So far as I can recall at this distance of time, the human figures and other familiar objects in these pictures were very distinct and detailed.

This cultivation of visualization continued till about the age of eighteen, when under a new environment the practice dropped away almost at once. For many years my visualizing capacity was little used and seems to have degenerated, although I worked considerably with visual after-sensations.

Within the past two years I have endeavored to renew the practice of visualizing with closed eyes. At first the results were meager; I saw only retinal light and fleeting after-sensations. Gradually the visualizing power has returned, and I am able to picture scenes voluntarily, though not so vividly as in adolescence.

I obtain these visualizations by concentrating the attention on the retinal field, endeavoring to form pictures out of what I see, and projecting them into a real scene. At first I see only the play of indistinct retinal light, which I weave into a picture with the help of imagination. Then all at once the picture becomes vividly real for an instant. I have never succeeded in prolonging these images. The effort to observe them attentively always throws them back into their former state; and often the attempt to control them voluntarily has the same result.

The purely involuntary type of visualization, which is apparently the phenomenon observed in clairvoyance and crystal-gazing, occurs infrequently in my case; but I have occasionally had experiences of this sort in an unmistakable form. In a dark room with eyes closed a definite scene will appear before me as apparently as bright an illumination as daylight. I seem to be looking through my closed eyelids. The scene is apparently as real, as vivid, as detailed, as an actual landscape. The phenomenon lasts not more than a minute. I have never been able to hold it long enough to notice any change or movement. It is a scene---not a happening. The two most vivid cases occurred quite automatically, either as I was dozing off and for some reason came back to consciousness; or immediately on waking during the night. Once the scene was a tropical landscape, with palm-trees and a body of water. It was clear and detailed and appeared so real that I was surprised to find it unchangeable by winking.

**Relation to Earlier Work.** The types of phenomena reported above have been little investigated, though they have an important bearing on the mechanism of memory and on the relation of sensation to central imagery.

V. Urbasichitsch reported in 1903 that in early life he was able voluntarily to call up color impressions with closed eyes. This power was diminished in later years; he can still bring up colored pictures but only with difficulty. This experience is apparently similar to my voluntary visualizations. In a later paper (1905) Urbasichitsch reports that after an excursion in the country, on closing his eyes, he is often able to call up pictures of landscapes, with groups of trees and bushes. These visualizations may occur for several days after the original impression. He considers them memory-images rather than after-

sensations. This experience resembles the delayed after-sensations mentioned in the beginning of the present paper, except that the lapse of time is much greater—days instead of less than an hour. If the two phenomena are really due to the same neural processes, they bear on the relation between retinal and central processes.

H. J. Dureh reported in the same year an experience similar to my microscope effect. On his way to the laboratory he stopped several minutes to watch a pair of birds building a nest in the branches of a tree. On reaching his laboratory and turning out the gas in the dark-room, he obtained an after-sensation of the gas-flame for about ten minutes; then came a retinal fog, and afterwards there developed a picture of brighties such as he had seen around the nest---a delayed after-sensation.

The first attempt at systematic investigation of these phenomena was made by V. Urbantschitsch. Urbantschitsch distinguishes two classes of visual memory images (*Gedächtnisbilder*): (1) Simple representations (*Vorstellungen*, *Bilder der Erinnerung*), and (2) Visualizations (*anschauliche Gedächtnisbilder*, *Bilder der subjektiven Anschauung*). "In the first case the object formerly seen is merely represented, in the second case it is subjectively seen again." The latter phenomena were subjected to various experimental modifications by the author. It is not clear how he distinguishes them from after-sensations.

More recently these phenomena have been made the subject of a series of experimental studies by E. K. Jaensch and his pupils in the Marburg Psychological Laboratory. Two of these studies were published in 1920 and others are in progress.

Jaensch distinguishes three types of visual after-effect: (1) *Nachbilder*, (2) *Anschauungsbilder*, and (3) *Vorstellungsbilder*, which will be translated *after-images*, *visualizations*, and *memory images*, respectively. The *Anschauungsbild* or visualization is intermediate between the other two. Jaensch and Basse consider them as three grades of memory (*Gedächtnisstufen*).

The Marburg subjects were chosen with reference to their ability to obtain vivid visualizations. It appears that some capacity for visualization is present in a large proportion of children: examinations conducted by the Marburg laboratory indicate that at least 27 per cent. of all children possess it in some degree. For the Marburg studies a number of young observers from 13 to 27 years of age were used, together with many older observers capable of visualizing.

After-sensations were obtained by the subjects after a 44-second exposure of the visual stimulus, visualizations after a 5-second exposure. The intensity of the visual stimulus is not stated, though this would seem to be an essential factor in repeating the experiments. After-effects of all three types were obtained with open eyes, and were usually projected onto a blank cardboard background. For the purposes of the experiments lines and other objective figures were placed on this same background. The subjects were able to hold the after-effects and compare them with the objective figures.

The experiments aimed to discover definite laws governing visual after-effects, comparable with the laws of visual perception. Basse found that if the head be turned about the sagittal axis after the phenomena has been obtained, the memory image deviates from its original projective position less than the after-sensation; i. e., there is more change with reference to the shifting optical axis in the memory image than in the after-sensation. The change in the visualization picture is intermediate between the memory image and after-sensation. The area of the field of vision was found to be generally greater in the memory image. In general, memory images were flat, visualizations stood out in relief, and after-sensations appeared solid. Visualizations were compared with visual perceptions by means of a pair of objective threads and the after-effect of another pair of threads; it was found that the mutual influence of perception and visualization diminishes

as the difference between the distances measured by the two pairs increases. After-effects are progressively less clear in detail as we pass from after-sensations through visualizations to memory images.

Jacobs, experimenting with visualizations, finds that with the law of identity of the binocular line of vision and the law of incongruence of the two retinal fields hold for visualizations, the same as for visual perceptions. Visualizations withstand voluntary control more than memory images; in other words, memory images are more plastic than visualizations.

The Marburg experiments had especially in view to demonstrate that visualizations are not produced and altered by suggestion, but are orderly (psychonomic) mental phenomena;---that they are as capable of definite experimental investigation as perceptions. The results reported, and the general agreement among the 129 observers after due allowance for differences in mental types, appear to substantiate this conclusion.

**Physiological Basis of Visual After-effects.** The most important problem in connection with visual after-effects, in the opinion of the present writer, is their point of origin: are they generated peripherally or centrally?

(a) In the case of visual after-sensations there seems no reason to doubt that they originate peripherally---that they are due to physiological processes in the retina itself.

(b) As regards visual memories, the accepted opinion among psychologists is that they depend upon cerebral retention: (1) It is difficult to see how such a vast number of visual impressions could be retained in the retinal substance of an entire life-time. (2) There is no known motor mechanism for the voluntary revival of such traces in the retina, thus supporting them to have been retained.

The delayed after-sensations of Borch and the present writer weaken the first argument somewhat. It is evident that after-effects may persist in the retina despite subsequent, rather intense stimulation of the same retinal regions; that after a latent period of thirty minutes or longer they may give rise to renewed sensations. The question then arises how long this retinal retention can last. Are the after-effects reported by Urbanowitsch as occurring several days after his trip to the country phenomena of central origin, as he believes, or are they delayed after-sensations?

The second argument still holds. The absence of motor nerves in the retina supports the view that retinal retention is only a secondary aid to memory---that the stream of visual memories is controlled centrally and not through a retinal mechanism.

(c) Turning now to visualizations, the question of their source is somewhat perplexing. The writer's involuntary visualizations of childhood (e.g., the changing color patterns) seem to be retinal; if not real after-sensations, they are apparently due to physiological processes in the retina. On the other hand, the visualization of the tropical scene was too definitely pictorial to have been caused by casual retinal stimulation; nor was it a delayed after-sensation, unless an effect of many years' standing or the amplified retention of some photograph or picture. Its definiteness of outline and content mark it as peripheral; the other evidence is entirely in favor of its central origin. Dream visualization and crystal gazing seem to belong in this category.

My voluntary visualizations in mature life appear to be based on casual retinal processes, which are amplified into meaningful scenes by the addition of central elements. Retinal stimuli are apparently essential in my present visualizations; in childhood they apparently played an unimportant role. Neither in childhood nor today have I succeeded in getting pure visualizations with open

eyes, like Jaensch's subjects.\* Were the Marburg experiments performed less rigidly, I should consider the 'Anschauungsbilder' to be a kind of prolonged after-sensation. As it is, they seem undoubtedly to correspond to my visualizations; but they are far more vivid, as shown by the fact that they persist in all their definiteness with open eyes.

While my own experiences may be brought fairly well into line with Jaensch's my classification would be slightly different. At one extreme is the visual sensation, due to objective stimulation; at the other the memory image, which in my case is a thought rather than a visual picture. Between these extremes I distinguish three classes of visual after-effects which occur with closed eyes.

1. Pure After-sensations. These are clear-cut and vivid. They are easily recognized as real; that is, there is no question of mistaking them for figments of the imagination. They bear all the marks of being aroused by retinal stimuli.

2. Mixed After-effects. Here the after-sensations are not themselves definite, but they seem to be woven into definite figures and scenes by the addition of central imagery. If the image element predominates, the scene can be voluntarily controlled; if not, it is refractory. This type is recognizably different from the first; the pictures are not projected out, and there is no filling in of details. It is a partial visualization, but is largely dependent on retinal factors.

3. Pure Visualization. The 'troupeau scene' experience is the best example of this type. The visualized picture is even more vivid than an after-sensation. The details are life-like, but in my case do not admit of careful examination; I should say that the outlines and content are not so sharp and clear as in pure after-sensations. The experience seems real, though obviously it is not external. Dreams, hallucinations, and the phenomena of clairvoyance apparently belong to this type.

Visualization offers a promising field for research. The writer believes the visualization experience to be a combination of peripheral and central elements. The correctness of this explanation and the extent of the contribution from each source, would seem to admit of experimental determination. A retinal after-effect is affected very definitely by any new stimulus; while central after-effects presumably are little altered by external stimulation. Changes of general illumination, winking, eye-movements, attempts at voluntary control---one or more of these factors might prove a satisfactory criterion to distinguish the central from the peripheral elements in a visualization.

The radical behaviorist has a further task. If the phenomena which we call memory and imagery are determined in every case by motor factors, as the behaviorist asserts, he must discover the motor path leading to the retina which arouses visual memory images---for according to behaviorism the memory image is a motor-sensory affair.

Summary. Several cases of long delayed after-sensations were described; also an unusually prolonged after-sensation of glass. Observations were reported of vivid visualization (both voluntary and involuntary) in childhood and in later life.

\* I can weave the indefinite markings of colored marbles into scenes, new pictures in sketches, etc. My ability to recall these visualizations in later life may be due to inocular limitations. My left retina is normal but the left corner is defective; so that distinct impressions are obtained only with the right eye. Possibly my after-sensations are more definite and persistent on this account.

These personal experiences were compared with earlier observations and experiences. The first systematic treatment of the phenomena was by Erhan-nschitzsch. Jaensch's recent work is an attempt to investigate them by laboratory methods. He finds that visualization pictures (Anschauungsbilder) can be obtained with open eyes; that they can be compared with objective perception-pictures, and that they can be subjected to rigid experimental tests. Jaensch divides visual after-effects into three grades: after-sensations (Nachbilder), visualizations (Anschauungsbilder), and memory-images (Vorstellungsbilder).

An important problem for future investigation is the source of these various phenomena, ---how far they are due to peripheral and how far to central processes.

Compare these observations with those in Section PLP, where hypnagogic illusions are discussed.



Cliff (photographic memory). (Drawing by John C. Holder)



## PIM-001 A PRODIGY OF MEMORY

Creighton, J. H.: *Knowledge*, 11:274-278, 1886.

Daniel McCartney was born in Westmoreland County, Pennsylvania, September 10, 1817. His father was of Irish descent, and his mother German. I first met him in Delaware, Ohio, in 1871. Notice of his coming, and what he would do, was given in the papers several days before he arrived. The meeting was in a public hall. The president and several professors, and many students of the Ohio Wesleyan University, and also a few citizens, were present. Mr. D. C. Brown, of Cardington, O., stated what he could do, and introduced him and conducted the examination. Mr. E. Moore, of the First National Bank, was prepared with calendars and other documents to test his claims. Other professors were also prepared in various ways to decide the truth of Mr. Brown's statements.

Mr. McCartney was then fifty-four years old, of medium height, rather heavy set, with rather large, well-formed head; square, large, high forehead; complexion pale. Countenance sober, dignified, benevolent. Eyes defective, not being able to see clearly, and yet not entirely blind. His speech was deliberate and confident, using but few words. His dress was cheap but decent.

The audience were requested to ask any questions they chose. As the examination went on, we soon found that everything that had passed before his mind for forty years was remembered. I can only refer to a few things that occurred in the two hours of most varied questioning. He could tell the day of the week (by having the year and day of the month) back for forty years, and tell it instantly. He could tell the dates of most important events from his boyhood. Could give the state of the weather, forenoon and afternoon, for forty years without mistake. One gentleman asked for the day of the week about fifteen or sixteen years before. McCartney replied Friday. "No," said the gentleman, "that is wrong. That was my wedding day, and it was Thursday." "Now," said Mr. Brown, "can any gentleman in the hall tell who is right?" "Yes," said Mr. Moore; and in a minute or two from his old calendar he found that McCartney was right. During the evening one or two other questions were raised as to the day of the week, but by the old calendar McCartney was right every time.

He was a complete concordance of the New Testament and most of the Old Testament. Professor Hoyt (Hebrew professor) read a large number of passages from the Scriptures. All the audience were entirely satisfied that he knew where every passage was. He could tell what he was doing every day from his boyhood. President Merick, having prepared himself on several dates, asked him what he was doing on a certain day, naming the time, several years before. "Looking at the eclipses," said he. His multiplication table went up into millions. He could give the cube root of numbers up to millions almost instantly. One of the numbers given was ten figures deep, another was eleven figures deep. He could raise any number under 40 to the sixth power instantly. He could raise any number under 100 to the sixth power in ten or fifteen minutes. He was given the number 99, which is a prime number and more difficult, but he raised it in a few minutes (494,281,329,243). He could instantly give the minutes and seconds of periods of time from the Mosaic creation, and could give the feet or inches of sidereal distances. Professor H. M. Perkins (professor of astronomy) asked him a question. McCartney said he had never been given such a question, but he would see. What was very remarkable was, he never asked the professor to state it again, although it was most complicated. In about three minutes he said it came out with a fraction, and the fraction was one-eighth. In a few minutes more he told off the long line of figures. A gentleman wrote five or six

columns of figures, seven or eight deep, on the blackboard and read them to him. He could immediately repeat them backward or forward; and being asked the next day if he still remembered them, he told them off again without a mistake.



Daniel McCarty

At the close of the examination several questions of another nature were asked. Some of them were of a nature not needing any test, for we were perfectly satisfied of the accuracy of all his statements. His powers of memory were noticed when five or six years old, and he could remember a great number of little events from that early age. His full power of memory was attained at the age of about sixteen. He knew two hundred hymns, and could sing one hundred and fifty tunes. He could remember what he ate for breakfast, dinner, and supper for more than forty years. He learned nothing by reading, but all by hearing. His sight was so defective, especially in early life, that he could not read, except very coarse print, and that very slowly, and with great difficulty. He was always poor, and his relatives, with whom he lived, were poor. The question has often been raised why a man with such prodigious memory did not prosper in some business. Doubtless the principal cause of this was his deficient eyesight. Several attempts were made to bring him before the public, but with very little success. At one time, in 1871, he appeared in the Opera House, Columbus, Ohio, when members of the legislature, teachers, and professional men were present. At that meeting he answered questions similar to those above stated, and gave entire satisfaction.

He retained his memory to the time of his death. He was in possession of most of those vast powers for about sixty years. When answering questions about certain things, President Merick asked him how he did it, or if he had any particular mental process or rule. He said, "I just know it." The answers to some questions, however, showed that it was not all mere memory, for they required some reasoning powers. This was particularly so in the question given by Professor Perkins.

It has been considered that the invention of logarithms by Napier stands among the greatest works of intellectual power in the world, and will be a monument to his name and fame for ever. But McCarty would not need these tables. He was himself a living table of logarithms. These definitions, that cost Napier long and tedious hours of figuring, McCarty could give at once without pencil or paper, and without mistake.

Daniel McCarty was supported for the last few years of his life at the county farm, near Muscatine, Iowa, and died in that place, November 15, 1887, aged a little over seventy years.

#### PIM-002 THE MNEMONIC FEAT OF THE 'SHASS POLLAK'

Stratton, George M.: *Psychological Review*, 14:246-247, 1907.

Some years ago, through the kindness of my friend Professor Hollander, of the Johns Hopkins University, my attention was directed to a special achievement in memorizing which I venture to report; since, so far as I know, it has remained unnoticed by psychologists, and yet should be stored among the data long and well richly gathering for the study of extraordinary feats of memory.

The facts of the case I can hardly do better than to allow the witnesses themselves to state. And first the Reverend Dr. David Phillips, of Cincinnati, to whom I was first referred by Professor Hollander.

"The Babylonian Talmud" he has been good enough to write me, "consist of twelve large folio volumes comprising thousands of pages. All the printed editions of the Talmud have exactly the same number of pages and the same words on each page. This must be borne in mind in order to understand the remarkable feat of memory about to be described. There have been, as there undoubtedly still are, men who know the whole text of the Talmud by heart. Some years ago one of these men, a native of Poland, was in this country. I witnessed his remarkable feats of memory. Thus, one of us would throw open one of the volumes of the Talmud, say the tractate Berakhot, at page 18; a pin would be placed on a word, let us say, the fourth word in line eight; the memory sharp would then be asked what word it is in this same spot on page thirty-eight or page fifty or any other page; the pin would be pressed through the volume until it reached page thirty-eight or page fifty or any other page designated; the memory sharp would then recite the word and it was found invariably correct. He had visualized in his brain the whole Talmud; in other words, the pages of the Talmud were photographed on his brain. It was one of the most stupendous feats of memory I have ever witnessed and there was no lie about it. In the company gathered about the table were a number of Talmudic experts who would readily have discovered fraud had there been any. The technical name which was used by the Jews of afortimes to designate these memory experts was Shass Pollak; Shass is the abbreviation for the Hebrew terms for the Talmud, and Pollak is

Pols; nearly all these memory experts came from Poland; a Shass Poliak then is a Pole who has memorized the entire contents of the Talmud and is able to give exhibitors of his memorized powers like those mentioned above."

And next let me quote from Judge Mayer Kaliberger, of Philadelphia, who in answer to my inquiry, wrote as follows:

"I have met but one 'Shass Poliak' in my life. He was brought into my library one evening by a friend. I conversed with him and experimented upon him.

"After he had been introduced as the expert in question I expressed some curiosity with perhaps a tinge of incredulity. He was eager for the fray.

"You are of course aware that all (or nearly all) modern editions of the Talmud are paged alike and printed alike, each page beginning and ending with the same word in all the editions.

"I went to the case and took out a volume of the first edition which has its own paging not followed by the other editions. He made an automatic dive for a word in a particular part of the page, and lo! it was not there.

"Confounded by this unexpected event, he thought at first that this was not a Talmud I was showing him; and when convinced finally that it was, seemed to bear it some resentment for its improper behavior.

"I then brought out the corresponding volume of an ordinary edition and he undoubtedly made good.

"He would take a pencil and merely glancing at the page put it down anywhere and without looking told the word on which his pencil had lighted. This he did over and over again. There is no reasonable ground for the suspicion that he saw the words. I watched him closely and am convinced that he did not. He had, I feel sure, a perfect image of the page and the position of every word as it is in his head."

Finally, let me give the testimony of Dr. Schechter, of New York, the late President of the Jewish Theological Seminary of America--testimony the more interesting in that while it depends upon the recollection of an experience many years ago, yet it is an independent account of the same kind of testing which Dr. Philipson reports--namely, by pricking through the pages--and consequently confirms the opinion of Judge Kaliberger that the success of the 'Shass Poliak' who was tested merely by pencil was not due to a spy catching of the word by eye.

President Schechter stated to me by letter that once he had come across a 'Shass Poliak' but that it was too long a time ago to give an account of him with definiteness. "It is at least forty-five years since the incident occurred," he wrote. "What I remember was that he could tell you the contents of every page of the Talmud by heart. I remember also that the people amused themselves by prying a needle into any volume of the Talmud, and he could tell exactly the word on which the needle touched. But I also recollect distinctly that it was nothing more than a verbal or rather local memory, the students all maintaining that he knew very little about the meaning of the contents, their interpretation and application. I heard afterwards of many similar 'Shass Poliaks,' but it is a fact that none of them ever attained to any prominence in the scholarly world."

This absence of any scholarly grasp of the contents thus memorized, of which President Schechter speaks, also appears in the judgment of Dr. Philipson. "I looked upon his achievement at the time I witnessed it as purely mechanical," he writes. "It is quite likely that he could not interpret the Talmud though he knew its contents by heart." And Judge Kaliberger, when proposing to his 'Shass Poliak' that he use his knowledge to some scientific or literary end, was listened to with respect, but nevertheless received the impression that such proposals were deemed by his man to be nonsensical.

All of which confirms the oft-repeated observation, that such extraordinary powers of memory may exist in a kind of intellectual disproportion where there is no corresponding development of other powers--where, indeed, there may be an actual stunting of other powers and interests as though the mind had 'run' to memory, and been enlarged here at the expense of other functions.

As to the more precise amount of matter that was memorized, it should be noted that a page of the Babylonian Talmud consists, as my colleague Dr. Pepper, has pointed out to me, \* of the text proper, called the Gemarah, and printed as a more central portion on the page, and of a commentary printed before and around this text. Upon special inquiry whether the mnemonic feat applied only to the Gemarah or included also the Commentary, Dr. Phillipson states that the test which he witnessed was upon the Gemarah only; and Judge Salabarger is of the opinion that this was also true in the case that came under his observation. Even so, the task must have been a stupendous one; the amount of reading-matter upon each page is still great, and the number of pages is enormous.

\* Professor Pepper has also referred me to the articles "Talmud" and "Mnemonic" in The Jewish Encyclopedia for evidence that at one period the Talmud was handed down solely by memory. The feat of the Poles here recounted may therefore be regarded perhaps as the survival of a custom among early Jewish students in many and widely-separated communities. The work of Broff, Die Mnemotechnik des Talmuds, Vienna 1868, should also be cited.

#### PIM-003 A MUSICAL PRODIGY

Anonymous: Society for Psychical Research, Journal, 11-20-23, 1901.

The last number of the Annales des Sciences Psychiques for 1900 contains an interesting paper by Professor Bichet on a case of musical precocity. The paper was read by him at Paris during the International Congress of Psychology, where it was followed by a performance on the part of the child whose powers are described. The boy in question is Spanish; his name is Pepito Rodriguez Arriola, and at the date of the Congress he was three years and eight months old, having been born on December 14th, 1896.

There seems to have been musical talent in his mother's family. His mother plays the piano well; but it is difficult to find a parallel, even among the doubtfully authentic tales of early manifestations by musicians of their special faculties, for the extraordinary performances of Pepito. The account of his earliest efforts comes from his mother, who relates how, at the age of two and a half years, without any suggestion from her, he one day when alone played on the piano a musical composition which she had recently practised frequently. From this time onwards he made rapid progress, and at the age of three years and twelve days performed in Madrid before the King of Spain and the Queen Regent.

According to Professor Bichet, the child presents no special characteristics as regards physical, mental, and moral development; it is solely as a musician that his precocity is manifest. His accomplishments are described by M. Bichet under the three heads of execution, invention, and memory.

His fingering is childish and eccentric, but very ingenious, and he substitutes for the octave, which his hands are too small to strike, a rapidly-enacted

apparently. His execution is irregular; occasionally he loses his way, but suddenly, 'as if inspired,' plays with precision and facility difficult passages. But it is the expression which he puts into his playing which is the most remarkable point in Professor Richet's view; in this he far surpasses his mother, whose teaching---if her half-hearted efforts to control his studies can be so described---is the only instruction ever received by him. One most curious point may be noticed---his extreme unwillingness and apparent inability to play on any piano but his own. This piano, according to Professor Richet, differs from other pianos only in being exceedingly bad; and there seems no discoverable reason, except perhaps some association of ideas, why he should play well only on his own instrument.

His musical memory is very considerable; he plays by heart correctly some twenty pieces, and it should be remembered that he has never been made to practice, or taught, in the ordinary sense of the word. If thirty bars are played through to him two or three times, he sits down and plays them over, admits no corrections, and never forgets what he has once played. He can also pick out on the piano tunes that he has heard sung, and to these he finds the proper harmonies for himself.

It is not always easy to distinguish in a so-called improvisation on the piano between memory and invention; but Pepito, when improvising, seems never to be at a loss, and often produces interesting melodies, which are certainly not recognized by his hearers, and appear to be original. Here, again, as in his execution, the performance is irregular; in the midst of a tangle of false notes and hesitating confusion will come clever combinations of rhythm or transitions from one theme to another, as though the passages were dictated to him by a real composer.

Professor Richet offers no explanation of these facts; he is content to record them and to await with interest the future development of Pepito's musical talent. The case presents some analogy with that of the arithmetical prodigies---the "calculating boys" whose performances have been often recorded. (See account of the principal ones in Mr. Myers's paper on "The Subliminal Consciousness: The Mechanism of Genius" in the *Proceedings S. P. S.* Vol. viii., pp. 202-263.) Or a closer parallel may be found in the case of Mr. E. C. Rowe, a Fellow of Trinity College, Cambridge. This gentleman, who died in 1884, was an extraordinarily brilliant musician, whose powers of association and interpretation can never be forgotten by those who heard him play. He showed his musical talent at a very early age, playing from notes without instruction from the time he was four years old. Unlike Pepito, his musical proficiency seems to have been shown to his power of reading music. He used to relate how, as a small child, before he could read books or knew anything of music, he would spend happy hours gazing over musical scores, not attempting to play the music, which would have been beyond his compass, but getting some real but unanalyzable enjoyment out of the printed score. At a later age he would place a book on the piano and read aloud from it, while improvising at the same time; and at school he often learnt his lessons in this way. The musical gifts, at least in their early development, do not seem to have been of quite the same nature as Pepito's; whereas Mr. Rowe showed what his friends describe as an "innate" power of reading music. It would be difficult to find a parallel to the accuracy of ear, the musical memory, and the power of association possessed by this child of four years old.

## PIM-004 TEMPORARY REMINISCENCE OF A LONG-FORGOTTEN LANGUAGE DURING DELIRIUM

Frederick, Henry; *Society for Psychological Research, Journal*, 10:279-293, 1902.

The following case presents some interesting analogies to many cases of secondary and alternating personalities that have appeared in our *Recordings and Journal*. The report is quoted (omitting some details of purely medical interest) from *The Lancelot* of June 14th, 1902, where it appeared under the title "Temporary Reminiscence of a Long Forgotten Language during the Delirium of Broncho-Pneumonia," by Henry Frederick, M. B. Edin., with remarks by C. A. Mearns, M. B., M. R. C. P. Lond., F. R. C. S. Eng.

The patient was a woman, aged 70 years. She fell poorly on the evening of March 6th, 1902, and kept her bed on the 7th. I saw her on the 8th and found her complaining of headache and pain in the shoulders, back, and limbs. Her temperature was 102° F., and her pulse was 100, regular, and strong. Examination of the lungs revealed slight bronchial catarrh (the patient was very liable to slight attacks of bronchitis and had to keep her bed for a few days at the time once or twice during every winter). Her condition on the 9th and 10th was about the same; there were less headache and pain generally, the temperature remaining between 101° and 102°. On the 11th the patient had passed a bad night, the respirations were quickened, the cough was troublesome, the pulse was 120, and the temperature was 103°. Examination of the lungs revealed increased bronchitis all over. . . . The general condition of the patient remained about the same for two days, the temperature being between 102° and 103°, the pulse at this time being about 120 and strong. On the 13th the temperature fell rapidly to 99°, went up again for a short time in the afternoon to 101°, and fell again in the evening to 97°. On this day she coughed up a little rusty sputum, the only time she did so. At 8 p. m. I arrived to find her apparently dying. The pulse was quite uncountable, weak, and flickering. The nurse said that she began to change an hour before and was getting rapidly worse. Three minims of liquor strychniae were given subcutaneously. In 10 minutes the pulse could be counted and in 20 minutes it was fairly strong at 114. It was found necessary to repeat this dose every fourth hour and to give brandy and carbonate of ammonia freely until the 16th, on which day she began to improve and her pulse remained strong and slow without the help of the strychnine. . . .

The chief point of interest in this case lies in the delirium. From the night of March 7th until the evening of the 13th (when the temperature fell suddenly) she was sometimes wandering while awake and continually talking in her sleep, but when spoken to would be perfectly sensible and so long as she was engaged with one of the attendants or doctor would answer questions, etc. When the temperature fell on the 13th she became quite delirious and remained so until the 16th, when she gradually returned to reason. On the night of the 13th and on the 14th she was found to be speaking in a language unknown to those about her. It sounded as if she was repeating some poetry sometimes or carrying on a conversation with others. She repeated the same poem time after time. This language was found to be Hindustani. On the 14th, in the evening, the Hindustani began to be mixed with English and she spoke to, and of, friends and relations of her girlhood. On the 15th the Hindustani had disappeared altogether and she was talking to, and of, friends of a later date in English, French, and German. The patient was born in India, which country she left at the age of three years and landed in England, after five months' voyage, before she was four years old. Up to the time she landed she had been under the care of Indian servants and spoke no English at all, her only language being Hindustani. On her coming to

England the ayah was sent back and she then began to learn English, and from that time had never spoken Hindustani. She apparently, on the 12th, went back in her delirium to her very earliest days, when she spoke again the first language she ever heard. The poem was found to be something which the ayahs are in the habit of repeating to their children and the conversations were apparently with the native servants, one being recognized as a request that she might be taken to the bazaar to buy sweets.

Through the whole delirium there could be recognized a sequence. As time went on the friends she spoke of were of later date and she took events in their proper order. She apparently began at the beginning of her life and went through it until on March 16th she had reached the time when she was married and had her children growing up boy and girl. It is curious that after a lapse of 46 years, during which time she had not spoken Hindustani, this language of her early childhood should be recalled in delirium. The patient now speaks English, French, and German (as well as Hindi) as fluently as the others, but although she knows a few Hindustani words she is quite unable to speak the language or to put one sentence together. She says that she has no recollection how she got before her illness of ever having been able to speak Hindustani. The evidence that this language really was Hindustani is that she does not know, nor has she ever known, any other language except those mentioned in this paper. A lady who has lived much of her life in India and who speaks the language recognized the poem as one commonly in use amongst the ayahs and also translated some of the conversations which the patient carried on with her imaginary visitors.

**Remarks by Dr. Morel:**—This case is a most striking one may say a most dramatic, instance of a state of things, which, in less impressive degree, is by no means uncommon and which, though abnormal, is not irregular. Events of the kind have been recorded before, but no case so complete, so extraordinarily perfect, and so well authenticated, has yet been published as far as I know. The classical instance with which all such occurrences are compared and classed is that of the illiterate maid-servant recorded by Coleridge in his "Table Talk" who, while suffering from the delirium of fever, recited for hours in Greek and Hebrew. Many years before she had been in the service of a learned pastor who had been in the habit of reading these classics aloud in her hearing. She was totally ignorant of the languages in question and could not voluntarily reproduce a word of them. Yet in her delirium they hopped up to the surface, and flowed over.

It is to be noted that it was not the forgotten language alone whose memory was so strangely revived in this old lady's delirium. Her whole personality was transported back to her early years, and she lived over again the life of her childhood. She spoke of, and to, friends and relatives of her girlhood; she asked that she might be taken to the bazaar to buy sweets. Now this is the rule in certain cases of senile insanity. Perhaps I may be allowed to quote from my book on "Psychology, Normal and Morbid," to illustrate what I mean: "Along with this defect in the formation of structural memories"—and although Dr. Froeborn does not mention the fact, I have no doubt that this process was completely defective in the case that he has described, so that when the old lady recovered she remembered nothing of what occurred during this period of her illness—"there frequently goes an excess of those memories that remain from long past experience. Not only are these memories preserved, but they are recalled with exaggerated frequency and vividness. The memories of boyhood, for instance, are not only retained, but they are reproduced with excessive frequency and with a vividness which in middle life was unattainable. We often witness in the dementia of old age that not only are the experiences of the day forgotten, not



only are the experiences of youth remembered, but the memories of youthful experiences thrust themselves forward with such vividness and persistence that they become the dominant feature in consciousness, and the old man literally lives his youth over again. To such a degree does this vivid reappearance of memories attain that it sometimes invades the province of perception, and the veteran addresses his grandchildren by the names of schoolfellows of his own who have long been dead, and with whom he has had no dealings since his boyhood. It seems as if structural memories were laid down in the nervous system in strata, the memory of each successive experience overlying the memories of previous experiences, and as if, in senile loss of memory, the removal of the upper layers allowed of an over-activity of those that remain, on the principle so familiar to neurologists under the name of "loss of control."

That this old lady was not insane in the ordinary use of the term, but was suffering from the delirium of bodily illness, goes to corroborate my favourite doctrine that not only are delirium and insanity the same thing, but that any weakening illness, especially if suddenly weakening, may be, and I should go further and say must be, attended by weakening of mind. If the patient had remained in the same mental condition after her recovery from the bodily illness no one would question that that condition might be rightly characterized by the term insanity. Yet the improvement of the mental condition *pari passu* with the recovery of the bodily illness indicates the dependence of the one upon the other.

The sequence of events in the course of her recovery was most remarkable. She gradually passed through the stages of her life, beginning in infancy and taking them, as Dr. Freeborn says, in their proper order, until, upon her complete recovery, she brought events down to their present date. Nothing so dramatically complete has ever come under my own observation, though I have seen cases in which the period of life lived through again has varied. It is a very common occurrence for persons who have acquired, so completely as to think it is alone, a language which is not that of their birthplace, to lose that language in illness or in other stress and to return to the language earliest acquired, even when this had been almost or quite forgotten. I have had under my care during the last year an old lady whose native language is English, but who had subsequently acquired, in the order given, a perfect colloquial mastery of French and Italian and a competent knowledge of German. She is now 76 years of age and finds that she has lost her German, and in a severe attack of bronchitis she lost both French and Italian and was left with English alone. Her health is feeble and her mastery of Italian fluctuates with it. The great interest of the present case is that the language should have been discontinued so very early in life, that the patient had not only forgotten it but had forgotten that she could ever speak it. But, as Coleridge's case shows, the previous ability to speak a language is not necessary for its reproduction, and it is unlikely that the child herself had sung the verses. She probably reproduced them from hearing, as the servant girl reproduced the Greek and Hebrew. The gradual advance in the period of the patient's reminiscences, as her health improved, goes to corroborate, for what it is worth, my hypothesis of the stratification of memories. I do not put it forward as a very illuminating hypothesis, but in this very obscure region even a glimmer of light is grateful.

Several cases of alternating personalities have been recorded in which the subject reverts to or recovers the memories of earlier periods of life. One of the most remarkable of these was the case of Louise Voss (see Proceedings, Vol. IV., p. 419), who manifested several different personalities corresponding to different periods of life, which variations could also be artificially reproduced in him by certain methods of suggestion. Another case of alternating personalities corresponding to different ages was that of Mollie Farther (see Proceedings,

Vol. XV., p. 375). More remarkable still, and still more difficult to explain by Dr. Mercier's hypothesis of the stratification of memories, described above, is the case of "Miss Benachamp"—Dr. Martin Priano's subject (see *Psychology*, Vol. XV., p. 464)—in whom the principal secondary personality not only recollects the events of extremely early childhood (such as lying in her cradle and learning to walk), but also has a more complete and continuous memory of all the subsequent life than the primary personality has.

**PIM005 [BLINDFOLD CHESS]**

Kaestler, Arthur; *Heel of Achilles*, p. 233. Random House, 1978.

"Blindfold chess," as it is called, is yet another challenge with which the chess mind confronts the psychologist, and which still waits for an explanation. To play a single game blindfold moderately well is within the capacity of every strong player. To play *thous* blindfold games simultaneously was regarded by Philidor's contemporaries as one of the greatest exertions of which the human memory is capable. But in the years that have elapsed since Philidor's day, the record for simultaneous blindfold games has increased by leaps to ten, twenty, thirty-two (Alckhine in 1833); forty (Najdorf in 1940); and on 13 December 1980, at the Fairmont Hotel in San Francisco, The Belgian Master Kollarowski achieved the incredible feat of taking on simultaneously fifty-six opponents blindfold, winning fifty of the games, drawing six and losing none---in an exhibition lasting nine hours and forty-five minutes.

## PIU-001 STATISTICS OF "UNCONSCIOUS CEREBRATION"

CHM, Charles M.: *American Journal of Psychology*, 3:348-359, 1902

The present article is an attempt to give in a statistical form the results obtained from a set of questions on "Unconscious Cerebration." These questions were first issued by Mr. Francis Spier, Jr., of South Orange, N.J., and a part of the results of his investigation were published in the *Popular Science Monthly*, Vol. 32, p. 457, under the title, "The Antechamber of Consciousness." In order to the continuity of the inquiry it seemed best to re-issue the same set of questions, and these Mr. Spier very kindly furnished, together with the answers which had been returned to him. These answers were mostly from students of various colleges, and from persons in professional life. To these were added about a hundred more, all of college students, making the whole number of answers two hundred. These latter were collected by Professor A. C. Armstrong, Jr., of Wesleyan University, under whose direction and present investigation has been carried out. From these answers the statistics have been compiled, first, in general, with no regard to sex or age or other conditions; then the sexes were separated and the percentages for each were obtained; and third, the percentages were computed for the different ages.

In the two hundred papers there are one hundred and fifty-one from men and forty-nine from women. As regards age, the greater portion of the persons answering are between twenty and thirty years, and more of these are under twenty-five years than above. As the papers naturally fell into several divisions according to age, it seemed advisable to separate them as follows: first, those under twenty-five years; second, those between twenty-five and thirty years; and third, those over thirty years of age. The number of persons in each division is as follows: sixty are under twenty-five, thirty-two are between twenty-five and thirty, and forty-one are over thirty, besides which there are thirty-seven who do not give their ages.

Before giving the statistics a few words of explanation may be necessary. Each question is given separately, and following it are the percentages, together with any examples or remarks. A part of the examples quoted here are from the papers furnished by Mr. Spier and a few of them are given in his article; the others are from the papers collected by Professor Armstrong. In explanation of the figures it may be said here that in the tables the horizontal series headed "whole number answering," those answering "no" and "indefinite" have been computed only in the general division, and, when it is not otherwise stated, are percentages of the whole number of answers returned, i. e., two hundred. The figures in the different divisions headed "men," "women," etc., are, unless it is otherwise stated, percentages of the number of persons in each division. All the percentages are given as whole numbers, fractions of one per cent. being discarded. This sometimes causes a slight apparent discrepancy, as, for example, that noted below under the first question. With this explanation and the notes given with each table, the figures will doubtless be clear. Only a part of the questions are given in tabular form, as it was necessary to give all the figures in every case. In the questions as given below the original order has been somewhat changed, and some portions, as well as some entire questions, which elicited answers of no essential value to the subject, have been omitted. The questions omitted are those numbered I., V. and XI. in Mr. Spier's original list. In other respects our list is identical with the original.

**Question 1.** When you are unable to recall the name of something wanted and you say, "Never mind, it will occur to me," are you conscious of any effort

of searching after it?

2. When you are, do you feel some trouble or weight in your effort?

3a. Does the idea ever seem to have come back spontaneously without being suggested by any perceived association of ideas?

b. Does such recovery of the lost idea ever come during sleep?

c. Does such recovery come after sleep?

4. Please give examples from your own experience, illustrating fully.

	1	2	3a	b	c
Whole number answering.	20	21	22	24	25
Those answering no.	21	12	11	14	21
Indefinite.	9	9	9	4	6
	Yes	Yes	Yes	Yes	Yes
General.	72	69	81	17	57
Men.	72	69	77	18	60
Women.	72	67	84	15	54
Under 25 years.	72	72	79	16	51
Between 25 and 30 years.	78	66	84	22	56
Above 30 years.	66	61	71	21	62

In the first two columns there is an apparent discrepancy due to disregarding fractions of one per cent. In the first column the general percentage is 72, that of the men 72, while that of the women is not, as the general percentage would seem to indicate, 72, but 73. The same variation is seen in the second column. The percentages in the vertical columns under b and c, with the exception of the first three in each column, are percentages of the number of those in each division who answer 3a affirmatively.

In the answers to 1 there is little variation except in the last two divisions. Those between twenty-five and thirty show a distinct rise, and those above thirty a fall in their percentage. Under 2 those under twenty-five are above the general percentage, those between twenty-five and thirty somewhat below, and those above thirty still further below. In 3a the women show a higher percentage than the men, and here there is again the distinct rise between twenty-five and thirty, while those above thirty are considerably below those under twenty-five. Under b a somewhat larger percentage of men than of women answer affirmatively; the percentage of those between twenty-five and thirty is about double the general percentage, while that of those under twenty-five is less than the general percentage. In c also the percentage of affirmative answers is larger among the men than among the women. Here there is an increase in the percentage of affirmative answers with increase of age.

A few examples, which are among those given in the papers under the general subject of the spontaneous recovery of ideas, may be interesting and are given below.

1. "This morning I endeavored to recall the names of the characters I had read of in one of Scott's novels the night before. I could remember but one, and then only with much effort. During the morning I was unable to recall any other character by name, although constantly endeavoring to do so. After teaching a Sunday school class, I walked home in the afternoon with my mother, and, without any effort, gave not only the names of the principal characters but many of the unimportant. I had not thought of the work for a number of hours."

2. "I was trying to think of the name of a book, and gave it up. About half an hour after, I was talking of something else when, all of a sudden, I started

out the name without any conscious volition on my part, or without thinking anything about the book at all."

3. "I have tried to think of the name of a person without success in the evening, and the next morning have had it come to me without any connecting ideas at all, but it just seemed to 'pop' into my mind."

4. "I was telling my sister of a young lady, but I could not remember her name, though I thought I knew it. At last I had to give it up, and after a while forgot all about it, though I could not at first force myself to think entirely of other things. For a time I was dimly conscious of trying to remember. The next morning the name suddenly flashed across my mind, apparently without being suggested by anything else."

Many other examples are given, and a number state that the phenomenon is of very frequent occurrence. Several of the answers give empirical schemes for recalling the lost ideas, such as running through the letters of the alphabet, or working up from connected ideas to the one required.

**Question II.** 1. Can you wake precisely at a given hour determined upon before going to sleep, without waking up many times before the appointed time?

2. If you can, (a) is this habitual, or do you often fail?
  - b. Are you conscious before waking of any feeling (describe it)?
  - c. Do you come directly from oblivion into consciousness?

	1		2a		c	
	Yes	Seldom fail	Often fail	Yes	Directly	Gradually
General	59	69	25	39	54	16
Men	62	69	28	33	56	16
Women	51	68	18	40	50	16
Under 25	68	66	22	38	62	12
Between 25-30	47	73	28	32	60	12
Above 30	61	68	15	16	64	20

Those who answer 1 are ninety-one per cent. of the whole number; those answering 2 is the negative, thirty-one per cent.; those answering indefinitely, one per cent. The percentages in the first vertical column are computed on the whole number in each division. The percentages in the other five columns are computed on the number of those in each division who answer 1 in the affirmative.

As regards the general percentages, the table shows that fifty-nine per cent. of those answering in papers possess the power of waking at a given time without being disturbed before. About two-thirds of these seldom or never fail in their attempt. Only about a third of them are conscious of any feeling as they wake, and about two-thirds wake directly. In the other division the important points appear to be as follows: A smaller percentage of women than of men possess the power of waking at a given time. Those of both sexes between twenty-five and thirty years are also far below the general percentage in the possession of this power. Those under twenty-five are above and those over thirty are about equal to the general percentage. There is a distinct decrease with increasing age in the percentage of those who often fail in their attempt to wake at a given time. A smaller percentage of women than of men wake with any special feeling, and those above thirty only about half as often as those below. A very large percentage of women wake directly, while men are rather below the general percentage. A larger proportion of persons above thirty than of those below wake gradually. The feeling of which some are conscious on waking is variously described, but

to in nearly all cases a troubled feeling, as some describe it, "a feeling that I must wake," "that something must be done," "that it is time to get up," etc. In answering g some of those who say they wake directly have a very distinct feeling at the time of waking, so that b and g are not mutually exclusive.

A few of the examples given are quoted.

1. "Yes, at an early or unusual hour, by repeating the three to myself once or twice before going to sleep. I seldom wake before the hour determined upon and never fall then."

2. "I was instructed by the attending physician with the administering of medicine to my wife, who was very dangerously ill. It was of the greatest importance that a certain medicine should be given every two hours as exactly as possible. I am an extraordinarily sound sleeper, but for six weeks I woke up every two hours methodically, and never missed giving the medicine. I always came directly from oblivion into consciousness. I was an exact and methodical during the first few nights as at the last."

3. "I have never overslept when my mind was charged before retiring."

4. "I can always wake at any hour I desire, usually a few minutes before."

5. "Always can wake just five minutes before the hour at which I set the alarm."

6. "I recall one instance more remarkable than any other in my own case. I had been broken of my rest every night for a week or ten days, and one evening retired at about nine o'clock, giving directions to be called at twelve o'clock. I fell asleep at once, and slept till twelve without waking. At that time something seemed to tell me it was twelve o'clock. I seemed to come from perfect oblivion to perfect consciousness. I rose and dressed just as the clock struck twelve. I was under the impression that some one had called me, and was surprised to learn that no one had spoken to me.

**Question III.** 1. When perplexed at your progress in any work (mathematical, professional, literary, chess, puzzles, etc.), have you ever left it unfinished and turned your attention to other things, and after some time, on voluntarily returning to it, have found yourself able at once to satisfactorily master it?

2. If you have, please give instances.

The answers to the first part are as follows: Ninety per cent. answer the question, seventy-seven per cent. affirmatively and twelve per cent. negatively. Of the men seventy-seven per cent. answer affirmatively, while the percentage in the case of the women is eighty. Those under twenty-five show a percentage of eighty-four answering affirmatively, those between twenty-five and thirty, eighty-one, and those above thirty only seventy-three, a distinct decrease with increase of age. About sixty-four per cent. of those answering are able to give examples of such an experience, while many others say they are sure they have observed something similar, but cannot recall instances.

A large number of the examples given relate to mathematics, a considerable number to the translation of foreign languages, and some to other work, such as essays, puzzles, etc. Some of the examples given will serve as illustrations:

1. "Often while playing chess or working an example I have not succeeded well. On returning after having left it for a while, what was difficult before seemed now very easy."

2. "In working mathematical examples in the evening I sometimes 'got stuck.' I leave it over night and take it up in the morning, and I often get the answer immediately. So in translation I find passages that I cannot get out. I study on them for a while and then leave them for several hours, or better sometimes days, and I can get them clearly."

3. "In writing music I often get to a stumbling-block, and try vainly to search for a chord or bar of music, but cannot find the thing I want. When it gets me very excited I leave it and go for a walk, and on coming back to work, I will most likely be able to write it out at once, seemingly without any work on my part; it is all ready for me to get down. I have frequently had the experience."

4. "I have come across a sentence that was particularly difficult in some Latin book I was reading, and have been unable to translate it. I have then turned my attention to abstract problems in mathematics, and worked for some time. On returning to the Latin I have often found it quite simple, and have sometimes translated it at sight."

Question IV. 1. During sleep have you ever pursued a logical, connected train of thought, upon some topic or problem, in which you have reached some conclusion, and the steps and conclusion of which you have remembered on awakening?

2. During a half sleep?

3. If you have, how does the result appear when measured by your normal standard of daytime mental activity, with regard to accuracy, etc.?

4. Please give examples illustrating your meaning in full.

The general answers are as follows: Sixty-three per cent. answer the first section of the question, fifty-nine per cent. have had or recall no such experience, while thirty-one per cent. answer affirmatively. The second section is answered by eighty-two per cent., fifty-four per cent. in the negative, and twenty-four per cent. in the affirmative. Seventeen per cent. state that the results appear about as good or better than those reached in waking life, while eighteen per cent. reach conclusions which are far less accurate or absurd.

In the other divisions there is little variation, so it is unnecessary to give all the figures. There are, however, one or two points worthy of note. Only twelve per cent. of the women remember having any logical or connected train of thought in a half sleep, but the general percentage is twice as large. The low percentage of the women here may be connected with the fact that a very large percentage of women wake directly, as was shown in the fourth section of the second question. On the other hand, twenty-four percent. of the women reach results which are at least fairly accurate, this being somewhat above the general percentage, which is seventeen. The percentages of the different ages do not vary far nor with any regularity from the general percentages, and are not given.

Examples under this question are given by forty per cent. of those who have had an experience in sleep or in a half sleep; the following are quoted as showing the degree of accuracy sometimes attained:

1. "I have played a game of chess in my sleep. The game seemed in my sleep to be entirely completed. In the morning I remembered all but one or two plays, and when I played the game over in the morning it seemed consistent. I do not think that I had ever played that game *i. e.*, a game with those identical moves before, and I could not play it now. I had been playing a great deal at the time, though, and of course had been thinking of chess when I went to bed."

2. "I have been puzzled by a problem in algebra which I found it impossible to solve, and let it rest over night, and while asleep have thought out each step and remembered it, and in the morning on trying the problem again, solved it without difficulty."

3. "Being greatly troubled over a problem in algebra just before going to sleep, and leaving the problem half finished, I dreamed the rest of the solution and obtained the correct result. On waking, I remembered it, and it was correct."

4. "In my senior year at college I had an essay to write that troubled me unusually. After trying to decide upon the subject until quite late, I fell asleep and

dreamed not only of the subject and analysis, but of all the details. The next morning I wrote out what I had dreamed, and found it far more satisfactory than anything I had ever done in the same line before."

"Two years before I had exactly the same experience about an equation in algebra which I worked out correctly in sleep."

5. "I have worked out many algebraic or geometrical problems during sleep. Here, when some years ago in Worcester Academy, scanned some fifty or seventy-five lines of Virgil not yet translated, except ten or fifteen lines; felt tired, went to bed, in sleep accurately translated all of it, and remembered it on waking."

6. "One evening had been working late on a hard geometry problem, and had failed to solve it. The next morning on awaking I remembered having dreamed of doing it and of obtaining the correct solution. I immediately went over the solution as I had in my dream, and found my reasoning all correct. If I had not thought of my dream immediately on waking up should probably have forgotten my solution, for it was even then hard to recall it."

7. "I had earnestly been trying to make a trial balance and had at last left off working, the summary of the Dr. and Cr. sides of the account showing a difference of £2 10s. 6d., the Dr. side being so much smaller. The error I had not found on Saturday night when I left the counting-house. On this same Saturday night I retired, feeling nervous and angry with myself. Some time in the night I dreamed thus: I was seated at my desk in the counting-house and in a good light; everything was orderly and natural, the ledger lying open before me. I was looking over the balance of the accounts and comparing them with the sums in the trial balance sheet. Soon I came to a small account having a debit balance of £2 10s. 6d. I looked at it, called myself sundry uncomplimentary names, spoke to myself in a deprecating manner of my own eyes, and at last put the £2 10s. 6d. to its proper side of the trial balance sheet, shut up and went home. Here the dream abruptly ended. I arose at the usual Sunday time, dressed carefully, breakfasted, went to call on some young lady friends, and to go to church especially with one of them. Suddenly the dream flashed on my memory I went for the keys, opened the office, also the safe, got the ledger, turned to the folio my dream indicated. There was the account whose balance was the sum wanted, which I had omitted to put in the balance-sheet where it was now put, and my year's posting proved correct."

**Question 2.** 1. Have you ever been conscious of having discovered something new, e. g., an invention, a literary or poetical creation, or a mathematical solution, etc.?

2. If yes, then has this flashed into consciousness in the form of a clear conception?

3. How many instances can you give?

Seventy-two per cent. answer the first section of the question, forty per cent. negatively, and thirty-two per cent. affirmatively. Of those answering affirmatively, seventy-one per cent. have the idea flash into consciousness in a clear and distinct form. The percentages of both sexes are like the general percentages. Twenty-eight per cent. of those under twenty-five years of age think they have made such a discovery, thirty-two per cent. of those between twenty-five and thirty, and thirty-seven per cent. of those above thirty. Sixty-eight per cent. of those under twenty-five who have made such a discovery state that it came as a clear conception, seventy-five per cent. of those between twenty-five and thirty so state, and sixty per cent. of those above thirty.

These answers show, as might be expected, an increase in the number of such discoveries with increase of age. The percentages of those who answer the



second section show an increase between twenty-five and thirty, while above thirty the percentage falls below either of the others. Perhaps this may be due to the greater ability of the adult's fully developed mind to seize upon a hint as a basis, and work out from it the new idea.

A few of the examples given are quoted.

1. "I can instance as frequent the smallest kind of literary creation, forms of verbal expression, what one may call an apt phrase coming to my mind suddenly, uncalled for, as if uttered by some one else, of no use to me at the time or perhaps ever."

2. "Many instances of mathematical or psychological problems have suddenly flashed across my mind when on a totally different subject; sometimes very distinct and sometimes indistinct, which I afterwards developed into distinctness."

3. "Have often awaked with part of an essay all ready, with a letter wholly prepared; once or twice with a few stanzas composed on subjects that I had not endeavored to treat in rhyme, once or twice also on subjects that I had not attempted or thought to write upon in verse."

4. "In one case I wrote a long piece of a rather satirical character, in easy rhythm, so fast as I could set down the words, and it needed little or no revision. Usually I am dissatisfied with my first copies."

Question VI. 1. On seeing a sight (e. g., on visiting a strange place) or on hearing a sound (e. g., yourself or another making a remark), have you ever felt that you had under previous identical circumstances experienced the same before?

2. If you have, then give instances.

3. Describe any general feeling that accompanied this flash of half intelligence.

	1	2
	Yes	Describe some feeling
General	59	47
Men	54	45
Women	71	71
Under 25	69	63
Between 25 and 30	41	52
Above 30	63	59

Eighty-eight per cent answer the first part of the question, twenty-seven per cent answering negatively, and fifty-nine per cent affirmatively. The percentages in the second vertical column are computed on the number of those in each division who answer 1 affirmatively.

As regards the first part of the question, women show a larger percentage in the affirmative than men. Those under twenty-five show a larger percentage than any other age, and one which is above the general percentage, while those between twenty-five and thirty show a much smaller percentage than any other age. In the third section the women again show a higher percentage than the men; those of both sexes between twenty-five and thirty give a very high percentage, and those above thirty are much below the general percentages. The answers to this section vary greatly as regards the nature of the accompanying feeling. Many call it a feeling of annoyance, perplexity or surprise. Some say they have almost a feeling of awe, and one or two call it uneasy.

Sixty-three per cent, of those who recall such an experience are able to give examples. The greater part of these relate to sights or sounds, i. e., remarks, etc., heard or scenes visited, pictures seen and the like. Two persons, however, state that they have had this experience in connection with the sense of smell, but

do not give definite examples. A few of the instances related will serve to show their nature:

1. "I have purchased a Chinese umbrella-stand which I know I never possessed before, nor can I recall ever having seen one like it. Yet it is impossible for me to see it without feeling that I have previously owned and used it."

2. "When driving over a new road in a part of the country where I had never been before, and of which I had never seen pictures, it seemed as though I had been over it before under perfectly identical circumstances."

3. "On meeting strange people, a word or look will convince me that I have seen the same thing done by the same person in similar circumstances."

4. "Sometimes I find places which seem to be places I have seen before, and I often find them to be places I have dreamed about."

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# SECTION PL: HALLUCINATIONS

Reports of hallucinations; that is, images that apparently do not exist in the objective sense; make up a large class of strange mental phenomena. This information cannot depend heavily upon individual (rarely group) testimony and thus cannot be tested as readily as psychic behavior, claims of hidden knowledge, and the possession of unusual information processing capabilities. Fraud is rather common here. Nevertheless, the immense quantity of reports suggest that many people "see things."

That some hallucinations are products of the subconscious seems certain. The hypnagogic illusions or "faces in the dark" that appear on the borderland between sleep and wakefulness probably fall into this category. Ghosts, visions, doppelganger, psychic lights, and some UFOs may be joint products of suggestion and the subconscious. So do the images seen in crystal balls, which are in essence optical paraffeties. The subconscious is a rich store of strange images which, like the outpourings of an automatic writer, are foreign to the normal conscious individual.

The dark mystery of hallucinations is likely to the extent that call forth and shape these images. Why do so many see ghosts, lights, UFOs, religious figures, and other well-defined categories of images?

- \*PLD Doppelganger, doubles
- PLF Faces in the dark, hypnagogic illusions
- PLG Apparitions, ghosts, visions
- PLH Out-of-the-body experiences
- \*PLI Psychic lights
- PLS Scrying and crystal balls

\*This subsection not included in Vol. PL.



## PLF-001 HYPNAGOGIC HALLUCINATIONS WITH CASES ILLUSTRATING THESE SAME MANIFESTATIONS

Yawger, N. S.: *Journal of Abnormal Psychology*, 13:73-76, 1918.

In medical writings it is seldom that more than mention is made of such hallucinations, though they are not of such uncommon occurrence and occasionally we are reminded as to their significance. From Dittus-trines down there always have been persons who beheld visions and history records many instances where men of genius have had either a single hallucinatory experience or have been subject to their occasional reappearance.

Hypnagogic phenomena were first studied and so named by the French psychologist, Maury; subsequently, the matter was given consideration by Kraepelin, and in this country it is mentioned by White but for the most part the subject has been left to psychologists.

These curious experiences are familiarly known as visions, and, though innocent in their nature, might be mistaken as heralding some grave mental disorder. In discussing the subject some writers have included phenomena of the special senses manifested upon waking; the derivation of the word hypnagogic prohibits this, and, furthermore, while experiences preceding sleep are mostly visual, those occurring upon waking are more likely to be associated with hearing.

By hypnagogic phenomena, hallucinations or visions, we understand those experiences, usually optical, of a few sane persons, observed during the transitional stage from waking to slumber and in which scenes or objects of various kinds pass rapidly before the sight. While in some individuals such hallucinations are observed with the eyes closed, in others they are seen with them open.

The character of the visions vary; at times they assume architectural forms, they may be of streets or of interior decorations and in other experiences persons are represented either singly or in groups. These recurring scenes are likely to be more or less of a similar character in each individual.

Case I. A female, aged 72, long a sufferer from chronic rheumatic arthritis but whose hallucinatory experiences antedates her invalidism. The visions were first manifested at 46 years, since then not often than once in two or three years and still less often of recent years. The sights appear only upon retiring and always with the eyes closed. They are of no particular type—Scenes from nature, different patterns of lace and sometimes human heads with distorted features. Once, this individual recalls seeing a castle with doors standing open. It appeared to her that she entered the structure and walked along a wide corridor and into a number of large vacant rooms.

Case II. This is of a gentleman, aged 47, of unusual intelligence and in exceptional health. Her own statement follows: The visions appeared first at about 15 years and have been continuous ever since at longer or shorter intervals. Sometimes they appear for several consecutive nights and then remain away for months at a time.

So far as I can judge they are not more likely to be with me when I am overtired or distracted in mind. I exercise no control over them as I have repeatedly endeavored to recall the sights but without success; again, when I least expect them they appear, though never until after having retired. In character they are panoramic, one scene appearing for a few seconds to be followed a moment later by a vision entirely different. I regard their development with great interest and enjoyment. At times when others have been in my rooms I have been pleased to entertain them with descriptions of these visions as they appeared

one by one. Though my eyes are closed, I know I am fully awake, also how could I describe the sights accurately at the time and furthermore have the power of recalling them long after?

My experiences are almost invariably of a pleasant nature and through many years there have been but few instances when I have met with decidedly unpleasant sights. These experiences are not the projected images of things previously seen or read but seem an entirely new creation. To me a singular feature is that the visions are invariably void of life---Never a living creature nor the image of one---All is so deserted and still.

As to the subjects of these visions: They are accessories from nature of various kinds, streets where I see rows of houses mostly of dark brown sandstone and of stately architecture, handsome rooms with beautiful furnishings and hangings, all of gorgeous hue and wondrous design. When I distinctly see interiors, patterns of tapestries and decorations, they are usually in oriental style. None all I see is so beautiful that I long for the power to reproduce it in reality.

Once, I vividly recall that suddenly there appeared lying upon a highly polished round-top table of about two feet in diameter and within easy reach of my hand, jewel, of oval shape and about four inches in its greatest length. This jewel was a most beautiful, rich, shining topaz, set in a golden scroll and in the center was a jet-black pulsating star. Soon the whole scene vanished from my sight.

More frequent but less elaborate experiences are with me as I waken. These are usually associated with hearing and consist for the most part of jabbering, incoherent words or snatches from sentences. A recent instance of this kind was my distinctly catching these words, "I paid my million dollar debt to E. P. Andre." To me these words are always meaningless since I can associate them with nothing in my past life.

In the latter case cited the visions began at 15 years and in the former at 40. This, according to Esner, is unusual. In speaking of such manifestations he says, "These are more marked in youth and as a rule disappear when adult life is reached." He quotes DeQuincy who writes, "I know not whether my reader is aware that many children have a power as if were of painting upon the darkness all sorts of phantasms; in some that power is simply a mechanical affection of the eye; others have a voluntary or semi-voluntary power to dissipate or scatten such phantasms; or, as a child once said to me when I questioned him about this matter, 'I can tell them to go, and they go, but sometimes they come when I don't tell them to come.'"

These manifestations do not have their origin in peripheral disturbances, they have been perceived in persons blind and deaf. Individuals having such experiences may be physically healthy and entirely sane. The phenomenon is just a state of mind and probably as far removed from disease or disorder as is dreaming.

One finds among psychologists various theories accounting for hypnagogic hallucinations. In some general discussion of analogous states James says, "Whenever the associative processes are reduced and impeded by the approach of unconsciousness, as in falling sleep, or growing faint or in becoming narcotized, we find a concomitant increase in the intensity of whatsoever partial consciousness may remain."

As to theories regarding hypnagogic phenomena---Some have considered them due to shutting off the drainage through association paths, thereby making more intense the activity of those cells that retain any activity, until finally the accumulation is so great that a sensory explosion occurs in the form of a vision.

Another theory lays stress upon the approach of dreaminess, at which time the sensations cease, consequently, we have an absence of their reductive power,

in other words, the channels of comparison being shut off, there is in operation no testing down process and thus the imaginary sights are permitted to spring into existence unopposed.

PLF-002 ILLUSIONS HYPNAGOGIQUES

Anonymous: Society for Psychological Research, Journal, 4:263, 1890.

To the Editor of the Journal of the Society for Psychological Research,  
 Sir, ---I should like to know whether the following experience, which seems to me in some respects analogous to crystal-vision, is at all common. I am a very light sleeper, and frequently begin to see dream images while my brain is so far awake that I can study them and register them in my memory. As far as I can make out, the process of their appearance is as follows: I close my eyes, and see the broken blotches of light on the dark ground of my eyelids, which are, I suppose, the remains of light impressions on the retina common to most people. Among these, ever since I was a child, the first direction of the attention to them always produces an appearance of moving brown sand, interspersed with little square fat black capital letters of which I have never been able to distinguish more than one or two. A friend of mine has the same experience, only that her letters are cubical and light brown. When these go out of the field of sight their place is taken by lines or threads of light, which arrange themselves into geometrical shapes, and thence into somewhat conventional leaves and flowers. These pass away into coloured masses, which suddenly quicken into definite pictures, the colours becoming vivid and the lines definite. I have seen a reddish mass suddenly become brilliant orange and take the shape of the pulp of a half-out orange, with one quarter taken out and lying beside it on the plate; or, again, I have seen a dim, non-luminous mass of colour suddenly light up into the picture of a brilliant evening sky, against which rose the head and shoulders of a cavalry officer in a red coat, riding in a country lane. Sometimes the quickening process is applied to the horns only; an irregular coil of the light thread I mentioned before has presented itself to me first as a serpent, next as an irregular circle of old rounded small blocks of stone, and my mind has hesitated as to which suggestion to accept. I do not think my dream pictures have ever moved or acted while I was sufficiently awake to register them in my memory; but it has been curious to watch the moment at which they become definite impressions on my retina, instead of mere suggestions of my conscious imagination. I have had the converse experience also, when the dream image has remained imprinted on my retina after waking. The fact of their thus quickening seems to me to give force to Mr. Myers' argument in last month's Journal, since the fact seems to supply all the machinery necessary for telepathic impressions on the mind to clothe themselves in visual form. ---I am, &c. (An Associate)

[Hallucinations of the type of which our correspondent's experiences are interesting examples have received the name of illusions hypnagogiques, and have been described by Mesny, Müller, and others. Mr. Gurney gives a general account of them and some instances in Phantasms of the Living, Vol. 1., p. 290, and p. 474, foot-note. ---Ed.]

## PLF-003      ILLUSIONS HYPNAGOGIQUES

W., A. M., et al: Society for Psychological Research, Journal, 4:274-278, 1906.

To the Editor of the Journal of the Society for Psychological Research.

Sir:—A letter in the May Journal on the above subject having interested me deeply, I am emboldened to address you, and to relate my own experiences, now I know that it has a really delightful scientific name.

During my mother's lifetime, she and I often discussed our "dream-faces," as we called them, for want of a better name, for we never saw them in our dreams, only when lying wide awake with our eyes shut. The faces usually melt into each other in such rapid succession that it is quite impossible to describe them quickly enough in words—such as "lovely face, golden hair, &c.; hideous face, glaring eyes, wrinkling grimaces, nose long and red; pale, cadaverous face, much lined; lawyer's face, wig and spectacles," and so on indefinitely. Last night, for instance, I had just put out my light, when I clearly saw, on a black background, a skull. I had the instant before been thinking of something wholly different, and nothing had happened all day to bring such an object into my thoughts. In fact, I had not time to think of it, before it vanished, and in a second was succeeded by a vision of angels. They departed as speedily, and were succeeded by the more prosaic procession of "faces." The odd circumstance about these latter is that though all are familiar and distinct, as no real face ever is to my short-sighted eyes, I could not put a name to one. I never saw a friend's face, nor that of a well-known personage, though I seem to have seen each face before. My mother saw only "faces," and imagined herself feverish when she did so. I see them at all times; but have never noticed them if I closed my eyes in the daylight when in health. Like your correspondent, I frequently see definite pictures too. Glorious sun or moon lighted landscapes, mountains and rivers, grand cathedrals, village spires—all of these, too, seem familiar, but I cannot remember to have ever seen them in reality. When ill of a fever in 1884, I saw exquisite faces and scenes, but instead of melting harmoniously into the next picture, a blood-red veil seemed to gradually descend, and to make each feature of face or landscape horrible or grotesque. So painful was the inevitable conclusion that I dreaded closing my eyes. This I remember happened in broad daylight, and I described each picture, as it came, to my husband, as I have often done since.

I hope this rather lengthy account will induce others to relate similar illusions, with a view to their being scientifically explained. Is it "each stuff as dreams are made of"?—I am, &c., (A. M. W.)

To the Editor of the Journal of the Society for Psychological Research.

Sir:—A letter on "Illusions Hypnagogiques" which is printed in the last number of the Journal of the Society for Psychological Research has greatly interested me. The fact is that I have had experiences of a similar kind almost as long as I can remember. I have always tried to discover whether everyone can see such mental images, or whether it is a characteristic feature of a few persons only; but I have never succeeded in making this point perfectly clear to myself.

I hardly ever see any distinct mental images now; but when I was a boy of 13 or 14 this faculty of mine was exceedingly developed. Every evening after I had gone to bed and had closed my eyes I began to see images of remarkable distinctness which followed each other ceaselessly. These images were always in motion, and there seemed to be some kind of intelligible relation between them—sometimes at least, I mean. If after having closed my eyes I had seen a flower, I could be perfectly certain that I should see flowers for some time, until another class of objects should take their place. As I have already said, these curious



Images were always in motion, and each of them was comparatively of very little duration.

As for the character of these images, so far as I can remember, I used to see flowers oftener than any other objects, and I am unable to account for this, as I have never liked flowers exceedingly. It is true that almost every year I used to spend five or six months in the country, where, of course, there were plenty of flowers. That there was---often at least---a connection between the objects I had seen during the day and the images I saw every evening is for me certain. I will give you an instance of this. One evening I saw almost all the time dry leaves covering the ground, with stalks of grass here and there. This must be unimmediately explained by the fact of my having spent a great part of the day in a forest, where, of course, I had had under my eyes almost all the time the same scene that I saw with closed eyes in the evening. In other cases straw-barring were the principal object that persistently remained in the field of my mental vision (as I think it must be called), and in that case these dry straw-berries had followed real ones which I had seen and eaten in the course of the day.

The distinctness of these curious images was often striking, and when, for instance, I saw images of my friends and relations, these images were far more like the real persons than what I could voluntarily represent to myself even if I tried to do so.

To show you how unexpected these images could be, I will tell you that once---I think I was then seven or eight years old---I was dreadfully frightened by the image of an ugly old woman suddenly appearing before my closed eyes. I had behaved badly during the day and had been sent to bed early; and, so far as I can remember, I considered this image and the fear that followed its appearance as a punishment which God had sent me for my bad behaviour.

I must add that I have never had any objective hallucinations, and even when these mental images continued---as they sometimes did---to flick before my eyes when they were open (in the dark, of course), I always knew them perfectly well to be merely subjective and mental.---I am, dear sir, yours very truly,  
(Michael Shtovoy)

To the Editor of the Journal of the Society for Psychical Research.

Sir,---The letter of "An Associate" deserves attention. May I suggest that members of the Society for Psychical Research who are light sleepers might follow out a series of interesting experiments on this subject. Some 20 years ago, in consequence of the pain of a slight surgical operation which hurt the nerves of one side of my head, I found I could, as it were, watch my own dreams. It seemed as though one-half of the brain were dreaming while the other was awake. The effect was like a theatrical representation. I noticed that the dreams formed very rapidly, and tried to time them by my watch, but found the effect of looking at the watch prevented my testing the question (so often mooted) of the length of time occupied in a dream.

May I ask these questions---

1. What is the cause of the white or light grey light one sees in closing one's eyes? I know many people who notice this light in rooms perfectly dark, and then as sleep comes on first geometrical forms and then figures. Shellers say that these form often into ships on the sea.)

2. Another point in dreams is, are the figures always complete? In light sleeping I have tried to notice this. Is not sometimes only the part developed to which we give attention---in fact, do we not often dream of bodiless heads or bodiless bodies?

3. Taste dreams are in my experience very common (though some people say they never experience them). The usual taste seems that of fruit. But dreams of smelling appear to me to be rare.

## PLF-004      APPARITIONS

Gurney, Edmund, and Myers, Frederic W. H.; *Nineteenth Century*, 15:770-815, 1844, and 16:44-55, 1844.

In the late Nineteenth Century, the Society for Psychical Research, in Great Britain, amassed an immense number of testimonies describing various psychic events. Similar stories appear frequently today in the popular and occult magazines, indicating that the forces that produce the phenomena still operate in the same way. Such "cases" are frustrating because they are not the kind of repeatable data that scientists like to have. Nevertheless, they are very common and are the foundation of much of man's belief in a psychic world. Three of these cases are reproduced below. See also

The next account was sent to us by the Rev. A. Shaw Page, Vicar of Selsey, Stonehouse, Gloucester, in the words of his sister, Miss Millicent Anne Page. We can unfortunately only summarize it.

I was staying with my mother's cousin, Mrs. Elizabeth Broughton, wife of Mr. Edward Broughton, of Edinburgh, and daughter of the late Colonel Mackenzie, in the year 1844, and she told me the following strange story:---

She woke one night and roused her husband, telling him that something dreadful had happened in France. He begged her to go to sleep again and not to trouble him. She assured him she was not asleep when she saw what she insisted on then telling him---what she saw, in fact. First a carriage accident, which she did not actually see, but what she saw was the result, a broken carriage, a crowd collected, a figure gently raised and carried into the nearest house, and then a figure lying on a bed, which she then recognized as the Duke of Orleans. Gradually friends collecting round the bed, among them several members of the French royal family---the Queen, then the King. All silently, tearfully watching the evidently dying Duke. One man (she could see his back, but did not know who he was) was a doctor. He stood bending over the Duke, feeling his pulse, his watch in his other hand. And then all passed away: she saw no more. As soon as it was daylight she wrote down in her journal all she had seen. From that journal she read this to me. It was before the days of electric telegraph, and two or more days passed before the *Times* announced 'The death of the Duke of Orleans.' Visiting Paris a short time afterwards, she saw and recognized the place of the accident, and received the explanation of her impression. The doctor who attended the dying Duke was an old friend of hers; and as he watched by the bed, his mind had been constantly occupied with her and her family. The reason of this was an extraordinary likeness---a likeness which had often led to amusing incidents---between several members of the Broughton family and members of the French royal family who were present in the room. 'I spoke of you and yours when I got home,' said the doctor, 'and thought of you many times that evening. The likeness between yourselves and the royal family was, perhaps, never so strong as that day when they stood there in their scenes, all so natural; father, mother, brothers, sisters, watching the dying son and brother. Here was the link between us, you see.'

## PLG-001 ARE THERE OBJECTIVE APPARITIONS?

Wallace, Alfred R.: *The Arcana*, 3:129-146, 1886.

Alfred R. Wallace, cofounder with Darwin of Evolution, summarized in admirable fashion the evidence for hallucinations and apparitions amassed by the Society for Psychical Research as of 1891. The testimony recounted is identical to that being collected today. In fact, the evidence is almost identical in character to much of that in the files of UFO researchers. Mainly, a phenomenon for phenomenon exists to be explained. In a second article in *The Arcana* (3:237-276), Darwin comes out in favor of the "spiritualism" hypothesis; that is, apparitions are due to the spirits of the departed. In this he joined Sir William Crookes, Sir Oliver Lodge, and other eminent scientists of the day.

Everyone who feels an interest in whatever knowledge can be obtained bearing upon the nature and destiny of man---and what intelligent persons does not? ---should be deeply grateful to those active members of the Society for Psychical Research in England and in America who have devoted themselves for many years to the collection of authentic cases of the various kinds of apparitions. These cases have been all personally investigated, as far as was possible; the evidence has been obtained either from the actual witnesses, or, where this was not possible, from those who received their personal testimony; corroborative evidence, in contemporary records of whatever kind, has been sought for, often at great cost of time and labor; and, finally, the whole body of facts thus accumulated has been systematically arranged, carefully discussed and published for the information of all who may be interested in the inquiry. \* If we add to this the evidence collected and recorded with equal care by the late Robert Dale Owen, by Dr. Eugene Crowell, and many other writers, we shall find ourselves in possession of a body of facts which ought to be sufficient to enable us to arrive at some definite conclusions as to the nature, origin, and purpose of those puzzling phenomena usually known as ghosts or apparitions, these terms being held to include auditory and tactile as well as visual impressions---the appearances termed "doublers" or phantasms of the living, as well as those purporting to represent or to emanate from the dead.

Before proceeding farther I wish to point out the inescapable obligation we are under to the Psychical Research Society, for having presented the evidence in such a way that the facts to be interpreted are now generally accepted, as facts, by all who have taken any trouble to inquire into the amount and character of the testimony for them---the opinion of those who have not taken that trouble being altogether worthless. This change in educated public opinion appears to be due to a combination of causes. The careful preliminary investigation into the phenomena of telepathy has seemed to furnish a scientific basis for an interpretation of many phantasms, and has thus removed one of the chief difficulties in the way of accepting them as facts---the supposed impossibility of correlating them with any other phenomena. The number of men eminent in literature, art, or science who have joined the Society and have contributed to its "Proceedings," has given the objects of its inquiry a position and status they did not previously possess; while the earnestness, the thoroughness, the literary skill, and philosophic acumen with which the evidence has been presented to the world, has compelled assent to the proposition that the several classes of apparitions known as doublers, phantasms of the living or the dead, spectral lights, voices, raptorial sounds, and the varied physical effects which occur in haunted houses, are real

\*In "Phantasms of the Living," 2v. 3vo, and the "Proceedings" of the Society from 1862 to 1890.

and not very uncommon phenomena, well worthy of earnest study, and only doubtful as regards the interpretation to be put upon them.

Some of the best workers in the Society, it is true, still urge that the evidence is very deficient, both in amount and in quality, and that much more must be obtained before it can be treated as really conclusive. This view, however, appears to me to be an altogether erroneous one. On looking through the evidence already published, I find that every one of the chief groups of phenomena already referred to is established by a considerable number of cases in which the testimony is first hand, the witnesses irrefragable, and in which the evidence of several independent witnesses agree in all important particulars. And, in addition to these unexceptionable cases, there are a whole host of others in which the evidence is not quite so complete individually, but which are so completely corroborative in their general character and which tell so little about of the very best kind of evidence that the cumulative weight of the whole is exceedingly great. I shall, therefore, waste no time in discussing the value of the evidence itself, but shall devote my attention entirely to a consideration of what the facts teach us to the real nature of the phenomena.

This is the more necessary because, up to the present time, the only explanation of the various classes of apparitions suggested by the more prominent working members of the Society, is, that they are hallucinations due to the telepathic action of one mind upon another. These writers have, as they state that they felt bound to do, strained the theory of telepathy to its utmost limits in order to account for the more important of the phenomena which they have themselves set forth; and the chief difference of opinion now seems to be, whether all the facts can be explained as primarily due to telepathic impressions from a living agent—a view maintained by Mr. Podmore,—or whether the spirits of the dead are in some cases the agents, as Mr. Myers thinks may be the case. But in order to give this telepathic theory even a show of probability, it is necessary to exclude or to explain away a number of the most interesting and suggestive facts collected by the Society, and also to leave out of consideration whole classes of phenomena which are altogether at variance with the hypothesis adopted.\* It is to these latter cases that I now wish to call attention, because they lead us to quite different conclusions from the writers above referred to, both as to the nature of apparitions and as to the agents concerned in their production.

The evidence which either distinctly suggests or affords direct proof of the objectivity of apparitions is of five different kinds: (1) Collective hallucinations, or the perception of the same phantasmal sights or sounds by two or more persons at once. (2) Phantasms seen to occupy different points in space, by different persons, corresponding to their apparent motion; or, the persistence of the phantasm in one spot, notwithstanding the observer changes his position. (3) The effects of phantasms upon domestic animals. (4) The physical effects apparently produced by phantasms, or connected with their appearance. (5) The fact that phantasms, whether visible or invisible to persons present, can be and have been photographed. Examples of each of these groups of cases will now be given and their bearing on the question at issue briefly discussed.

(1) Collective Hallucinations (so-called). Cases of this kind are very numerous and some of them perfectly attested. Let us first take that of the figure of

\* "Phantasms of the Dead from another Point of View" by F. Podmore, and "A Defence of Phantasms of the Dead" by F. W. H. Myers, in Proceedings of the Society for Psychical Research, Part XVI., 1896. In these papers the extreme telepathic theory is set forth by Mr. Podmore with admirable boldness and with full illustrations; and is forcibly combated by Mr. Myers, whose views as here expressed are, however, only a very little in advance of those of his fellow-worker.

a man seen repeatedly by Mrs. W\_\_\_\_, her son, a boy of nine, and her step-daughter. It was seen distinctly at the most unexpected times, as when playing the piano, when playing at cricket in the garden, and by two at once when playing at battledore and shuttlecock. A voice was also distinctly heard by both the ladies. The description of the figure by the two ladies agreed completely, and the appearance occurred in a house reported to be haunted.

Such an appearance as this, occurring to two ladies not at all nervous and who have never before or since had any similar experiences, and also to a boy when at play, seems almost necessarily to imply some real object of vision; yet they both, as well as Suzanne-Major W\_\_\_\_, are positive that the form could not have been that of any living person.

An equally remarkable case is that of the young woman, draped in white, which, at intervals during ten years, was seen by Mr. John D. Harry, his three daughters, their servant, and partially by the husband of one of the daughters. Mr. Harry saw it on seven or eight occasions in his bedroom and library. On one occasion it lifted the mosquito curtains of his bed this all occurred in a house in the South of Europe, and looked closely into his face. It appeared to all three of the young ladies and their maid at one time, but apparently in a more shadowy form. Here again, it seems impossible that so many persons could have a similar or identical vision without any corresponding reality.

Of another type is the female figure in white, which was seen on a summer afternoon, floating over a hedge, some ten feet above the ground, by two girls of thirteen and a boy. They watched it for a couple of minutes, passing over a field till they lost sight of it in a plantation. All were in good health, and had seen no apparition before or since. They were driving in a tax-cart at the time, and when the figure appeared, the horse stopped and shook with fright, so much so that they could not get it on. This last fact which will be referred to under another head, renders it almost certain that the figure seen was visually objective.

As a type of the auditory phenomena we may take the disturbances in the house of a clergyman which continued almost nightly for twenty years. The sounds were loud knockings or hammerings, often heard all over the house and by every inmate, and occurring usually from twelve to two in the morning. Sometimes a sound was heard like that produced by a cart heavily laden with iron bars passing close beneath the windows, yet on immediate search nothing was seen. Lady and gentleman visitors heard these varied sounds as well as the residents in the house, and, notwithstanding long-continued search and watching, no natural cause for them was ever discovered. In such a case as this it is impossible to doubt that the sounds heard were real sounds.

Equally remarkable is the case where a whole family and a visitor, in an isolated country house, heard a loud and continuous noise at the front door, which seemed to shake in its frame, and to vibrate under some tremendous blows. The servants, who were asleep in the back part of the house sixty feet away, were awake by the disturbance, and came running, half-dressed, to see what the terrific noise meant. Yet the house was enclosed within high railings and locked gates, and on an immediate search nothing could be found to account for the noise. The visitor, however, Mr. Garling, of Folkestone, who gives the account, had that afternoon seen a phantom of a friend he had left four days previously with his family all in perfect health; and at the time of the knocking, this friend's wife and two servants had died of cholera, and he himself was dying, and had been all day repeatedly begging that his friend Garling should be sent for. Here we may well suppose that the (perhaps subjective) phantom, having failed to bring the percipient to his dying friend, a violent objective sound was resorted to, which should compel attention by its being audible to a whole household.

(4) Phantasms whose objectivity is indicated by definite space-relations---

We now pass to a group of phantasms which still more clearly point to the actual objectivity of phantasms, namely, their definite space-relations as witnessed either by one or many percipients. Of this kind is the case, given in outline only, of a weeping lady which appeared to five persons, and on many occasions, to two of them together. The interesting point is, however, that indicated in the following passage: "They went after it (the figure) together into the drawing-rooms; it then came out and went down a passage leading to the kitchen, but was the next minute seen by another Miss D\_\_\_\_, to come up the outside steps from the kitchen. On this particular day Captain D\_\_\_\_'s married daughter happened to be at an upstairs window, and independently saw the figure continue its course across the lawn and into the orchard." Here it is almost impossible to conceive that the several hallucinations of four persons should so exactly correspond and fit into each other. A something objective, even if unsubstantial, seems absolutely necessary to produce the observed effects.

In the next case, a well-known English clergyman and author, of Boston, Mass.,---the late Rev. W. Mountford,---was visiting some friends in the Norfolk Sea, when a carriage containing his host's brother and sister-in-law, who lived near, was seen coming along the straight road between the two houses. The horse and carriage was recognized as well as the occupants, and was seen by the three persons looking on to pass in front of the house. But no knock was heard, and on going to the door nothing was to be seen. Five minutes afterwards a young lady, the daughter of the persons in the carriage, arrived and informed her uncle and aunt that her father and mother, in their chairs, had passed her on the road and, greatly to her surprise, without speaking to her. Ten minutes afterwards the real persons arrived just as they had been seen a quarter of an hour previously, having come straight from their home. None of the four percipients had any doubt as to the reality of the phantom carriage and its occupants till the real carriage appeared. We are not now concerned with the cause or nature of this extraordinary "double" or phantasm of the living, with their horse and driver; that will be discussed in another article. It is added here only in evidence of the objectivity of the appearances, showing that something capable of being perceived by ordinary vision did pass along the road near the house in which Mr. Mountford was staying when the event occurred.

(5) Effects of phantasms on animals.---We now come to a group of phantasms which, although frequently recorded in the publications of the Society of Psychical Research, have received no special attention as bearing on the theories put forth by members of the society, but have either been ignored or have been attempted to be explained away by arbitrary assumptions of the most improbable kind. It will, therefore, be necessary to refer to the evidence for these facts somewhat more fully than for those hitherto considered.

I have already mentioned the case of the female figure in white, seen by three persons, floating over a hedge ten feet above the ground, when the horse they were driving "suddenly stopped and shook with fright." In the remarks upon this case in "Phantasms of the Living" no reference is made to this fact, yet it is surely the crucial one, since we can hardly suppose that a wholly subjective apparition, seen by human beings, would also be seen by a horse. During the tremendous knocking recorded by Mr. Garling, and already quoted, it is stated that there was a large dog in a kennel near the front entrance, especially to warn off intruders, and a little terrier inside that barked at everybody; yet, when the noise occurred that wakened the servants sixty feet away, "the dogs gave no tongue whatever; the terrier, contrary to its nature, shook shivering under the sofa, and would not stop even at the door, and nothing could induce him to go into the darkness."

In the remarkable account of a haunted house during an occupation of twelve

months by a well-known English church dignitary, the very different behavior of dogs in the presence of real and of phantasmal disturbances is pointed out. When an attempt was made to rob the vicarage, the dogs gave prompt alarm and the clergyman was aroused by their fierce barking. During the mysterious noises, however, though these were much louder and more disturbing, they never barked at all, but were always found "cowering in a state of pitiable terror." They are said to have been more perturbed than any other members of the establishment, and "if not shut up below, would make their way to our bedroom-door and lie there, crouching and whining, as long as we would allow them."

In the account of haunting in a house at Hammerstein near London which went on for five years, where steps and noises were heard and a phantom woman seen,—"the dog whined incessantly" during the disturbances; and,—"the dog was evidently still afraid of the room when the morning came. I called to him to go into it with me, and he crouched down with his tail between his legs, and seemed to fear entering it."

On the occasion of a "wailing cry" heard before a death in a rectory in Staffordshire, a house standing quite alone in open country, "we found a favorite bull-dog, a very courageous animal, trembling with terror, with his nose thrust into some billets of firewood, which were kept under the stairs." On another occasion, "an awful howling followed by shriek upon shriek," with a sound like that caused by a strong wind was heard, although everything out of doors was quite still, and it is stated, "We had three dogs sleeping in my sisters' and my bedrooms, and they were all cowering down with affright, their bristles standing straight up; one—~~was~~ barking,—~~was~~ under the bed, and refused to come out, and when removed was found to be trembling all over." The remark of Mrs. Siddwick on these and other cases of warning sounds is that "if not real natural sounds, they must have been collective hallucinations." But it has not been shown that "real natural sounds" ever produce such effects upon dogs, and there is no suggestion that "collective hallucinations" can be telepathetically transferred to these animals. In one case, however, it is suggested that the dog might have "been suddenly taken ill!"

In the remarkable account by General Barter, C. B., of a phantasmal pony and rider with two native grooms, seen in India, two dogs which immediately before having stood in the brushwood jungle which covered the hill, came and crouched by the general's side giving low, frightened whimpers; and when he pursued the phantom the dogs returned home, though on all other occasions they were his most faithful companions.

These cases, given on the best authority by the Society for Psychical Research, can be supplemented by a reference to older writers. During the disturbances at Mr. Menzies's house at Tedworth, recorded by the Rev. Joseph Glass[?] from personal observation and inquiry in his work, "Sagittarius Triumphtus,"—"It was noted that when the noise was loudest, and came with the most sudden surprising violence, no dog about the house would move, though the knocking was oft so boisterous and rude, that it hath been heard to a considerable distance in the fields, and awakened the neighbors in the village, some of which live very near this."

So, in the disturbances at Epworth Parsonage, an account of which was given by the eminent John Wesley, after describing strange noises as of iron and glass thrown down, he continues—"Soon after, our large mastiff dog came and ran to shelter himself between them (Mr. and Mrs. Wesley). While the disturbances continued, he used to bark and leap, and snap on one side and the other, and that frequently before any person in the room heard any noise at all. But after two or three days he used to tremble, and creep away before the noise began. And by this the family knew it was at hand; nor did the observation ever fail."

During the disturbances at the Rectory of Abresburg in the island of

Ordeal, where collars were overtaken is looked upon, and the case was investigated by an official commission, the horses of country people visiting the cemetery were often so alarmed and excited that they became covered with sweat and foam. Sometimes they threw themselves on the ground where they struggled in apparent agony, and, notwithstanding the immediate resort to remedial measures, several died within a day or two. In this case, as in so many others, although the commission made a most rigid investigation and applied the strictest tests, no natural cause for the disturbances was ever discovered.

In Dr. Justina Karner's account of "The Seeress of Prevoratz," it is stated of an apparition that appeared to her during an entire year, that as often as the spirit appeared, a black terrier that was kept in the house seemed to be sensible of its presence; for no sooner was the figure perceptible to the Seeress than the dog ran, as if for protection, to some one present, often howling loudly; and after his first sight of it he would never remain alone at night. In this case no one saw the figure but the Seeress, showing that this circumstance is not proof of the subjectivity of an apparition.

In the terrible case of haunting given to Mr. R. Dale Ows by Mrs. S. C. Hall, who was personally cognizant of the main facts, the haunted man had not been able to keep a dog for years. One which he brought home when Mrs. Hall became acquainted with him (he being the brother of her bosom friend) could not be induced to stay in his room day or night after the haunting began, and soon afterwards ran away and was lost.

In the wonderful case of haunting in Pennsylvania, given by Mr. Hodson in The Aery, of September last (p. 418), when the apparition of the white lady appeared to the interested's brother, we find it stated: "The third night he saw the dog crouch and stare, and then act as if driven round the room. Brother saw nothing, but heard a sort of rattle, and the poor dog howled and tried to hide, and never again would that dog go to that room."

Now this series of cases of the effect of phantasms on animals is certainly remarkable and worthy of deep consideration. The facts are such as, on the theories of telepathy and hallucination, ought not to happen, and they are especially trustworthy facts because they are almost invariably introduced into the narratives as if unexpected; while, that they were noticed and recorded shows that the observers were in no degree panic-struck with terror. They show us unmistakably that large numbers of phantasms, whether visual or auditory, and even when only perceptible to one of the persons present, are objective realities; while the terror displayed by the animals that perceive them, and their behavior, so unlike that in the presence of natural sights and sounds, no less clearly proves that, though objective, the phantasms are not normal and are not to be explained as in any way due to trick or to misinterpreted natural sounds. Yet these crucial facts, which a true theory must take account of, have hitherto been treated as unimportant, and, except for a few casual remarks by Mr. Myers and Mrs. Sidgwick, have been left out of consideration in all the serious attempts hitherto made to account for the phenomena of phantasms.

(4) Typical affects produced by phantasms or occurring in connection with them.—There can be no more convincing proof of the objective reality of a Phantasm than the production of real masses or displacement of material objects. There is abundant evidence of such affects; but, owing to the method hitherto adopted by the chief members of the Psychical Research Society, of breaking up the phantasms into groups, and discussing each group separately as if it stood alone and had no relation with the rest of the phantasms, they have as yet received no attention. The curious circumstances that visual phantasms are often seen to open doors in order to enter a room, which doors are afterwards found to be locked and bolted, is supposed to throw doubt upon other cases in which doors really open; but every one who pays close attention to these questions must be convinced that phantasms are of many kinds, ranging from mere images on the



brain of a single person up to forms which are not only visible to all present, but are sometimes tangible also, and capable of acting with considerable effect on ordinary matter. Let us consider a few of these cases, taking first those recorded in the publications of the Society for Psychical Research.

The phantasm described by Dr. and Mrs. Gwynne was seen by them both to put its hand forward or over the nightlight on the mantelpiece, which was at once extinguished. On being relighted it burned for the rest of the night. Of course it is possible to explain this as due to a sudden gust of wind down the chimney, but why the only gust during the night occurred at the moment the phantom was seen by two persons to place the hand forward or over the light is not explained.

In the house at Haversham where a figure was seen and noises heard during five years, Mrs. R. also describes these signs, that on one occasion the curtains of her bed were pulled back, and, she continues, ---"frequently I had doors opened for me before entering a room, as if a hand had hastily turned the handle and thrown it open."

In another case of a haunted house, Mr. K. Z., said to be a man of reputation, stated that "doors opened and shut in the house without apparent cause," and "bells were rung in the middle of the night, causing all the household to turn out and search for burglars." Again, in a house where apparitions were seen by four persons, three persons sitting together in a room were attracted by the door creaking, "and we watched it slowly open to about one third, and it remained so." No such opening has been seen at any other time.

Dr. Eugene Crowell relates that in a house in Brooklyn a relation of his own several times had his hat struck from his head while descending the stairs or passing through the hall, and under circumstances which rendered the agency of any living person impossible. In the case already referred to, given by Mr. Hodgson in the September *Army*, doors frequently opened and shut, and pictures, clocks, and other articles were thrown down with a great crash in a room where there was no one at the time, while another picture fell in front of the lady as she was entering the room.

But all these cases are insignificant as compared with the evidence afforded by the bell-ringing at Great Bealings, Suffolk, and at other places, an account of which was published in 1841 by Major Moor, a Fellow of the Royal Society, in whose house they occurred. The ringing, in a violent, clattering manner, went on almost daily for nearly two months, during which time every effort was made to discover any natural cause for the phenomenon, but in vain. Major Moor states:---"The bells rung scores of times when no one was in the passage, or backbuilding, or house, or grounds unseen. Neither I, nor the servants, nor any one, could or can work the underment that I and more than half a score of others saw." And he declares finally:---"I am thoroughly convinced that the ringing is by no human agency."

The publication of his statement in the Ipswich *Journal* brought him accounts of no less than fourteen similar disturbances in various parts of England, every one of them equally unexplained. One of these was in Greenwich Hospital, and the account of this was given to Major Moor, by Lieutenant Rivers, R. N., a comrade of Nelson's. The bells in Lieutenant Rivers' apartments in the hospital rang for four days. The clerk of the works, his assistant, a bell-hanger, and several scientific men tried to discover the cause, but all in vain. They made every one leave the house; they watched the bells, the cranks, and the wires, but, just as in Major Moor's case, without becoming any the wiser. In another case, in a house near Chesterfield, long and repeated bell-rings continued for eighteen months. Bell-hangers and other persons watched and experimented in vain. The wires were cut, but still the bells rang. Neither the owner, Mr. Ashwell, nor his friend, Mr. Perkins of Nottingham, afterwards mayor of that town, nor any other person was ever able to discover, or even to conjecture any

adequate cause for the phenomena. In many of these cases the raving occurred in the daytime, and was repeated so often that ample opportunity was given for discovering the agency, if a human one. And the thing itself is so comparatively simple that there is no opportunity for a trick to be played without almost immediate discovery. Yet in none of these cases, nor so far as I am aware in any other at all similar to them, has any trick been discovered. They exist, therefore, he claimed as a form of haunting, comparable with the knockings and other disturbances so often connected with phantasmal appearances, and thus affording very strong evidence of the powers of phantasms to act upon matter.

(5) *Phantasms can be photographed, and are, therefore, objective realities.*—It is common to sneer at what are called "spirit photographs" because imitations of some of them can be so easily produced; but a little consideration will show that this very facility of imitation renders it equally easy to guard against imposture, since the modes by which the imitation is effected are so well known. At all events it will be admitted that an experienced photographer who supplies the plates and sees the whole of the operations performed, or even performs them himself, cannot be so deceived. This test has been applied over and over again, and there is no possible escape from the conclusion that phantasms, whether visible or invisible to those present, can be and have been photographed. A brief statement of the evidence in support of this assertion will now be given.

The first process through whom spirit photographs were obtained, was a New York photographer named Mander, who, in 1848, was arrested and tried for obtaining money by trickery and imposture, but who, after a long trial, was acquitted because no proof of imposture or attempt at imposture was given. But, on the other hand, evidence of extraordinary tests having been applied was given. A professional photographer, Mr. W. H. Slee, of Poughkeepsie, watched the whole process of taking the pictures, and though there was nothing unusual in Mander's procedure, shadowy forms appeared on the plates. Mander afterwards visited this witness' gallery, bringing with him no materials whatever, yet the same results were produced. Mr. J. Churney, a New York photographer of twenty-eight years' experience, gave evidence that, after close examination, no trickery whatever could be detected in Mander's process. Yet a third photographer, Mr. W. W. Silver, of Brooklyn, gave evidence to the same effect. He frequently went through the whole process himself, using his own camera and materials, yet when Mander was present, and strictly placed his hand on the camera during the exposure, additional forms besides that of the sitter appeared upon the plates. Here we have the sworn testimony in a court of law of three experts, who had every possible means of detecting imposture if imposture there were; yet they all declared that there was and could be no imposture.

It would be easy to give a score or more of cases in which persons of reputation have stated in print that they have obtained recognizable photographs of deceased friends when they themselves were quite unknown to the photographer and even when no photograph or picture of the deceased person existed. In all such cases, however, the objection is made that the figures are more or less shadowy and that the supposed likeness may be imaginary. I, therefore, prefer to give only the evidence of experts as to the appearance on photographic plates of other figures besides those of the visible sitters. Perhaps the most remarkable series of experiments ever made on this subject are those carried on during three years by the late Mr. John Beattie, of Clifton, a retired photographer of twenty years' experience, and Doctor Thomson, M. D. (Edin.), a retired physician, who had practised photography as an amateur for twenty-five years. These two gentlemen performed all the photographic work themselves, sitting with a medium who was not a photographer. They took hundreds of pictures, in series of three taken consecutively at intervals of a few seconds; and the results are the more remarkable and the less open to any possible suspicion, because there is not in the whole

series what is commonly termed a spirit photograph, that is, the shadowy likeness of any deceased person, but all are more or less rudimentary, exhibiting various patches of light undergoing definite changes of form, sometimes calculating in undefined human forms, or medallion-like heads, or star-like luminousities. In no case was there any known cause for the production of these figures. I possess a set of these remarkable photographs, thirty-two in number, given me by Mr. Beattie, and I was personally acquainted with Doctor Thomson, who confirmed Mr. Beattie's statements as to the conditions and circumstances under which they were taken. Here we have a thorough scientific investigation undertaken by two well-trained experts, with no possibility of their being imposed upon; and they demonstrate the fact that phantasmal figures and luminousities quite invisible to ordinary observers, can yet reflect or emit actinic rays so as to impress their forms and changes of form upon an ordinary photographic plate. An additional proof of this extraordinary phenomenon is, that frequently, and in the later experiments always, the medium spontaneously described what he saw, and the picture taken at that moment always exhibited the same kind of figure. In one of the pictures the medium is shown among the sitters gazing intently and pointing with his hand. While doing so he exclaimed: "What a bright light up there! Can you not see it?" And the picture shows the bright light in the place to which his gaze and pointing hand are directed.

Very important, as confirming these results, are the experiments of the late Mr. Thomas Mather, the optician of Euston Road, London, who obtained second figures on his plates when only his own family were present, and in one case when he was perfectly alone; of Mr. H. Williams, M. A., of Hayward's Heath; of Mr. Truall Taylor, the editor of the *British Journal of Photography*; and of many other professional or amateur photographers, who all agree that, with everything under their own control, phantasmal figures, besides those of the sitters, appeared on the plates without any apparent or conceivable mechanical or chemical cause.

In the cases hitherto given the phantasms or figures photographed have been invisible to all present except the medium, and sometimes even to them; but we have also examples of the photographing of a visible form, or apparition, occurring in the presence of a medium. A very successful photograph of a spirit form which appeared under strict test conditions, with Miss Cook as the medium, was taken by Mr. Harrison, then editor of the *Spiritualist* newspaper. An engraving from this photograph appears as a frontispiece to Epes Sargent's "Proof Palpable of Immortality," with an account of the conditions under which it was taken signed by the five persons present. Later on, Mr. Crookes obtained numerous photographs more than forty in all in his own laboratory, with the same medium; and had every opportunity of ascertaining that the phantom, which appeared and disappeared under conditions which rendered doubt impossible, was no human being, and was very different in all physical characteristics from the medium.

This long series of photographic experiments and tests, of which the briefest abstract only has been given, has been hitherto not even alluded to by the investigators of the Society for Psychical Research. But they cannot much longer ignore it, because they have entered on the task of collecting the whole of the evidence for psychical phenomena, and of fairly estimating the weight of each of the groups under which that evidence falls. Now I submit that this photographic evidence is superior in quality to any that they have hitherto collected, for two reasons. In the first place, it is experimental evidence, and experiment is rarely possible in the higher psychical phenomena; in the second place it is the evidence of experts, in an operation the whole details of which are perfectly familiar to them. And, I further submit, this evidence can no longer be ignored because it is evidence that goes to the very root of the whole inquiry and affords the most complete and crucial test in the problem of subjectivity or objectivity of apparitions. What is the use of elaborate arguments to show that all the

phenomena are to be explained by the various effects of telepathy and that there is no evidence of the existence of objective apparitions occupying definite positions in space, when the camera and the sensitive plate have again and again proved that such objective phantasms do exist? Such arguments, founded on a small portion only of the facts, remind one of that literary *jeu d'esprit*, "Historic doubts as to the existence of Napoleon Bonaparte"; and, to those who are acquainted with the whole range of the phenomena to be explained, are about equally convincing.

I have now very briefly summarized and discussed the various classes of evidence which demonstrate the objectivity of many apparitions. The several groups of facts, while strong in themselves, gain greatly in strength by the support they give to each other. On the theory of objective reality all are harmonious and consistent. On the theory of hallucination, some require elaborate and unsupported theories for their explanation, while the great bulk are totally inexplicable, and have, therefore, to be ignored, or set aside, or explained away. Collective hallucinations (so-called) are admitted to be frequent. That phantasms also behave like objective realities in relation to material objects and to different persons is also admitted. This is as it should be if they are objective, but is hardly explicable on the subjective or telepathic theory. The behavior of animals in the presence of phantasms, the evidence for which is as good as that for their appearance to men and women, is what we might expect if they are abnormal realities, but involve enormous difficulties on any other theory. The physical effects produced by phantasms (visible or invisible) afford a crucial test of objectivity, and are far too numerous and too well attested to be ignored or explained away. And, finally, comes the test of objectivity afforded by the photographic camera in the hands of experts and physicists of the first rank, rendering any escape from this conclusion simply impossible.

I have confined this discussion strictly to the one question of objectivity, a term that does not necessarily imply materiality. We do not know whether the luminiferous ether is material, or whether electricity is material, but both are certainly objective. Some have used the term "non-molecular matter" for the hypothetical substance of which visible phantasms are composed, — a substance that seems to have the property under certain conditions of aggregating to itself molecular matter, so that tangible or force-exerting phantasms are produced. But this is all theoretical, and we do not yet possess sufficient knowledge to enable us to theorize on what may be termed the anatomy and physiology of phantasms. There is, however, a broader question to be discussed, one on which I think we have materials for arriving at some interesting and useful conclusions. I refer to the general nature and origin of various classes of phantasmal appearances, from the "doublets" of living persons to those apparitions which bring us news of our departed friends or are in some cases, able to warn us of future events, which more or less deeply affect us. This inquiry will form the subject of another paper.

## PLG-002 ANGELIC INTERVENTION AT MONS

— Anonymous; Literary Digest, 51:234, July 31, 1915; 51:609-620, September 25, 1915.

A strange story that has gone abroad through England almost as widely as the rumor of the "war-bubbles" is that at the battle of the Mons the British were saved by angelic intervention. The heavenly hosts are said to have appeared on the side of the British, heartening them in their efforts and striking terror to the Germans. The story has found support from Dr. Horton, the well-known British Congregational clergyman, who mentioned it in a sermon. Both religious and secular papers are now discussing the credibility of such stories of miraculous intervention, and a Church paper like The Guardian is obliged to answer the protests of some of its readers against the warping it offered "in the matter of undue readiness to believe stories of the miraculous." The origin of the story now seems to be discovered in a "little essay in allegory" contributed to an evening paper by Mr. Arthur Machen. In a letter to The Evening News (London) the author himself confesses to the part he played:

"Some time in last September I was thinking of the terrible and heroic retreat from Mons. It is many years since I have told a tale, but somehow there was a fire in that history that burned in me, and made me wish that I could celebrate it in some poor fashion. And so the tale of "The Bowman" came into my head. Very, very briefly, it is the story of the British troops at the point of agony and despair, hopelessly outnumbered in men and guns. One of our soldiers invokes the help of the champion of England, St. George. St. George brings up the spirits of the Agincourt bowmen in array, and the German host is annihilated by their ghastly arrows. That is all. It was quite a simple, ordinary little legend of the battle-field, and I wrote it and dismissed it, and wished I could have made it better. I may say, once for all, that I had heard no kind or sort of rumour of any spiritual intervention during the retreat from Mons, nor any faintest echo of such rumour. "The Bowman," as printed in The Evening News, was invention as much as any story can be invention. Everybody would have felt that the tale was true. The clergy said so. The Army said so. The occultists said so. All sorts of vague authorities--'an officer,' 'a soldier,' 'a correspondent'---were quoted to show that the incident of spiritual intervention, or something very like it, had actually happened. The names of these witnesses were not given."

Dr. Horton, it now appears, was satisfied by evidence "not first-hand or even second-hand." But Mr. Machen, after going to see him, found that in any event Dr. Horton holds that such a case of spiritual intervention is "eminently credible." Mr. Machen quotes the clergyman as saying:

"I was more particularly disposed to believe in the story of the angelic apparition during the retreat from Mons, from what I heard myself from an army reader. He told me that all the men who were in that retreat were changed men. They had all prayed, and they had all felt a sense as of spiritual uplifting; and so the tale seemed to me congruous with their experiences."

The New Statesman (London), one of the newer English weeklies that treat mainly of politics and literature, lends a hospitable ear to the story, viewing it in the light of many accepted instances of angelic participation in the affairs of men:

"Poor Joan of Arc saved her country and lost her life owing to the vision of an angel. It is not the vision but the voices that figure most in her story, but it all began with a vision. When she was in her thirteenth year she was running a race with some other girls who were watching sheep with her in a meadow, when she ran so fast that her feet did not seem to be touching the ground, and one of the other girls cried, 'Voanna, I see you flying close to the earth.' When she was

resting afterward a youth spoke to her and told her to go home, for her mother needed her. This youth was really an angel, for when she went home she found her mother had not sent for her at all, but was angry with her for leaving the sheep. . . .

"The story of Jeanne d'Arc is at least as incredible as the story of the angels at Meuse, and yet how many of us in our hearts disbelieve it? Jean with her angels, like Socrates with his demon, is a figure too vital in the grave possession of history to be dismissed with a lofty constance of unbelief. The human imagination, at any rate, will not surrender the world of angels without a struggle. Do we believe in angels? Do we disbelieve in them? We know nothing."

The Canadian, in its editorial capacity, reminds its correspondents, however, of the common danger of confuting two very different things:

"They fail to realize that the line to bread which separates belief in a general possibility from belief in a specific alleged event. He would be a poor Christian who did not believe in the possibility of celestial intervention in human affairs; but he is perfectly satisfied—he is, indeed, bound—to refuse credence to a supposed particular instance of such intervention unless and until he is satisfied that there is good evidence to support it. In the case of the angels of Meuse, vast numbers of people were ready to pledge their faith to something for which they had no evidence whatever—something which we now know, as an absolute certainty, did not occur. We last week entered a protest against this readiness to believe without evidence, and the explanation which was forthcoming almost before the ink was dry upon our protest is our complete justification. In this case the will to believe was, with many people, stronger than the evidential sense. In such matters we all have the will to believe; but we inquire rather than help religious by overreadiness to accept current talk as conclusive evidence. The system of concealment—sometimes absolutely necessary, sometimes merely silly—upon which this war is being conducted has encouraged large crops of wild rumors, none of which has been too stupid to strain credence; and it would be disastrous if those who are unassailably satisfied that all human events have spiritual antecedents showed themselves ready to believe a rumor simply because it had a peculiarly obvious and immediate spiritual bearing. It is very much our duty to protect the sacred agony from vulgarization, and we are failing in that duty when we pin our faith to that which, for aught we know, is mere chatter, or, as in the case of the angels of Meuse, an indirect echo of a clever and deliberate imagining. Nothing is more natural or more human than to long, in difficulty or emergency, for a sign from Heaven; yet such a longing is a mere negation of faith, for, after all, it is by faith and only very seldom by sight that we have to walk. 'Faith is the substance of things hoped for, the evidence of things not seen.'" (P. 210)

No phenomenon of religious psychology has of recent times been so wide-spread and marked in its results as the reputed incident of the "angels of Meuse." The story of angelic appearance and participation in that engagement in Belgium, saving the British force from annihilation, has been told in these pages. But what is especially remarkable is the diversity of opinion in England regarding the story. "To many thousands of people unshakable evidence of the objective reality of the phenomena which are stated to have occurred would almost compensate for the horrors of the war itself," declares The Christian Commonwealth (London) in a long editorial. "It would strengthen their religious faith, which has been greatly weakened by the war, and would reinforce belief in the justice of the cause for which so many men fell during that magnificent retreat and almost miraculous recovery on the banks of the Marne." On the other hand, we are told that there are "constitutional skeptics and many serious students and religious teachers who would regard it as an intellectual disaster if such a story gained general credence." Because—

"They fear a return of superstition. It has, indeed, been said that democratic liberty in Europe would be dearly purchased at the price of a revival of belief in angels, supernatural interventions, and miracles. We can easily believe, however, that there are multitudes of reasonable and intelligent men and women to whom these stories appeal, as they do to us, not as evidence of a naive and child-like disposition to believe in signs and wonders—and to imagine them if they do not spontaneously appear—but as evidence of the persistent desire to identify our human concerns with some larger purpose and meaning. These stories prove that man is essentially religious, even if they do not prove that religion finds an objective sanction in them. They testify to the natural egotism of the natural man, who must bring God into his affairs, and who derives a peculiar spiritual satisfaction from stories which still await satisfactory demonstration of their objective truth."

The Moss story, says the writer in recapitulation of much already printed, "presents a curious mixture of circumstantial statement that might conceivably be true and of literary fancy that is admittedly fiction":

"Mr. Ralph Shirley, editor of The Great Britain, has assembled all the relevant data in a little pamphlet entitled 'The Warrior Angels at Mons.' He is obliged to begin with the literary fiction. On September 29 of last year, Mr. Arthur Machen, a well-known Fleet Street journalist, wrote in the London Evening News a story called 'The Bowman,' since published in book-form with other legends of the war. Mr. Machen quite frankly declares that his story was pure fiction; it describes the experience of a British soldier who finds himself one of a thousand comrades holding a salient during the retreat from Mons, and trying to stem the advance of ten thousand German infantry. The British know that their position is hopeless, but they mean to hold that salient. In the fighting one of the soldiers remembers the motto that appears on all the plates at the vegetarian restaurant in St. Martin's Lane, 'Adul Anglia Spectat Georgia!' (May St. Georgia be a present help to England!). He utters the prayer mechanically, and instantly falls into a waking vision. In that vision he sees the spirits of the old English bowmen, who come to the rescue of the soldiers; their arrows darken the air as they shoot, and the Germans melt before them. This is Mr. Machen's story, and in reply to an inquiry from Mr. Shirley he has stated quite plainly that it had no foundation outside his own fancy; in fact, much of his time since has been taken up in printing and publishing denials that his narrative was founded on fact."

But the stories, Mr. Shirley discovers, were widely current in France at the actual time of the retreat from Mons, nearly a month before the journalist published his story:

"We select typical narratives, not all of them from Mr. Shirley's pamphlet. A lance-corporal, subsequently wounded and now in an English hospital, told his nurse of his experience on or about August 28; he declares that he saw in midair 'a strange light,' which became brighter until he could discern three shapes. "One in the center having what looked like outspread wings; the other two were not so large, but were quite plainly distinct from the center one. They appeared to have a long, loose-hanging garment of a golden hue, and they were above the German line facing us." Other men, he asserts, saw the vision. In other narratives the luminous cloud is always mentioned, and it is said in one that bright objects seemed to be moving in the cloud: "The moment it appeared the German outflankment received a check. The horses could be seen rearing and plunging, and ceased to advance."

"One of the most circumstantial stories is that of Private Robert Cleaver (No. 19515), of the 1st Cheshire Regiment, who made deposition on oath before Mr. George S. Harbésart, a magistrate in the county of Flint, on August 29 of

this year. He stated: "I personally was at Mons and saw the vision of angels with my own eyes." His story, recorded by Mr. Hazlehurst, is that things were at the blackout with our troops, who were lying down for cover behind tufts of grass when the vision came between them and the German cavalry. "He described it as a "flash," says Mr. Hazlehurst. "I asked him if the angels were mounted or winged. He could say no more than that the appearance was as a "flash." The cavalry horses rushed in all directions and were disorganized; the charge frittered away, but it was quite sufficient to harry the German cavalry." Rev. A. A. Boddy, vicar of All Saints', Sunderland, who lately returned from the front, declares that he has had several opportunities of investigating the stories. The evidence, he says, is not always direct, was remarkably cumulative, and came through channels which were entitled to respect. Mr. Shirley also records an apparition of the Virgin Mary on the night before the Russians went into the battle of Augustovro in October, 1914.

None of the stories, it is pointed out, can by itself supply proof of an objective intervention of angels at Mons.

"They stand much on a level with the singular stories of 'Visions, Pre-Visions, and Miracles in Modern Times,' described by Mr. E. Howard Grey in a book bearing that title which makes its opportune appearance just now. This volume is full of details of psychic phenomena akin to the Mons stories. It records, for example, the lights in the sky seen by many people during the Welsh Revival, and contains much about predictive dreams, prophecies, visions, and various signs and wonders, associated with great political and military events, of which there is a superabundance in literature. The extraordinary frequency of such supernatural phenomena in times of crises and change is noteworthy. It suggests a possible explanation which people independently persuaded of the truth of all that range of experience which the Psychological Research Society exists to investigate will not find it hard to accept. Given belief in the view stated so simply and confidently by Swedenborg—that man is so constituted that he is at the same time in the spiritual world and the natural world—and it is not difficult to imagine that in times of great spiritual excitation man becomes aware of presences and powers to which in their normal lives they are strangers. Swedenborg said again, with equal simplicity and confidence, that the spiritual world is where the angels are, and the natural world is where men are; but modern psychical research has done nothing if it has not proved the interpenetration of these two worlds, and has supplied the evidence that occult forces emerge within our world in ways beyond our knowing.

"The skeptic can, of course, dismiss such stories as that of the angels at Mons as mere crude superstitions—which is an attitude at once unscientific and negative. That position attracts us as little as the rather pathetic position of those who seek quasilegal testimony to the existence of a spiritual world, in which our own world lies enfolded, by inviting soldiers to make affidavits in proper form. Whether supernatural manifestations were seen in the skies at Mons is, of course, a matter to be decided by eye-witnesses, and the more eye-witnesses there are the better. But we would not build our faith in a spiritual world, which is the center and source of all our life, upon documents presented in legal form. The ultimate test of the value of these stories is, not whether they can be proved to be objectively true—there is, indeed, in the desire to prove them literally true something parallel to the materialism which denies the possibility of their being true—but whether they are consonant with the conception we have framed of the universe, and whether they enrich real spiritual religion. Granted that the reports of the external appearance of angels at Mons have not been established, is it unreasonable to regard the persistence in all ages and lands of such stories and the readiness with which they are credited as witnessing to a great spiritual reality?" (pp. 659-674)



## PLG-003 ANGELS AND UFOs

Bord. Colls: Flying Saucer Review, 18:17-19, September-October 1972.

It now appears very likely that the UFO phenomenon of lights in the sky has been with mankind for at least as long as there are written records. Some researchers have suggested that religious reports of messengers from God are also an aspect of the historical UFO scene.<sup>1</sup> The difficulty in correlating these reports with current reports of visiting UFO entities lies in the lack of detail in the Biblical accounts. This is not really surprising when one remembers that to the original writers the importance of the account lay in the message and not the medium. A report of a Biblical type of visitation written with the detail and observation more approximating to that of a present-day witness could be of greater assistance to researchers than the vague descriptions found in the old religious documents that are normally at their disposal. I believe that such reports do exist, and the experience of contactee Joseph Smith form one case that is worthy of our consideration.

Joseph Smith was the poorly educated son of a farmer living in the state of New York, who claimed that between the years of 1820 and 1823 he was contacted by various entities who told him they were angels and saints, and whom he believed to be such. It was a time of religious unrest among the simple agrarian community, and Methodists, Baptists, Presbyterians and others exerted continuous pressure upon the unsophisticated population in order to gain converts for their own particular sect. The 14-year-old farmer's son was not a little confused by the claims of the opposing groups, and decided to seek some form of guidance by retreating alone to a secluded woodland glade to pray. To his astonishment, he felt himself being overcome by some unknown influence and unable to move or speak. He was about to succumb to what, he felt sure, was a malignant force, when a pillar of light, brighter than the sun, appeared above his head and gradually descended until it touched him. The malignant force was dispelled and before him appeared two glowing personages, whose feet did not touch the ground. After his initial amazement, a long conversation ensued, and to his enquiry as to which of the contending sects he should join, they replied "None," and indicated that one was an workless as another.

At the end of the interview Joseph "came to himself" and found that he was lying on his back, gazing skyward. As were others later, he was anxious to spread the news of his experience, and as with the twentieth-century contactees, he met with disbelief, contempt, derision and hostility. But he was unshaken in his conviction that he had met and conversed with holy personages from the realm beyond this earth.

After this initial contact, nothing further occurred for three years until one night while Joseph was in bed, a glowing entity appeared in the room "standing in the air." This being announced himself as Moroni, a messenger from God, and told Joseph that there was work for him to do which would cause him to become famous, or infamous, on a worldwide scale. In Smith's own words: "my name should be had for good and for evil among all nations, kindreds and tongues, or that it should be both good and evil spoken of among all people." Moroni then told him where he would find a book of gold plates that had been buried centuries earlier. It told of the history of the earlier inhabitants of the American continent, and of the time that Christ had lived with them and taught them. He was not to obtain the book then, but would be told when the time was right.

The room began to darken and the glowing individual ascended in a column of light. But the excitement of the night had not finished. In fact they could hardly be said to have begun, for while Joseph was still thinking about this

amazing visitation, the room began to brighten once again, and the same entity reappeared at his bedside. Without the least variation he repeated his previous performance, and then added some prophecies regarding war, famine and pestilence that were seen to fall upon the world. He then retreated as before.

By now, Joseph Smith was deeply impressed and, abandoning sleep, he lay there, overwhelmed by the recent occurrences. And yet a third time the glowing personage appeared and again went through the same message, and this time warned Smith against having any ideas of obtaining the gold plates for his personal gain. This, he was told, would not be allowed to happen. With that, the figure of Moroni disappeared in the same manner as before.

It was by then daylight, the contact having taken the whole night to complete. Even so, the indoctrination was not yet finished. The following day Joseph found himself to be weak and exhausted, and was unable to work. His father saw his incapacity and sent him home, and as he was crossing a field, he fell unconscious upon the ground. Once again the same messenger appeared, and once more related the message that had been given three times during the night. At the end, Moroni told Smith to return to his father and tell him what he had seen and heard. The father was convinced of the reality of his son's experience, and told him to do as he had been instructed. So Joseph Smith went to the adjacent hill and found the inscribed gold plates within a stone box buried in the ground. He was told to leave them there for four years, but to return on the anniversary of that day every year. He did so, and each time was met by Moroni who gave him instructions on how he should organize his church once the gold plates had been recovered and rendered into English.

The numerous correspondences between this story and many of the features encountered in present-day contact cases will be evident to all ufologists who have given such cases more than casual attention. As the spirit of that time was predominantly of an evangelizing religious nature, the manifestation was presented in a religious context, just as it is today when simple Catholic peasant children are used to spread a message, as has occurred at Patina, Garabandal and several other places. This approach would not meet with much success if used in contacting members of the general populace of the Western world today who have no strongly-held religious beliefs, but as the predominant belief of our society has been based on the efficacy of science, it might be expected that a contactee would be presented with the phenomenon in a scientific context, and this generally seems to be the case. Bearing this essential difference in mind, we can examine the similarities between Joseph Smith's experiences and those of present-day contactees.

A reasonably well-authenticated report which contains elements of both the religious/supernatural and the scientific space-craft presentation occurred in South America in 1915. Luminous beings descended from a landed aircraft while the local Indians who were present worshipped them with uplifted arms. A message of peace and goodwill was conveyed by the "space beings", who returned to their craft and took off in a blaze of light.<sup>2</sup> Another relevant case involved Williamsen, a Mexican taxi-driver who met two mysterious persons who had appeared while he was repairing his broken-down vehicle. After all three had spent the night sheltering inside the car from the rain, he accompanied them to their craft and noted that while he floundered and squelched through the swampy ground, the feet of the two aliens did not touch the ground but walked above the muddy surface.<sup>3</sup> Beams of light are a frequent occurrence in contactee and landing cases, and have, according to the witnesses, been used by aliens as a means of egress and ingress.<sup>4</sup>

The initial paralysis (akinesia) as originally reported by Joseph Smith can be paralleled in various contact cases. Notable among these is the case of the

however grew Maurice Masse<sup>5</sup> who was not only temporarily paralyzed by his contacts, but subsequently suffered the after-effects of exhaustion, as did Joseph Smith. There are numerous cases of paralysis being experienced during a contact, and some of these include the contactee lapsing into an unconscious state.<sup>6</sup> In two of the cases previously cited<sup>7</sup> as examples of the use of light beams by entities, the contactees were paralyzed during part of the contact.

A number of contactees have been given prophecies of coming doom, sometimes in a Biblical context as was Joseph Smith, but others on a more personal or immediate level. Doro Kraspedon is one such contactee that comes to mind whose contact had Biblical connotations, while more immediate doom prophecies were given to Felipe Martinez who, along with his family, was promised salvation when the rest of humanity is burnt up.<sup>8</sup>

The interval of weeks, months, or even years between the initial contact and subsequent visits has been a feature of a number of grip contactee stories (by "grip" I refer to contactees who claim numerous meetings with "space-men" who have gained the confidence of the contactee, as opposed to those contactees who have had one brief and possibly traumatic contact experience). Orfeo Angelucci had his first UFO sighting in 1946 and contact was initially made during 1952 followed by meetings at one- or two-monthly intervals.<sup>9</sup> Howard Mengar claims his first sighting occurred at the age of eight in 1939, and two years later he had his first contact experience. He was not contacted again until 1942, when he was doing army training--an interval of ten years.<sup>10</sup> Joseph Smith's visitant did return on the date that had been promised, but many contactees are told that there will be a return visit which in fact never occurs.<sup>11</sup> Similarly, contactees are told of missed landings which will take place on specific dates in the future, but which have also failed to materialize.<sup>12</sup> The term "bedroom visitants" has been coined by John Keel to describe entities who appear at night to contactees,<sup>13</sup> and Joseph Smith's experience seems to fall into the same category as the cases referred to in note 11 as well as other cases that are on record.

Joseph Smith did dig up the book of golden plates and he also translated them, with the aid of an untranslated device that he found buried with them, which was termed the Urim and Thummim. In 1830 he published his translation, which is known as The Book of Mormon and became the bible for his new church. He pre-figured the book with an account of his experiences, and with a statement signed by three witnesses to further visitations that happened to them and Smith in 1838, and another testimony from another eight witnesses who had handled and examined the gold plates. These, said Joseph Smith, were later collected by Moroni.

As a proselytizing contactee, Joseph Smith was probably one of the most successful ever. From the original group of six friends, his organization grew to hundreds in a few weeks and within a matter of months had a membership of thousands. It has continued to grow, and today the Church of Jesus Christ of Latter-day Saints, often known as the Mormon Church, has something in the region of three million members and is a worldwide organization.

For the rest of his short life, Smith suffered the experiences of most known contactees, but as he lived in a less tolerant society than ours, he met with rougher treatment than the contactee of today. Apart from the usual ridicule heaped upon him by the press of the day, he and his followers suffered continual harassment at the hands of clergy-inspired mobs, and were frequently forced to move from established settlements to fresh territory. He was imprisoned in 1844, and while awaiting trial, the mob broke into the jail and shot and killed him.

The crucial point in such an experience as Smith's would seem to be after the initial contact. If the "space people" decide that the contactee is a suitable subject they may then set about making the contactee one of their own. If they decide he is not suitable, the contact is not pursued and the contactee is left with a ridiculous story and prophecies which fail to materialize. Those whom they

do take under their wing may find their lives being controlled and directed to an unprecedented degree. The intelligences who adopted Howard Menger frankly told him that they had manoeuvred him into some of the bloodiest fighting in the Pacific operations of World War II. They had decided that their message would command more attention and respect from the American public if it were voiced by a war hero than if it came from an individual who had not been endangered fighting for his country's freedom.<sup>14</sup> Other contactees have said that during a meeting with a UFO they experienced a period of blackout when operations were performed on their brains or body, and subsequently they were unable to use their free will on all occasions. They feel they have been "programmed."<sup>15</sup> The ultimate fate of Joseph Smith was probably known and even planned many years before his murder.

The study of the teachings of Smith, Menger, and other individuals, both contemporary and from history, and the effect upon humanity of these teachings, is a necessary part of research into the contactee syndrome. To decide just what the contacting intelligences are trying to achieve is far from easy. If one accepts the doctrine that this life we know on earth is but one of many that we will eventually have experienced, then to have it taken over and controlled by others may not necessarily be considered an unbearable usurpation of free will. For those who believe that they have no other life than this, it is an utterly outrageous imposition. Researching into the methods and motives of these non-terrestrial intelligences brings one face to face with significant questions. Would the answers to these questions reveal the nature and ultimate purpose of mankind on this planet?

#### References:

- <sup>1</sup> Flying Saucers Through the Ages by Paul Thomas, published 1965 by Neville Spearman Ltd. The Bible and Flying Saucers by Harry H. Dowling, published 1967 by J. B. Lippincott Co., U.S.A.
- <sup>2</sup> The Humanoids, edited by Charles Bowen, published 1968 by Neville Spearman Ltd., p. 159 (case 42 in "The Humanoids in Latin America").
- <sup>3</sup> The Humanoids, p. 58 (case 4 in "The Humanoids in Latin America").
- <sup>4</sup> For accounts of typical reports, see FSR, Vol. 15, No. 2, p. 21; FSR, Vol. 14, No. 6, p. 2, and The Humanoids, p. 104 (case 20 in "The Humanoids in Latin America"). Also, contactee George van Tassel in a TV interview on the Long John Nebel Show in New York reported that in 1953 when he was contacted in the desert by a saucer crew he entered the machine, which was hovering above the ground, by stepping into an "anti-gravity" light beam in which he floated up into the saucer. In FSR, Vol. 17, No. 6, p. 24, "Uproar in Brazil", there are two cases of unwilling contactees being levitated and held for some time in mid-air in a beam of light.
- <sup>5</sup> FSR, Vol. 11, No. 4, pp. 6 and 8; FSR, Vol. 14, No. 1, p. 6.
- <sup>6</sup> The Humanoids, pp. 51 and 52 (cases 149 and 158 in "The Pattern Behind the UFO Landings"); p. 111 (case 44 in "The Humanoids in Latin America"); p. 131 (Riverdale Incident in "UFO Occupants in the United States").
- <sup>7</sup> FSR, Vol. 14, No. 6, p. 2, and Vol. 17, No. 6, p. 24 (previously quoted in note 4).
- <sup>8</sup> The Humanoids, p. 111 (case 44 in "The Humanoids in Latin America"). This case has already been cited in note 6 as an example of paralysis. (See also FSR, Vol. 18, No. 4, p. 66.)
- <sup>9</sup> The Secret of the Saucers by Orfeo M. Angelucci, published 1965 by Amberst Press, Amherst, Wisconsin, U.S.A.
- <sup>10</sup> From Outer Space to You by Howard Menger, published 1968 by Scepterian Books, Clarkburg, West Virginia, U.S.A.
- <sup>11</sup> FSR, Vol. 17, No. 6, p. 18.

- 12 The Harassment, pp. 111 and 118 (cases 44 and 54 in "The Harassment in Latin America").
- 13 UFOs---Operation Trojan Horse, by John A. Keel; see index for "bedroom visitants".  
Also see Harvard Canyon, FSR Special Issue No. 2---"Return of the Monster" by Jerome Clark, p. 85.
- 14 As note 10.
- 15 "Strange Transformation" by Hans Lauritzen in Outpost, published by Gene Duplantier, 12 Sheppard Street, Willowdale, Ontario, Canada; and FSR, Vol. 17, No. 8, p. 24.

Other sources used: Joseph Smith's introduction to The Book of Mormon and literature from the Church of Jesus Christ of Latter Day Saints.

#### PLG-004 "NEGATIVE HALLUCINATIONS"

d'Abadie, Antoine; Society for Psychological Research, Journal, 3:219, 1892.

I am often teased by what you very properly call negative hallucinations. After searching in vain for my pen, folder, letters, &c., which I know to have remained undisturbed on my table, I give up the useless task, begin another parcel and on returning to my table find easily everything where I had left it. I attribute this infirmity to old age, which forgets easily recent events while remembering those of childhood.

Two months ago I was returning by rail from Biarritz, and being alone in the wagon with my wife I mentioned the Bidart tunnel. She stopped me by saying, "There is no tunnel here; we ought to have passed it five minutes ago. How I have perceived neither darkness nor the rattling noise; are you conscious of either?" After a few minutes trying to remember, I quite agreed with her. On getting home the same evening I called a man before her and asked him to enumerate all the tunnels between Hendaye and Bayonne. He quoted amongst them the one near Bidart and we were both reassured. I quote this as a hallucination, of sight and hearing in two persons at once.

#### PLG-005 "NEGATIVE HALLUCINATIONS"

D., T.; Society for Psychological Research, Journal, 3:144, 1891.

It is always instructive to trace the analogy between hypnotic phenomena and the actions which take place during ordinary states of consciousness, and the following appears to me to be a case in point.

I was engaged in some amateur carpentering work, and in the course of it I laid down the two foot rule I was using upon the carpenter's bench. Shortly afterwards requiring to use it again I looked for it, but it was gone. Surprised at its disappearance I distrusted my own memory and concluded I must have

deposited it elsewhere, and accordingly searched all round the room. Not finding it I returned to the bench and this time instituted a most careful search all over it, but to no effect. Thoroughly baffled I hunted about the room again, and finally turning to the bench a third time, I at once saw the robe lying in the most conspicuous place possible, spread open, and on the top of everything else, plainly visible from every part of the room. Something like this has happened once or twice to me before in my life, but never to the same extent.

I do not know whether any physiological explanation could be afforded for the inevitability of the foot rule. If it could, it would be of a kind equally applicable to negative hallucinations in general. But whatever may be the process involved, the real interest of the case seems to me to lie in the rationality of it. Mental abstraction and indifference to sensory impressions have always been considered to be dependent upon the concentration of the attention on other matters, but the peculiarity of the case above named is that it was just the reverse of this. Instead of my attention being absorbed in other ways, it was entirely fixed on the effort to find the foot rule; indeed, the loss was of such an irritating kind, owing to the interruption of my work, together with the knowledge that the instrument must be close at hand all the time, that I felt a kind of exasperated earnestness in seeking for it.

The case may throw some light, I think, upon some cases in which articles are stated to have been mysteriously removed and replaced, and these movements attributed to the agency of "spirits." It is well to exhaust natural explanations before assuming supernatural ones.

#### PLG-006 STRANGE DREAM PHENOMENON

S. W. J. : Nature, 18:389, September 6, 1877.

After reading the interesting letter on a "Strange Dream Phenomenon" which appeared in Nature (vol. xvi. p. 328) it occurred to me that it might be worth while to put on record the following experience which connects in a very striking manner the phenomena of dreaming and subjective vision. Some time ago, when rather tired by overwork, I dreamed during the night that some one had entered my bedroom and was approaching the pillow under my head with the intention of abstracting some valuable papers which I fancied were concealed beneath it. I noticed in every particular the dress, stature, and features of the intended robber, but just as he put forward his hand towards the bed I began to awake, slowly at first, but with great celerity as soon as I perceived the figure of my dream walking slowly down the side of the bed; wide awake now, I watched it reach the corner bedpost, turn round, and with measured noiseless step pass along the foot, till on coming between the window and myself it disappeared, as all the "ghosts" with which I was then afflicted were wont to do when shone through by the light.

I did not sleep any more for the rest of the night, and hence am perfectly certain that this was not "a dream within a dream," but a clear case of a subjective vision prolonged from the sleeping into the waking state, and thus affording evidence to prove the essential identity which underlies the phenomena of "dreaming-dreams" and seeing "ghosts."

## PLO 001 APPARENT DUALITY OF CONSCIOUSNESS UNDER MORBID CONDITIONS

Stevens, C. E. G.: Society for Psychological Research, Journal, 4:291-344, 1934.

There is a strong similarity between this incident and an out-of-the-body experience. Two less interesting cases occurring under "morbid" conditions are omitted.

With the above we may compare the following case of a vivid and somewhat complicated impression of dual personality, occurring apparently in the absence of any morbid condition whatever.

The Hollies, Murthyr Tydfil, December 29th, 1891.

In the early part of January, 1890, I was at Aberdeen, reading for my second professional examination in medicine. I was in good health, not in any grief or anxiety, and had not been overworking. At that time I was 33 years old.

One afternoon I had been reading notes on surgery, and was resting on the sofa in the room in a semi-recumbent posture. I was thinking over the reading for the next day, and arranging my times in next lecture hours. In the room were two friends of mine, H. T. H. and R. N. de B. H. was writing at the table, De B. was at the piano playing some operatic airs. De B. left the room and went out of the house. Shortly after this I felt much in the same condition that one does in a bad nightmare. I was unable to move in any direction, but felt bound hand and foot. I, however, could move my eyes in any direction, and I could also open and shut my eyelids easily. I was quite conscious of everything in the room, and noted the time, 3.42, looked at the note-book in front of H., and saw that he was transcribing Materia Medica notes, and in fact I was well aware of every single thing going on in the room.

I then began arguing in my mind as to whether I could possibly be asleep or not. I remained in this condition for nearly three minutes by the clock. I had a continual feeling all this time that some other force was "inhibiting" my movements. This force seemed to act, and seemed to be concentrated at a spot about a yard away from me. It seemed to be situated at a level of my shoulders, and slightly behind me.

Whilst arguing with myself as to whether I was asleep or not, I suddenly seemed to divide into two distinct beings. The force that occasioned this was that which I have described above. One of these beings remained motionless on the sofa; the other could move some little distance, and could actually look at the motionless body on the sofa. There existed between these two "beings" an elastic force which prevented the one from severing its connection with the other. At will I could make the second "being" lie on the floor, or move some distance about the room. As the distance between the two beings became greater, so did the elastic force seem to become more powerful. A limit was soon reached at which no effort of will could effect a further severance. This limit was about two yards. When this limit was reached, I could feel resistance to the separating efforts in both "beings."

During this time, as before, I retained perfect consciousness of what was happening in the room. De B. had returned. I saw and heard him come in; he commenced to play the piano again, and H. was making wry faces at the music. After a great effort I managed to call H.'s name. He looked round and went on writing. Afterwards he gave as his reason for not answering that he thought I was "fooling" him.

The dual condition continued for five minutes more. Then fusion seemed to set in. I resisted the feeling of fusion. It could be prevented at will. Eventually, with a curiously to know "what was going to happen next," I allowed it to proceed. The two beings then rapidly united again. I tried to get into the dual condition again. This seemed to be prevented by the same force that "inhibited" me at first.

I then began to think out a theory to account for all these sensations, and during this time the inhibiting force grew weaker and gradually disappeared. There was no sensation of waking, but simply a slow cessation of the conditions. The whole time I was actively engaged not only in theorizing, but in recording events in the room, to see whether I observed them accurately or not. As it turned out, my observations had been minutely correct. I continued to remain in the same position on the sofa; I was anxious to see "if anything more was going to happen." Nothing did happen, so in the course of ten minutes I got up and related my experiences to my friends. They were much amused, but very much inclined to doubt the whole affair. Their idea seemed to me to be that I had been all this time manufacturing something to tell them.

I am now in practice as a medical man. I have inquired of many people with regard to such phenomena as I have described. None as yet whom I have asked have experienced anything of the kind. This is my apology for communicating the above to you.

I have seen in my practice a case of epileptiform dual personality, but I do not think that my experiences have anything in common with such cases. My idea was at the time that probably the motor centres of my brain were asleep, the rest of the brain being in a fairly active condition.



## PLS-001 EXPERIMENTS IN CRYSTAL VISION

Anonymous; Science, 14:312-314, 1899.

There is a general tendency, whenever a notion is relegated to the rank of superstitions, to regard all interest in the matter as ending there. Such an attitude neglects to distinguish between error founded upon a false observation of facts and error founded upon a false interpretation of facts; it neglects to consider as well that the origin of this superstition also needs explanation. A superstition is rarely a purely fanciful notion spun from the inner consciousness, but usually contains, though often in a scarcely recognizable form, an element of interesting and perhaps important knowledge. It is with a full appreciation of this latter point of view that an anonymous lady writes in the recently issued number of "The Proceedings of the Society for Psychological Research" upon the phenomena of crystal-vision, and reviews these in the light of sagacious experiments of her own. The phenomenon, though simple, has a very ancient and varied history. It consists in gazing into a crystal, a drop of water, polished metal, a gem, or even the flagstone, and seeing there reflected certain appearances usually to be interpreted as of prophetic significance. The custom is very widespread in the Orient both in the most ancient and in modern times. It has been found among savages; it has been counted as an instrument of the Devil, it has received noble treatment at the hands of the learned before the courts of princes. Like most such customs, it has been surrounded with mystic and religious proceedings, and its exercise controlled by elaborate and fanciful directions. The Assyrians, the Hebrews, the Greeks, the Romans, were acquainted with the process, and give evidences of its use. In early Christian times those who read the future by gazing into a mirror received the title of "scopularii." They appear in a church council convened by St. Patrick in 450, while we have a list of procedures against them as heretics in the twelfth century. Although Thomas Aquinas attributes this power possessed by some children to the "work of the Devil," and though a special condemnation of it was made by the theological faculty of Paris in 1298, the art continued, and in the sixteenth century reached its zenith under the auspices of a court physician or a university professor. Catherine de Medic consulted a magician, who showed her in a mirror how long her nose would occupy the throne. The topic was brought into prominence by the work of Dr. Dee, a very entertaining personage, under whom the process was systematized, and produced wonderful results. Dr. Dee and his associate, one Kelly, of dubious repute, see spirit visitors in their crystal or stone-screens who are described in all detail. Moreover, they hold long conversations with them, though what they learn from the "angelicall beings" is often mere "heremon-like stuffs." The storm is "of that value that no earthly kingdom is of that worthiness as to be compared to the vertue of dignity thereof." It is brought to him by angels; it is miraculously restored to him; it is placed in a sanctuary, and shown with great ceremony. We read of many other uses of the crystal: we have instructions whereby to have a spirit enclosed in a crystal stone or beyl glass; and from these medieval notions we have almost a continuous line of the process down to modern times.

Considering the function of the crystal strictly as a means of concentrating the gaze, our rather attempts to follow the course of these visions by analogy with other hallucinations, and regards them as consisting mainly of (1) "after-images or recedescant memories, often rising thus, and then only, from the subconscious strata to which they had sunk;" and (2) "as objectivations of ideas or images consciously or unconsciously in the mind of the percipient." "The tendency of the conscious memory is so strongly in favor of picture-making,

that we may naturally assume this habit on the part of that which is latent or sub-conscious. Thus, at any rate, in case for the lady in question; for she is gifted with a remarkably power of visualization, that goes far to explain her success at crystal-vision. When desirous of describing a room in a friend's house, she tells us, "I return in recollection to the occasion of my last visit. I once more occupy the same chair. The carpet at my feet becomes visible, the furniture nearest to my seat, gradually the whole contents of the room, till walls and ceiling complete the picture, and I am able to give an inventory which would not disgrace an auctioneer's clerk." The exercise of this faculty, and especially with regard to phenomena of the unconscious, seems to be much aided by fixation of the attention upon the crystal. To quote from the record of experiments, "Here, for example, I find in the crystal a bit of dark wall covered with white jasmine, and I ask myself, 'Where have I walked to-day?' I have no recollection of such a sight, not a common one in the London streets; but to-morrow I will repeat my walk of this morning with a careful regard for crevices covered walls. To-morrow solves the mystery. I find the very spot, and the sight brings with it the further recollection that at the moment we passed this spot I was engaged in absorbing conversation with my companion, and my voluntary attention was pre-occupied." Or, again, "I had carelessly destroyed a letter without preserving the address of my correspondent. I knew the county, and, searching in a map, recognized the name of the town, one unfamiliar to me, but which I was sure I should know when I saw it. But I had no clue to the name of house or street, till at last it struck me to test the value of the crystal as a means of recalling forgotten knowledge. A very short inspection supplied me with 'H. House' in gray letters on a white ground, and, having nothing better to suggest from any other source, I raised posting my letter to the address so strangely supplied. A day or two brought me an answer, headed 'H. House' in gray letters on a white ground." Again, "The quantity of association, as in all cases of memory, plays an active part in this class of crystal-vision. One of my earliest experiences was of a picture perplexing and wholly unexpected, --- a quiet oak chair, an old hand, a worn black coat-sleeve resting on the arm of the chair, --- slowly recognized as a recollection of a room in a country vicarage, which I had not entered and but seldom recalled since I was a child of ten. But whence came this vision? What association has conjured up this picture? What have I done to-day? . . . At length the clue is found. I have to-day been reading Dante, first enjoyed with the help of our dear old vicar many a year ago." After these instances (and there are many more in some of which the crystal is purposely resorted to, and often successfully, to see if there be any unconscious information regarding the whereabouts of a missing prescription or a lost key), we may agree with the writer, and "see result of crystal-gazing is to teach one to abjure the verb 'to forget' in all its moods and tenses."

Examples of the objectification of recent sensations are given, but the point is clear enough without instances. Although the author regards recent impressions as a less important element of her dream life and her visualizations than older experiences, she can see the less-crete a group of figures, and put them in the crystal to see what they will do, "and so far is one's conscious a stranger to one's unconscious Ego, that I sometimes find their little drama so startling and unexpected that I watch the scene with curiosity and surprise." One more instance may be added. The author wanted the date of Professor Philadelphia's fall, sure that she knew it and connected it with some important event, but could not recall it. The crystal showed her an old man, "dressed like a Lyceum Strylock," and writing on a big book with massive clasps. Wondering who he was, she decided to carry out a suggestion, and look at the image through a magnifying-glass. The glass revealed the characters as Greek, though the only

characters recognized were the numerals "LXX." Then it flashed on my mind that he was one of the Jewish elders at work on the Septuagint, and that his date, 177 B. C., would serve equally well for Ptolemy Philadelphus. It may be worth while to add, though the fact was not in my conscious memory at the moment, that I had once learned a chronology on a mnemonic system which substituted letters for figures, and that the mnemonic technique for this date was, "Two Jewish elders (and a Greek copy)."

Our author adds a possible third class of crystal-vision, concerning which she speaks with becoming caution and uncertainty; namely, those that may be connected with telepathy, clairvoyance, and other doubtful faculties. It is true that historically this use of crystal-vision is the most important; and, if we could credit the evidence of wonderful facts revealed by this means, we would indeed have to call in other means of explanation than those science affords. But the methods of using this form of vision for purposes of more or less conscious deception are so various, and lie so close at hand (indeed, our author cites some pertinent cases in which prophetic powers ascribed, alleged to a crystal-seer, were shown to be grounded by the exercise of very ordinary precautions, that we need hardly have recourse to outward hypotheses as yet. As is well remarked, "It is easy to see how visions of this kind, occurring in the age of superstition, almost irresistibly suggested the theory of spirit-visitations. The percipient, receiving information which he did not recognize as already in his own mind, would inevitably suppose it to be derived from some invisible and unknown source external to himself." A large class of prophecies, too, and in their own fulfillment; and, in brief, this aspect of the topic presents nothing peculiar to itself, and may be dismissed with the mention of it already made.

We have illustrated in this study the subtlety of the relation between the conscious and the unconscious mental processes. We see what a small proportion of the endless impressions that stream in upon us through the avenues of sense are consciously added to our mental storehouse, and what a very much larger portion must be at the service of those lower strata of consciousness that at times rise so unexpectedly and so mysteriously into the locus of attention. And finally, just as much of the mystery that surrounded the mesmeric phenomena fell away when men looked for their explanation, not in some peculiar gift of the mesmerist, but in the psychophysical constitution of the subject, so the phenomena connected with crystal-vision become psychologically rational when we seek their explanation, not in the magic properties of the crystal, but in the mind of the seer.

#### PLS002 THOUGHT TRANSFERENCE BY MEANS OF CRYSTAL-VISION

Grieve, B. H., et al; Society for Psychological Research, Journal, 10:134-136, 1901.

The following is a case of collective crystal-vision, in which there is no indication that the pictures seen were derived from any source external to the minds of the percipients; it seems rather to have been a purely fancy scene, arising casually in the mind of one of them and transferred, apparently by telepathy, to the mind of her companion. The case is especially interesting on account of its bearing on the general theory of collective hallucinations, since it indicates that the sharing of a hallucination by two or more persons is no proof that the hallucination had not a merely subjective origin; and we print it partly for this reason, and partly in the hope that it may stimulate some of our readers to try experiments on the same line.

The account was sent to us through the kindness of Mr. Andrew Lang, one of the percipients, Miss Grieva, being a niece of his; it was received on October 11th, 1901. Miss Grieva writes---

The Leakeowen, Halsowen, Gloucestershire.  
On June 24th C. and myself were reading eagerly together. C. took the crystal ball and I looked over her shoulder---both of us merely wondering if we should see the same thing. At the same moment the ball darkened, a white cloud came over the whole, and three pyramids appeared, a large one in front, the other two behind. Then a train of carrels, some with riders, others being led, passed from left to right and disappeared behind the large pyramid. The vision lasted about one minute, and vanished simultaneously for both of us. We each wrote down as the things appeared, so as to be accurate; and I had no thoughts of pyramids in my mind. H. H. Grieva.

Miss Grieva's friend gives her own recollections of the vision as follows---  
On the 24th day of June, 1901, H. G. and myself were looking up muscles for an exam, and we had the crystal ball on the table.

We both looked into it casually, and I at least had no definite thoughts in my mind, when simultaneously we saw some pyramids appear, one large one in front and others behind, seemingly in a row, and coming round from the left to right a train of carrels appeared. On the first one was a man, whose features I could not distinguish, as he was muffled up. Most of the other carrels had large packages on their backs and were led. The procession passed slowly round the pyramid and then all vanished.

Another day I was looking into the ball by firelight hoping to see a favourite coffee dog that had died a year previously.

The ball turned all black at first, then a light spot appeared in the centre and gradually spread nearly all over the ball. In the centre of this was a true portrait of the dog,---perfectly life-like. The vision only remained a few seconds. Catherine Coad.

The second vision described by Miss Coad seems to show a special faculty as her part of vivid visualisation; it was, therefore, especially important to ascertain whether any conversation took place between her and Miss Grieva during the course of the vision, which might have suggested to her the same scene. In reply to questions on this point, and as to the notes made at the time, Miss Grieva writes to us:---

October 11th, 1901.

... I am sorry to say I cannot send you the rough notes we made at the time; we left them here (at the college) last term and cannot find them anywhere now. ... The descriptions were written immediately after seeing the vision, but before either of us said anything, and we did not speak while the vision lasted. ... Bertha H. Grieva.

Mr. Andrew Lang gives in *The Making of Religion*, pp. 88-93, a case in which "Miss Angus" and a friend of her saw exactly similar visions in the crystal. But from their accounts it does not seem certain that verbal suggestion was altogether excluded, as the seers did not entirely refrain from discussing the visions while they were seeing them.

Miss Grieva has sent us an account of another case in her own experience, in which, after an examination in anatomy and before the results came out, she saw in the crystal a list of names written on a sheet of paper. The first three names were clear, but the rest illegible. Shortly afterwards she dreamt that the same three names were at the top of the list; and when the actual list came out the three first names appeared as in her dream. But as there were only ten candidates altogether, of whom Miss Grieva herself was one, she does not, of course, attribute any importance to this vision.

# SECTION PP: PSYCHIC BIOLOGY

The control of mind over body is more amenable to scientific study than many aspects of parapsychology. Psychosomatic medicine, in fact, is not usually considered part of parapsychology, although the mechanism of the placebo is certainly as strange as the forces that drives the hand of the automatic writer or outja board user. Perhaps these mechanisms are related as well.

Everyone of course knows that mental attitude can affect physical well-being; headaches disappear and so do other aches and pains when mental conditions improve. The factor that makes this subject suitable for this sourcebook is the apparent degree of control of mind over body; as in miracle cures, voodoo death, and the raising of blisters and stigmata by suggestion. It is almost as if mind is all-powerful whether one talks of health or the interface with the outer, supposedly objective, world.

- PPB Body control
- \*PPC Pain control
- PPF Fire walking
- PPH Hyperperception. Conscious and unconscious abilities to perceive external stimuli.
- \*PPI Poison tolerance
- PPM Miracle cures, placebos
- PPP Abilities of perception. Synaesthesia, chromaesthesia, etc.
- PPS Stigmata and skin writing
- \*PPV Voodoo death. Hexing and rootwork.
- \*PPW Hair bleaching and loss

\*This subsection not included in Vol. P1.



## PPB-001 THE INFLUENCE OF SUGGESTION ON BODY TEMPERATURE

Hatfield, J. A., and Oron, M. A.: Lancet, 66-68, July 16, 1920.

More than two years ago I published in this journal a paper describing experiments in which blisters were produced by hypnotic suggestion. Since that time I have made the same attempt in perhaps half a dozen cases without success. But I have recently had under observation another case of the same kind in which a blister was formed even more rapidly than in my previous case. I do not propose to describe this experiment, for it was not dissimilar to the last. This case, however, showed a very remarkable susceptibility to suggestions of heat and cold, which was not purely subjective, but produced a rise and fall of temperature as measured by the thermometer. The temperature of both hands was taken with the bulb of the thermometer held firmly in the middle of the palm, and found to be---right, 92°F.; left, 90°F. Then suggestions of "cold" were made relative to the left arm. Subjective feelings of cold were felt immediately, but no change in temperature took place for three minutes. Then the temperature began to fall, till it reached 85° in the left hand, whilst it remained at 88° in the right. This change took place in the course of ten minutes, and the thermometer was still descending when suggestions of "warmth" were made, which restored the temperature to 88° in the right hand.

Later in the day a much greater change of temperature was obtained by suggestion. The patient was taken out for a five-mile walk without gloves and carrying nothing, and with both hands free, in order to equalize the temperature in both hands. Suggestions were then made of "cold," this time to the right arm, for purposes of control. The arm immediately began to get chilly, subjectively and objectively. In half an hour the temperature in the left palm was 84°, whilst that in the right was 68°. It is interesting to note that this temperature---88°---was the exact temperature of the room at the time, the circulation having apparently no effect on the skin temperature. The right hand appeared and felt to the touch extremely cold, and great discomfort was produced. To the touch the right hand felt like ice, whilst the left hand was comparatively warm. Leaving the thermometer still in the palm of the hand, I then suggested the right hand warm again. Almost immediately the thermometer began to rise, till at the end of 10 minutes the right hand stood at 84° and the left at 85°.

A further remarkable incidence is that, though I have frequently hypnotized this patient, the suggestions of this experiment were made entirely in the waking condition.

Relation of Pain to Inflammation. As already remarked, I had previously produced "suggestion" blisters in this patient, and a blister was also produced by touching the arm with a heated thermometer case, suggesting in the latter case that there would be no pain, either at the time or afterwards. The result was as suggested; but there was no inflammation surrounding the blister, as there was surrounding the painful blister produced by suggestion. This supports the view suggested in my article of November, 1917, that it is not the inflammation primarily that produces the pain or sensation, but the pain that produces the inflammation.

This principle was generally supported by a further observation. After two days the hypnotic blister became infected by the slipping of the bandages, and produced a more extensively painful and inflamed condition. By a word of waking suggestion the pain was stilled, with the result that in two or three minutes the inflammation was also reduced, and the hyperæmia and redness nearly disappeared. It was then found possible, by suggestion of heat and pain, to restore the wound to a painful and inflamed condition once again. The suggestion of "cold"

had a more marked effect than that of "patalaneness" in bringing about the reduction of inflammation.

Whilst I have mentioned these experiments in particular, they were not isolated either in this or other patients. I frequently repeated the raising and lowering of the temperature of the arm in this patient. This phenomenon was produced in other patients, not only by myself, but by Captain G. de H. Dawson and Captain G. Correll at Ashhurst Hospital. In these cases, curiously enough, we were able to raise the temperature of a hand, but could not lower the temperature by suggestion. It is further noted in the cases I observed that when we suggested "heat" to one hand, it was the other hand that first showed signs of rising warmth on the thermometer; and then the suggested hand would go ahead and "heat" the other, till there was a very marked difference between the two. The greatest range of temperature that I have observed in the case detailed above; but Captain Dawson claims to have produced a rise of  $20^{\circ}$ . This, however, was, I believe, in an arm which corresponded closely to the type known by Haldani as "reflex," with a sound and vascular changes present.

If these conclusions of the effect of suggestion on body- and particularly cutaneous-temperature can be established it will surely be of great import, both to physiology as a whole and to dermatology in particular. Have not some skin diseases been known to be associated with the neurotic constitution? If the auto-suggestion of a neurotic can influence the circulation and depress the nutrition of the skin in the way that our heterosuggestion has done in these experiments the connection becomes obvious. The experiments described above are very tentative and suggestive; there remains the more important experiment of determining whether suggestion can raise and lower the whole body temperature. My patient, Mrs. N., to whom my thanks are due for these experiments, performed at considerable discomfort to herself, has placed me under the greater obligation of offering herself for further experimentation.



## PPF-001 THE FIRE WALK CEREMONY IN TAHITI

Langley, S. P.; Society for Psychological Research, Journal, 18:104-121, 1901.

The author is the famous American aviation pioneer.

Some striking accounts of the Fire Walk, as practised in many different countries and described in some cases by European witnesses, were given in Mr. Andrew Lang's paper on the subject in our Proceedings, vol. xv., pp. 2-15, and readers of the Journal will remember the equally remarkable recent Indian cases reported by Mr. Henry K. Beauchamp in the Journal for November, 1900 (vol. ix., pp. 312-321). We think it worth while, therefore, to reprint here in full a letter that appeared in Nature, of August 22nd, 1901, from the pen of Professor S. P. Langley, of the Smithsonian Institution, Washington, U. S. A. (who is also a Vice-President of our Society), and who has recently witnessed the ceremony in Tahiti. It will be seen that Professor Langley succeeded in making more crucial tests of the temperature of different parts of the fire than have, as far as we know, been applied in any other case, with the result that there appeared to be nothing supernatural in the performance he witnessed. It must, indeed, be remembered that the details of the ceremony vary a good deal in different places and as practised by different persons, as will be seen by comparison of the various accounts referred to above. But the case now to be quoted seems to have been more completely observed, and that by a more competent observer, than any other yet recorded.

The very remarkable descriptions of the "Fire Walk" collected by Mr. Andrew Lang and others had aroused a curiosity in me to witness the original ceremony, which I have lately been able to gratify in a visit to Tahiti.

Among these notable accounts is one by Colonel Cadogan, British Resident at Rarotonga, describing the experiment by a man from Raiatea, and also a like account of the Fiji fire ceremony from Dr. T. M. Hooker, whose article is also quoted in Mr. Lang's paper on the "Fire Walk" in the Proceedings of the Society for Psychological Research, February, 1894. This extraordinary rite is also described by Mr. Fraser in the Golden Bough and by others.

I had heard that it was performed in Tahiti in 1897, and several persons there assured me of their having seen it, and one of them of his having walked through the fire himself under the guidance of the priest, Papa-Ia, who is said to be one of the last remnants of a certain order of the priesthood of Raiatea, and who had also performed the rite at the Island of Hawaii some time in the present year, of which circumstantial newspaper accounts were given, agreeing in all essential particulars with those in the accounts already cited. According to these, a pit was dug in which large stones were heated red hot by a fire which had been burning many hours. The upper stones were pushed away just before the ceremony, so as to leave the lower stones to tread upon, and over these, "glowing red hot" (according to the newspaper account), Papa-Ia had walked with naked feet, exhibiting such enthusiasm that he was treated with great consideration by the whites, and by the natives as a god. I found it commonly believed in Tahiti that any man who chooses to walk after him, European or native, could do so in safety, secure in the magic which he exercises, if his instructions were exactly followed. Here in Tahiti, where he had "walked" four years before, it was generally believed among the natives, and even among the Europeans present who had seen the ceremony, that if any one turned around to look back he immediately was burned, and I was told that all those who followed him through the fire were expected not to turn until they had reached the other side in safety, when he again entered the fire and led them back by the path by which he had come.

I was further told by several who had tried it that the heat was not felt upon the feet, and that when shoes were worn the soles were not burned (for those who followed the priest's directions), but it was added by all that much heat was felt about the head.

Such absolutely extraordinary accounts of the performance had been given to me by respectable eye-witnesses and sharers in the trial, confirming those given in Hawaii, and, in the main, the cases cited by Mr. Lang, that I could not doubt that if all these were verified by my own observation, it would mean nothing less to me than a departure from the customary order of Nature, and something very well worth seeing indeed.

I was glad, therefore, to meet personally the priest, Papa-Ita. He is the finest looking native that I have seen; tall, dignified in bearing, with unusually intelligent features. I learned from him that he would perform the ceremony on Wednesday, July 17, the day before the sailing of our ship. I was ready to provide the cost of the fire, if he could not obtain it otherwise, but this proved to be unnecessary.

Papa-Ita himself speaks no English, and I conversed with him briefly through an interpreter. He said that he walked over the hot stones without danger by virtue of spells which he was able to utter and by the aid of a goddess (or devil as my interpreter had it), who was formerly a native of the islands. The spells, he said, were something which he could teach another. I was told by others that there was a still older priest in the island of Raiatea, whose disciple he was, although he had pupils of his own, and that he could "send his spirit" to Raiatea to secure the permission of his senior priest if necessary.

In answer to my inquiry as to what preparations he was going to make for the rite in the two or three days before it, he said he was going to pass them in prayer.

The place selected for the ceremony fortunately was not far from the ship. I went there at noon and found that a large shallow pit or trench had been dug, about nine feet by twenty-one feet and about two feet deep. Lying near by was a pile containing some cords of rough wood and a pile of rounded water-worn stones, weighing, I should think, from forty to eighty pounds apiece. They were, perhaps, 200 in number, and all of porous basalt, a feature the importance of which will be seen later. The wood was placed in the trench, the fire was lighted and the stones heaped on it, as I was told, directly after I left, or at about twelve o'clock.

At 4.3 p. m. I went over again and found the preparations very nearly complete. The fire had been burning for nearly four hours. The outer stones touched the ground only at the edges of the pile, where they did not burn my feet, but as they approached the centre the stones were heaped up into a mound three or four layers deep, at which point the lowest layers were between the upper ones were visibly red-hot. That these latter were nevertheless sending out considerable heat there could be no question, though the topmost stones were certainly not red-hot, while those at the bottom were visibly so and were occasionally spitting with loud reports, while the flames from the burnt wood near the centre of the pile passed up in visible lambent tongues, both circumstances contributing to the effect upon the excited bystanders.

The upper stones, I repeat, even where the topmost were presently removed, did not show any glow to the eye, but were unquestionably very hot and certainly looked unsafe for naked feet. Native feet, however, are not like European ones, and Mr. Richardson, the chief engineer of the ship, mentioned that he had himself seen elsewhere natives standing unconcerned with naked feet on the cover of pipes conveying steam at about 200° F., where no European feet could even lightly rest for a minute. The stones then were hot. The crucial question was, how hot

was the upper part of this upper layer on which the feet were to rest an instant in passing? I could think of no ready thermometric method that could give an absolutely trustworthy answer, but I could possibly determine on the spot the thermal equivalent of one of the hottest stones trodden on. (It was subsequently shown that the stone might be much cooler at one part than another.) Most obviously, even this was not an easy thing to do in the circumstances, but I decided to try to get at least a trustworthy approximation. By the aid of Chief Engineer Richardson, who attended with a stoker and one of the quartermasters, kindly detailed at my request by the ship's master, Captain Lawless, I prepared for the rough but conclusive experiment presently described.

It was now nearly forty minutes after four, when six natives (natives), wearing crowns of flowers, wreathed with garlands, and bearing poles nearly fifteen feet long, ostensibly to be used as levers in toppling over the upper stones, appeared. They were supposed to need such long poles because of the distance at which they must stand on account of the heat radiated from the pile, but I had walked close beside it a moment before and satisfied myself that I could have manipulated the stones with a lever of one-third the length, with some discomfort, but with entire safety. Some of the uppermost stones only were turned over, leaving a superior layer, the long poles being needlessly thrust down between the stones to the bottom, where two of them caught fire at their extremities, adding very much to the impression that the exposed layer of stones was red hot, when in fact they were not, at least to the eye. These long poles and the way they were handled were, then, a part of the ingenious "staging" of the whole spectacle.

Now the most impressive part of the ceremony began. Papa-Ita, tall, dignified, flower-crowned and dressed with garlands of flowers, appeared with naked feet and with a large bush of "Ti" leaves in his hands, and, after going partly around the fire each way uttering what seemed to be commands to go, went back and heading the stones nearest him three times with the "Ti" leaves, advanced steadily, but with obviously hurried step, directly over the central ridge of the pile. Two disciples, similarly dressed, followed him, but they had not the courage to do so directly along the heated centre. They followed about half-way between the centre and the edge, where the stones were manifestly cooler, since I had satisfied myself that they could be touched lightly with the hand. Papa-Ita then turned and led the way back, this time with deliberate confidence, followed as his return by several new disciples, most of them not keeping exactly in the steps of the leader, but obviously seeking cooler places. A third and fourth time Papa-Ita crossed with a larger following, after which many Europeans present walked over the stones without reverence in the priest's instructions. The natives were mostly in their bare feet. One wore stockings. No European attempted to walk in bare feet except in one case, that of a boy, who, I was told, found the stones too hot and immediately stepped back.

The noise on stage was certainly noteworthy. The site, near the great ocean breaking on the barrier reefs, the excited crowd, talking about the "red-hot" stones, the actual sight of the hierophant and his acolytes making the passage along the ridge where the occasional tongues of flame were seen at the centre, with all the attendant circumstances, made up a scene in no way lacking in interest. Still, the essential question as to the actual heat of these stones had not yet been answered, and after the fourth passage I obtained Papa-Ita's permission to remove, from the middle of the pile, one stone which from its size and position every foot had rested upon in crossing, and which was undoubtedly at least as hot as any one of those trodden on. It was pulled out by my assistants with difficulty, as it proved to be larger than I had expected, it being of ovoid shape with the lower end in the hottest part of the fire. I had brought over the largest wooden bucket which the ship had, and which was half-filled with water, expecting that this would cover the stone, but it proved to be hardly enough. The stone

caused the water to rise nearly to the top of the bucket, and it was thrown into such violent ebullition that a great deal of it boiled over and escaped weighing. The stone was an exceedingly bad conductor of heat, for it continued to heat the water for about twelve minutes, when, the ebullition being nearly over, it was removed to the ship and the amount of evaporated water measured.

Meanwhile others, as I have said, began to walk over the stones without any reference to the cautions prescribed by Papa-Ita, and three or four persons, whom I personally know on board the ship, did so in shoes, the soles of which were not burned at all. One of the gentlemen, however, who crossed over with unburned shoes, showed me that the ends of his trousers had been burnt by the flames which leaped up between the stones, and which at all times girded so much to the impressiveness of the spectacle, and there was no doubt that any one who stumbled or got a foot caught between the hot stones might have been badly burned. United States Deputy-Consul Guccorini, who was present, remarked to me that he knew that Papa-Ita had failed on a neighbouring island, with stones of a marble-like quality, and he offered to test the heat of these basaltic ones by seeing how long he could remain on the hottest part of the pile, and he stood there, in my sight, from eight to ten seconds before he felt the heat through the thin soles of his shoes beginning to be unpleasantly warm.

A gentleman present asked Papa-Ita why he did not give an exhibit that would be convincing by placing his foot, even for a few seconds, between two of the red-hot stones which could be seen glowing at the bottom of the pile, to which Papa-Ita replied with dignity, "My fathers did not tell me to do it that way." I asked him if he would hold one of the smaller, upper hot stones in his hand. He promised to do so, but he did not do it.

The outer barriers were now removed and a crowd of natives pressed in. I, who was taking these notes on the spot, left, after assuring myself that the stones around the edge of the pit were comparatively cold, although the centre was no doubt very hot, and those below red hot. The real question is, I repeat, hot but were those trodden on? and the answer to this I was to try to obtain after measuring the amount of water boiled away.

On returning to the ship this was estimated from the water which was left in the bucket (after allowing for that spilled over) at about 125 pounds. The stone, which it will be remembered was one of the hottest, if not the hottest, in the pile, was found to weigh sixty-five pounds, and to have evaporated this quantity of water. It was, as I have said, a volcanic stone, and on external examination proved to be a vesicular basalt, the most distinctive feature of which was its porosity and non-conductibility. For it was subsequently found that it could have been heated red hot at one end, while remaining comparatively cool at the top. I brought a piece of it to Washington with me and there determined its specific gravity to be 0.28, its specific heat 0.18, and its conductivity to be so extremely small that one end of a small fragment could be held in the hand while the other was heated indefinitely in the flame of a blow-pipe, almost like a stick of sealing-wax. This partly defeated the aim of the experiment to find the temperature of the upper part of the stone, since only the mean temperature was found. This mean temperature of the hottest stone of the upper layer, as deduced from the above data, was about 1200 degrees Fahrenheit, but the temperature of the surface must have been considerably lower. The temperature at which such a stone begins to show a dull red in daylight is, so far as I am aware, not exactly determined, but is approximately 1300 to 1400 degrees Fahrenheit.

To conclude, I could entertain no doubt that I had witnessed substantially the scenes described by the gentleman cited, and I have reason to believe that I saw a very favourable specimen of a "Fire Walk."

It was a sight well worth seeing. It was a neat clever and interesting piece of stage magic, but from the evidence I have just given I am obliged to say (almost regretfully) that it was not a miracle.

## PPF-002 DEMONSTRATION OF FIREWALKING

— *Anatomical Record*, 126:468, September 21, 1935.

A demonstration of firewalking was given by an Indian, Kuda Ben, before members of the University of London Council for Psychological Research and other men of science at Carnation, on September 17. The fire was contained in two trenches about 12 ft. long, 5 ft. wide and 3 in. deep. Barefooted, Kuda Ben walked along the trenches twice, and his feet made contact with the burning coals for some five seconds each time. Prof. C. A. Farnett of St. Mary's Hospital sends us the following account of his observations: "Kuda Ben is physically of the typical, slightly built, Indian type. The soles of his feet present no unusual features. The skin is not callous but soft, as the skin of so many individuals who walk barefoot. The feet felt cold to the hand, and a skin thermometer registered 53.2°F. This was about twenty minutes before the attempt, during which time the performer walked about the loam. A five-eighths inch square of zinc oxide plaster was attached to the sole of the right foot. The skin of the feet was very dry. The feet were washed and dried carefully about fifteen minutes before the walk. After the steps had been taken, with a delay of perhaps ten seconds, the temperature of the soles of the feet was again taken. It was now 50°F. There was no sign of burning of the skin.

"At the conclusion of the performance, after Kuda Ben had walked twice over the pit, an interval of perhaps forty minutes having elapsed, the feet were again examined. By careful scrutiny could be seen here and there the whitened appearance of the skin which occurs when the very surface of the epithelium is scorched without blistering. Yet with the pigmentation present it was very difficult to be positive of this. There were no signs of hyperaemia or blistering. The patch of plaster was quite unharmed, except that the fluff of the cotton basis at the cut edge looked very slightly scorched. If this were so, these cotton fibres must have reached a temperature approaching 120°C. Mr. Digby Moynagh, who had made an attempt to carry out a firewalk ten days previously, made a second one. The soles of his feet had a number of blisters on them, which were in the healing stage. After two steps he acquired new blisters. The soles of his feet were noticeably moister than those of the Indian, and this factor may be of importance, because at one place the dampness had caused a piece of the charcoal to adhere. Underneath it a burn occurred. Mr. Margine-Saengen also made two steps on the glowing charcoal. Hyperaemia patches occurred on his soles, which doubtless were the beginning of blisters."

## PPF-003 FIRE-WALKING

— *Darling, Chas. R.: Nature*, 126:521, September 28, 1935.

At the suggestion of the secretary of the Institute of Physics, I attended the demonstrations of fire-walking by the Indian, Kuda Ben, on September 9 and 17. Notes on some physiological aspects of the second demonstration were published in *Nature* of September 21, p. 468. One important detail should, however, be added, the time of contact of the performer's feet with the fire, which was certainly much less than five seconds.

Observations made at the first performance indicated that the feat was merely another form of the fireside experiment of picking up a hotinder and

returning it to the fire, when the fingers are not burnt, if the action is performed quickly. It, therefore, seemed probable that measurements of the rise in temperature caused by contacts of a cold substance with the fire, of similar duration to those of the walker's feet, would test the correctness of this view, and preparations were made to do this at the second trial on September 17. On this occasion, Dr. T. E. Hawks, of the Physics Department, St. Bartholomew's Hospital, and Mr. G. Smith, of the London School of Hygiene and Tropical Medicine, collaborated with me in making the observations.

These comprised the measurement of the total time of contact of each foot with the hot surface; counting the number of steps; and then pressing a thermal junction on to the fire intermittently so as to imitate the period of contact of each foot and the interval between each step, the rise in temperature then being noted on the indicator. The junction consisted of a thin disc of copper, to which wires of copper and eureka were fastened. The wires were passed through holes in a piece of aralite and pulled, so as to bring the disc into contact with the aralite, so that when the disc was pressed on the fire the conditions were favourable for the absorption of heat and its retention when the junction was raised for another impact.

The arrangement was equivalent to a sensitive walking thermometer, and would certainly show a greater rise in temperature under the same conditions than the human skin, which is protected by the moisture it exudes.

Careful observation with a stop-watch having shown that the average time of contact of the walker's foot was half a second at each step, and it being noted that each foot rested twice on the surface during the passage, the junction was struck on to the surface twice in succession, a period of contact of half a second per impact being attempted. Actually, owing to the difficulty of working near the fire, this period was always exceeded, but a number of separate trials showed a rise of 15°-20°C. in the junction. This was conclusive evidence that the feet of the performer would not become hot enough for blistering to occur.

Fire-walking is really a gymnastic feat, and the agile way in which Koda Box walked across the fire compelled admiration, and would be difficult to imitate without much training. It would not be easy for a beginner to walk bare-footed over cold charcoal so as not to exceed the time of contact necessary for successful fire-walking. It was lack of training in this particular which prevented Mr. Moynagh and Mr. Sheehan from succeeding; but it was noticeable that even in their cases large portions of the feet were unharmed. Both were much heavier men than Koda Box, and this caused them to sink more deeply into the fire, and increased the time of contact. A temperature-measuring device conforming more nearly to the conditions of the skin could be made and tested on a fire, but the explanation of fire-walking is so obvious that this would be superfluous.

#### PPF-004 FIRE-WALKING: SCIENTIFIC TESTS

Anonymous Nature, 128:668, April 17, 1897.

Eighteen months ago, the University of London Council for Psychical Investigation arranged a demonstration of fire-walking, with the view of obtaining precise information upon its scientific aspects. Descriptions of the condition of the feet of the performer, Koda Box, before and after the walk, and results of some physical observations, were given in Nature of September 23 and 26, 1895 (105,

488, (21). As the observations were not altogether conclusive, two more demonstrations were arranged by the University of London Council for Psychological Investigation through Mr. Harry Price, honorary secretary of the Council, in the grounds of Mr. Alex. Driffell at Carshalton, Surrey, on April 7 and 16.

The professional fire-walker was Ahmad Hussain, a Moslem from Calcutta. In the first experiment, the trench containing the charcoal on oak-logs was 12 ft. long. The temperatures were measured by special thermoscopes with the co-operation of the Cambridge Scientific Instrument Co., Ltd., and were shown to be 575°C. on the surface and 700°C. inside. After examination and tests for chemical treatment, Hussain walked the trench in 1.3 sec., showing no signs of injury. He then repeated the walk leading three amateur volunteers with the claim that they would be immune from burning. They were, however, all burned to a varying but slight degree. A further two volunteers then performed the walk separately and unaided. They were also slightly burned, and where the number of steps had been uneven, the foot that had been down most often was most affected. This indicated that the injurious effect was cumulative, although Hussain claimed that he could walk any distance. As he refused to retrace his steps, the trench was increased to 20 ft. for the second experiment.

In the second experiment, the surface temperature was 740°C. and the inside 780°C. Hussain took six steps in 2.1 sec., and this produced five blisters on one foot and marked erythema on the other, a condition closely resembling that of the amateurs after four steps. The effect was therefore cumulative in his case also. One of the former volunteers covered the distance in four steps and 1.4 sec., and then later, in rope-soled shoes, took seven steps in 3.6 sec. The frayed portions of the rope were slightly scorched at the edges only. The feet sank into the ash to a depth of between two and three inches, and it seems clear that its poor thermal conductivity prevents damage to normal skin if the contact-time is less than about half a second, although the small flames within it will produce singeing of the hairs. This time corresponds with that of one quick step: two steps with the same feet could only be done without injury by the practiced professional, and three steps was beyond his limit.

This small difference between amateur and professional, together with observations made during the experiment, make it very unlikely that any hypothesis of a special induced mental state is required, such as is, of course, maintained by the Indian performers.

#### PPF-005 FIRE-WALKING

Price, Harry; *Nature*, 139:524-525, May 29, 1937.

I shall be glad to be permitted to supplement the report in *Nature* of April 17 on the fire-walking experiments which I organized for the University of London Council for Psychological Investigation. The article records the results of two tests (at Carshalton, on April 7 and 9), but does not mention the third—and final—demonstration with the Indian professional.

This was staged in the grounds of Alexandra Palace on April 20. The trench was 12 ft. long, 4 ft. wide, and 2 in. deep. Some four tons of oak logs were used in preparing the fire. At the time of 'walking', the surface temperature (measured by a representative of the Cambridge Instrument Co., Ltd.) was 800°C. This high temperature (the hottest fire we have managed to produce at any test) was due to the exposed position of the trench, and to the fact that a stiff breeze was blowing.

The first to walk was Ahmed Hussein (weighing 138 pounds), who took four steps in 1.4 sec. His feet were uninjured. Then Mr. Reginald Adcock (weighing 160 pounds), a young Cambridge graduate, walked the trench in 1.8 sec., taking three steps. His feet were not blistered or injured in any way. This was the third occasion on which he has done the fire-walk for us. Both walkers started off with the right foot. The slow-motion film I took of the demonstrators reveals no apparent superiority in walking technique on the part of the professional.

In the report in Nature of our last fire-walking experiments, it is stated that "two steps with the same foot could only be done without injury by the practiced professional". But Mr. Adcock demonstrated to us at Alexandra Palace that he, too, can take two steps with the same foot on a very hot fire without the slightest injury. Although he took three steps against the Indian's fear, the time taken was 0.2 sec. longer; and the Englishman weighed 24 pounds more than the Indian. The tests were taken by Dr. E. J. Dingwall, and Prof. J. C. Flugel, and I washed and examined the feet of the walkers both before and after the walk.

It is interesting to compare Mr. Adcock's feat with that of Koda Bux's when the latter gave as his performance at Carshalton on September 17, 1935. Bux walked on a trench 11 ft. long, with a surface temperature of 428°C. He weighed 138 pounds. Each foot was in contact with the embers twice. Adcock's performance surpassed that of the Indian's because the surface of the fire was nearly twice as hot, he walked farther, and the Englishman weighed 40 pounds more—the extra weight being a great disadvantage in fire-walking.

#### PPF-006 EXPERIMENTAL FIRE WALKS

Anonymous; Nature, 142:67, July 9, 1938.

A report by Dr. G. Barnston Brown on three experimental fire-walks has recently been issued ("A Report on Three Experimental Fire-Walks by Ahmed Hussein and others"). By Dr. G. Barnston Brown, Bull. 4, University of London Council for Psychological Investigation, 14 Berkeley Street, Mayfair, London, W.1. in. net). The experiments were made at Carshalton, where Koda Bux had also been tested (see Nature, 139: 405, 523; 1935) and at the Alexandra Palace. The accompanying table shows a comparison of the most successful attempts made by Ahmed Hussein, R. Adcock and Koda Bux.

	Weight	Distance walked	Surface temp. (°C.)	No. of steps	Time	Minimum mean time of contact per step
Hussein	138 lb.	12 ft.	399°	4	1.4 sec.	1.60
Adcock	160 "	12 "	428°	3	1.8 "	4.60
Koda Bux	138 "	11 "	429°	4	2.2 "	0.55

The results of the experiment showed that the fire-walk is not a trick, but is performed in the normal manner with bare and chemically untreated feet. Moisture on the feet was shown to be a disadvantage, since it may cause hot particles to adhere to the skin and thus cause blisters. The sudden formation of an insulating cushion of vapour between the foot and the hot embers does not occur, and no abnormal degree of callusity of the feet is required.



## PPH-001 THE VISUAL CUES FROM THE BACKS OF ESP CARDS

Kennedy, John L. : *Journal of Psychology*, 4:159-163, 1938.

Recently, some mention has been made of visual cues obtainable from the backs of the Rhine "Extra-Sensory Perception" cards, printed by the Whitman Publishing Co. The possible presence of such cues was brought to my attention by the late Professor John E. Coover when the cards were first published. Gallikson and Wolfe credit R. F. Skinner with the discovery that cues due to printing could be utilized to produce extra-chance scores with some of the Rhine clairvoyance methods. Helling has also suggested the presence of visual cues on the backs of the earlier ESP cards. However, to my present knowledge no data on the aid that these cues may give in guessing experiments or on the exact method of elicitation has been published. The present note will make available some results on the conscious and unconscious use of visual cues, both with the commercial ESP cards and with the ESP cards used by Rhine in his earlier experiments.

The writer reported at the Indianapolis meetings of the AAAS that one subject among 100 college students tested with the Open Matching method made extra-chance scores consistently. Decks of the commercial ESP cards were used. Illumination of the backs of the cards came from a 15-watt bulb, about 8 feet above and directly over the cards as they were held in the subject's hands. In 1000 matches with the same deck of cards, 273 hits were scored, yielding a critical ratio (D'/σ) of 3.7. Such a deviation from the chance level of 250 hits could be produced by chance but once in approximately one billion times. The subject was allowed to look closely at the backs of the cards and to tilt them in order to get reflections. Further trials with the backs of the cards screened from the subject's vision did not produce significant deviations from the chance level of scoring. The sight of the backs of the cards was found to be a necessary condition for the production of high scores. The subject reported throughout the experiment that he was not aware of using visual cues; when questioned about his close scrutiny of the backs and his method of tilting the cards slightly to change the reflection on the surface, he replied that this was necessary or "there would be nothing to go on."

The writer has practiced until these cues are quite plain under the illumination conditions described above and other room conditions as well. Any light source that will give a good reflection off the backs of the cards will serve as sufficient illumination. The technique for obtaining the cues when the light is overhead is as follows: Pick up the whole deck (the Before-Touching method) and tilt it until the light source is reflected as a glare directly into the eyes. Then make small adjustments in the tilt of the deck. The symbol appears as a shadowy figure. These faint shadows are formed by small indentations to the backs due to the shrinking effect of the heavy ink of the symbols on drying. The more the deck is used, the plainer these cues become.

The cues may be obtained from absolutely new and untouched (except for mechanical shuffling) decks of the commercial ESP cards. The writer received a new shipment of cards on February 11, 1938. Ten decks were shuffled by another person. The R. T. method, as described above, was used in an attempt to guess the correct symbols by reflecting light from the backs. Scores for the 20 decks were, respectively, 19, 22, 4, 28, 12, 18, 17, 15, 28, and 12 hits per 25 cards. In these 200 trials, 242 hits were scored, yielding a critical ratio of 18.8. These data only show that the cues are present. The important point is that they may be used subliminally by naive subjects who glance at the backs of the cards. It appears that anyone with normal visual acuity may learn to use the

case since we have been able to teach a large number of people to make extra-chance scores.

Under optimum conditions of lighting, i. e., when the angle of reflection is around 22°, the symbols on the backs of the cards appear quite clearly. The photograph of the backs of the cards shows that the whole symbol may be seen. Twenty-five correct calls successively can be made with ease by subjects familiar with the symbols but otherwise untrained.

In this connection, the following quotation from the December, 1957, number of the *Journal of Parapsychology*, p. 388, should receive attention by everyone interested in the Duke experiments on Extra-Sensory Perception:

Imperfections in the commercial reproductions of the ESP cards preclude their unreserved use for experimental purposes. As reports of screened work have indicated that subjects do practically as well and in some cases better than they have no sensory contact at all with the cards, the screen should be so uniform a condition that card imperfections are not a matter for experimental concern. However, the publishers of the cards have been able to overcome the principal difficulties and future printings will therefore be much improved.

Laying aside the question of evidence for the statement that "subjects do practically as well and in some cases better" when the cards are screened, it is important to realize that all extra-chance results based upon techniques in which the backs of the cards are available to the subject's vision are open to question. Such an admission precludes the unreserved use of the Open Matching method, the Blind Matching method and the Single Card Calling test. A notable portion of the results presented in Rhine's monograph, "Extra-Sensory Perception" was obtained with the Before Turning or Single Card Calling method.

Supporters of ESP will object that the Zener cards and the earlier version of the ESP cards were used in the tests reported in Rhine's monograph. However, care from shuffling and handling may cause high results with these cards. A subject in this laboratory was tested with a deck of the earlier version of the ESP cards. After approximately 300 trials with the General B. T. method, in which the subject took a card off the top of a shuffled deck, looked at the back and called out her guess for the symbol on the face, she began to make extra-chance scores. In 1000 tests trials, 255 hits were scored, yielding a critical ratio of 4.3. When tested for 1000 further trials with the Back Calling method, in which the subject attempts to guess the symbols down through an unbroken pack, 197 hits were scored and the critical ratio was only  $\sim 2$ . Examination of the cards showed visible markings which served as adequate differential cues, although the subject reported that at no time had she consciously associated these marks with the correct symbols. Opportunity for unconscious association of marks and symbols was afforded in the checking-up process, which was carried out in view of the subject. Breaks has also reported that a subject probably responded to shuffling and handling cues on the backs of cards in making extra-chance scores.

In such intricate cases, the successes of some dowryers may originate. Slight geological hints, perhaps noted unconsciously, may combine with extensive experience to cause involuntary muscular action of the hands.

## PPH-002 THOUGHT-READING

Romanes, George J.; *Nature*, 34:171-172, June 23, 1883.

Despite the title, this article is not triplined here, because it is an excellent example of "exotic reading."

The public mind has of late been somewhat agitated by the doings of a Mr. Bishop, who has come before the world of London society in a capacity no less startling than that of a professed reader of thought. Armed with a favourable letter of introduction from Dr. W. B. Carpenter, he has not only taken by storm the general public and daily press, but also succeeded in securing an assembly of scientific men to witness his performance, which in point of numbers and importance resembled in miniature a sitting of the Royal Society, while still more recently he has had the honour of exhibiting his powers before the *Haar Apparat* to the Crown. There is no doubt that Mr. Bishop owes this wide and sudden celebrity to the patronage which was extended to him by the great opponent of all knowledge, and although Dr. Carpenter doubtless intended his letter to exert a salutary influence by recommending Mr. Bishop to the attention of the credulous, it is to be regretted that it served to recommend him also to the attention of the scientific. This is to be regretted, because the result was to endow the powers which were afterwards exhibited with a fictitious degree of importance in the eyes of the public, and also to bring a large number of distinguished men into the somewhat undignified position of setting the stalling-horse to Mr. Bishop's society. But however this may be, it seemed to Prof. Crook Robertson worth while to make a more careful trial of Mr. Bishop's powers than was possible in the first crowded assembly, and he therefore invited Mr. Francis Galton, Prof. E. R. Lankester, and myself, who were all present on the first occasion, to join him in an investigation. When we had assented to the proposal, Mr. Bishop was invited to meet us at Prof. Crook Robertson's house. He immediately accepted the invitation, and it is but just to state that throughout the investigation which followed he placed himself entirely in our hands, and with the utmost good nature submitted to all our requirements. He professes that he is himself ignorant of his *modus operandi*, and merely desires that this should be adequately investigated and satisfactorily explained.

Two meetings were arranged. At the first, which was held on May 28, Prof. Lankester was not able to attend, and his place was taken by Mr. Leslie Stephen. Mr. Alfred Sidgwick was also present. At the second meeting, held on June 11, there were present as before, Prof. Crook Robertson, Mr. F. Galton, and myself, but Mr. Leslie Stephen and Mr. Alfred Sidgwick were absent, while Prof. Lankester was present. The room in which both meetings were held was a double drawing-room of the ordinary shape of those which usually have folding-doors; here however the folding-doors were absent. The extreme length of the room was 36 feet, the width of its front part was 18 feet, and of its back part 22 feet.

First, Mr. Bishop was taken out of the room by me to the hall down stairs, where I blindfolded him with a handkerchief; and, in order to do so accurately, I thrust pieces of cotton-wool beneath the handkerchief below the eyes. In all the subsequent experiments Mr. Bishop was blindfolded, and in the same manner. While I was doing this, Mr. Sidgwick was hiding a small object beneath one of the several rugs in the drawing-room; it having been previously arranged that he was to choose any object he liked for this purpose, and to conceal it in any part of the drawing-room which his fancy might select. When he had done this the drawing-room door was opened and the word "Ready" called. I then led Mr. Bishop up stairs, and handed him over to Mr. Sidgwick, who at

that moment was standing in the middle line between the two drawing-rooms, with his back to the rug in question, and at a distance from it of about 15 feet. Mr. Bishop then took the left hand of Mr. Sidgwick, placed it on his (Mr. Bishop's) forehead, and requested him to think continuously of the place where the object was concealed. After standing motionless for about ten seconds Mr. Bishop suddenly faced round, walked briskly with Mr. Sidgwick in a straight line to the rug, stopped down, raised the corner of the rug, and picked up the object. In doing all this there was not the slightest hesitation, so that to all appearance it seemed as if Mr. Bishop knew as well as Mr. Sidgwick the precise spot where the object was lying.

This is Mr. Bishop's favourite experiment; so I may give some of our other observations relating to it before passing on to the variations which we introduced. It was soon found that he succeeded much better with some of us than with others; so at the second meeting, in order to make a numerical comparison, he was requested to try two experiments with each of the four persons who were present. With Mr. Galton, Prof. Robertson, and Prof. Lancaster he failed utterly, while with myself he succeeded once perfectly and the second time approximately. For on the first occasion I concealed a pocket-matchbox upon the top of a book behind the leather top of a book-shelf. After feeling along the rows of books for some time he drew out the one on which the match-box was lying. In the second experiment I placed a starting-card on the keyboard of a grand piano and closed the cover. After going about the room in various directions for a considerable time he eventually localised the piano, and brought his finger to rest upon its upper surface about six inches from the place where the card was lying. It will thus be seen that his success with me, although so much better than with any of the other three persons present that evening, was not so immediate and precise as it had been with Mr. Sidgwick the evening before. It has also to be mentioned that in one of the experiments which he tried with Prof. Robertson the evening before, he was, after a good deal of feeling about, successful in localising a particular spot on an ordinary chair which Prof. Robertson had selected as the spot to be found. From this it will be seen that it made no difference whether a particular article or a particular spot was thought of for of the subject thought of was a certain square inch of surface upon any table, chair, or other object in the room. Mr. Bishop, in his successful experiments, would place his finger upon that spot. Neither did it make any difference whether the article or place thought of was at a high or a low elevation. Thus, for instance, in one of the experiments I placed a small pencil-case high up in the chandelier of one of the drawing-rooms. There was first a great deal of walking about in various directions, examining tables, bookshelves, &c., so that it was thought that the experiment was about to prove a failure. (It may here be mentioned parenthetically that in all the experiments trials were taken of the routes which Mr. Bishop traversed, but it seems needless to occupy space with recording the analysis of these results.) Then, while feeling over the surface of a table in the other drawing-room, and not far from the corresponding chandelier, Mr. Bishop suddenly pointed at arm's length vertically to the ceiling. He remained motionless in this position for a few seconds, and then set off at a brisk pace in a straight line to the other drawing-room, until he came beneath the other chandelier. As his finger was all this time pointing to the ceiling, it touched this chandelier on his coming beneath it. He then stopped and pointed as high as he could, but not being a tall man, was not able to touch the pencil-case, which had been purposely placed above his reach. After satisfying ourselves that his determination to reach up at that particular spot could not be attributed to accident, but rather that his finger appeared to be smelling the object of his search, the experiment was concluded. As a rule, unless success is achieved within the first two or three minutes, it

is never achieved at all; but in some cases, as in the one just quoted, after several minutes of feeling about in various places and directions, a new point of departure seems suddenly to be taken, and Mr. Bishop starts off straight to the right spot. As an instance of this I may quote another experiment, in which I placed a shilling beneath a sheet of paper lying on a table which was crowded with other articles. After going about the room in various directions for a considerable time, this table was reached, apparently by accident, and just at the time when I was thinking that the experiment would certainly prove a failure, Mr. Bishop suddenly became more attracted to his movements, and exclaiming "Now I am within two feet of it," began to hover the point of his finger over the table, and eventually brought it down upon the sheet of paper just where the shilling was lying beneath.

Mr. Bishop can also very frequently localise any spot on his subject's person of which the subject may choose to think. As in all other cases he presses the hand of the subject upon his forehead with one hand, and uses the other as a feeler. Here again he succeeds much better with some persons than with others, and the persons with whom he succeeds best are the same as those with whom he does so in his other experiments. Thus he altogether failed with Mr. Galton, although the latter, in order to fasten his attention the more exclusively on one particular spot, pricked this spot with a needle. With Prof. Landrester success was partial; for while he thought of the point of his nose, Mr. Bishop was only able to say that the point thought of seemed to occupy the median line of the body on the front aspect. But on a previous occasion at Bedford Square Mr. Bishop localised correctly a pain (slight toothache) from which Prof. Landrester was suffering. With Prof. Cicconi Robertson success was better, though not quite perfect, for while the place thought of was the ball of the right thumb, Mr. Bishop localised it in the right wrist. In the only two experiments tried in this connection with myself the results were somewhat peculiar. In the first experiment I thought of a spot situated under the left scapula, and Mr. Bishop localised it as situated under the right; in the second experiment I thought of my right great toe-nail, and for a long time Mr. Bishop probed round and on the left great toe-nail, though he eventually changed to the right one, and so localised the spot correctly. In both these experiments, therefore, it seemed that with me Mr. Bishop experienced a strong tendency to confuse asymmetrically homologous parts.

From this brief summary of the results gained by following Mr. Bishop's own methods, it will be seen that on the whole his power of localising objects or places thought of by a person whose hand he claps is unquestionably very striking. Of course the hypothesis which immediately suggests itself to explain the modus operandi is that Mr. Bishop is guided by the indications unconsciously given through the muscles of his subject---differential pressure playing the part of the words "hot" and "cool" in the childish game which these words signify. Mr. Bishop is not himself averse to this hypothesis, but insists that if it is the true one he does not act upon it consciously. He describes his own feelings as those of a dreary abstraction or "cervicite," and his finding a concealed object, &c., as due to an "impression borne in" upon him. But however this may be and of course we had no means of testing the statement all our experiments have gone to show that the hypothesis in question is the true one, and that Mr. Bishop owes his success entirely to a process of interpreting, whether consciously or unconsciously, the indications involuntarily and unwittingly supplied to him by the muscles of his subjects. Thus when his subject is blindfold and loses his bearings, failure results. Failure also results if the connection between Mr. Bishop and his subject is not of a rigid nature---a loose strap, for instance, being apparently of no such use to him for the establishment of connection as a walking-stick. Similarly, although he was very successful

when he grasped my left hand when I did not know where the object was concealed, but when my left wrist was held by Mr. Wigwrick, who had concealed the object; he failed when, under otherwise similar circumstances, Mr. Sidgwick held my right hand---so establishing a link instead of a firm connection through my person.

Lastly, a number of other experiments were tried, in deference to some statements which Mr. Bishop made concerning his occasional success in reading thoughts of a kind which could not be indicated by muscular contractions. From these experiments, it is needless to say, we did not anticipate any results; but (with the exception of Prof. Lankaster) we thought it was worth while to make them, not only because Mr. Bishop seemed to desire it, but also to satisfy the general public that we had given the hypothesis of "thought-reading," as well as that of "muscle-reading," a fair trial. The experiments consisted in the subject looking at some letter of the alphabet which Mr. Bishop could not see, and the latter endeavouring to read in the thoughts of the former what the letter was. Although this experiment succeeded the first time it was tried, it afterwards failed so frequently that we entertain no doubt as to the one success having been due to accident, and therefore conclude that if Mr. Bishop has any powers of "thought-reading" properly so-called, he has failed to show us evidence of the fact.

Deeming it a remarkable thing that such precise information as to a mental picture of locality should be communicated so instantaneously by unconscious muscular movement, we thought it desirable to ascertain whether Mr. Bishop, who is able so well to interpret these indications, is endowed with any unusual degree of tactile sensibility or power of distinguishing between small variations of resistance and pressure. We therefore tried the sensitiveness of his finger-tips with the ordinary test of compass-points, but found that he did not display more than a usual delicacy of tactile perception, while his power of distinguishing between slight differences in weights placed successively on a letter-balance concealed from his eyes was conspicuously less than that displayed by Prof. Crookes Robertson. As Mr. Bishop is not opposed to the hypothesis by which we conclude that his results are obtained, there is no reason to suppose that his results are obtained, there is no reason to suppose that he tried to depreciate his powers of tactile sensibility and of distinguishing between small differences of weight. In their main features Mr. Bishop's experiments are frequently performed as an ordinary drawing-room amusement, and we are therefore inclined to think that he does not enjoy any peculiar advantages over other persons in regard to sensitiveness of touch or power of appreciating pressure, but that his superior success in performing the experiments is to be ascribed merely to his having paid greater attention to the subject.

In conclusion, we desire to express our thanks to Mr. Bishop for the trouble which he has taken in submitting to the numerous experiments, the general results of which have now been stated.

This report has been read in proof by Prof. Crookes Robertson, Mr. Francis Galton, and Prof. E. R. Lankaster, and meets with their full approval.

## PPM-001 PLACEBO REACTOR

Parkhouse, James: *Nature*, 199:348, July 28, 1963.

It is often believed that there exist, in the community, certain individuals who are 'placebo reactors', and that these individuals must be excluded from a controlled clinical trial if the 'true' effects of the drug in question are to be correctly assessed. Glaser expressed the extreme view when he wrote 'a dummy' [that is, a pharmacologically inert substance] "identifies those patients who can be disregarded, either because they need no treatment or else because they can be cured by psychological influences, and this is an reasonable a procedure as the exclusion from experiments with anti-asthmatic drugs of patients who do not have attacks of bronchial asthma".

The story of the 'placebo reactor' can largely be traced back to Jellinek, who reported an investigation of headache in which he found that a proportion of the sufferers obtained relief from a placebo; he further observed a U-shaped distribution of individuals, with regard to this placebo reaction, so that some 'definitely' responded while others 'definitely' did not, only very few being partially relieved. It has since been shown that this U-shaped distribution is by no means characteristic of all drug responses, and that the incidence of placebo reactions can vary greatly with the circumstances of a trial. Nevertheless, the mythical person who 'once a placebo reactor' is 'always a placebo reactor' dies so hard that an extra nail for his coffin will perhaps do no harm.

There is, of course, no doubt that some individuals are more amenable to suggestion than others, and in a given situation this increases the likelihood of their deriving some satisfaction from a placebo. Also, the cause of the symptoms is of obvious importance, as Jellinek himself recognized when he wrote 'the difference in response to placebo must reflect a difference in the nature of headache'. It was, indeed, a shrewd physician who said 'the treatment of scarlet fever depends on what is the matter with the patient'.

Apart from the variability of the individual and his symptoms, the design of a drug trial may influence the number of 'placebo reactors' who are discovered, particularly in a complex situation in which several methods of grading the response to the drug are available. This is well shown in my own work on post-operative pain, with which—unlike headache—'complete relief' and 'complete non-relief' rarely occur. The design and purpose of these investigations are explained elsewhere; their present interest lies in the fact that they have provided several different criteria against which 'relief of pain' may be deemed to have occurred after treatment with morphine and a placebo (normal saline).

Table 1. Incidence of 'Placebo Reactors' After Upper Abdominal Surgery

	Improvement of pain alone (%)	Improvement of pain, movement and coughing (%)	Vital capacity (%)	Peak expiratory flow rate (%)
Change of 1 grade or more 'relief'	45	50	33	12
Change of 2 or more grades 'relief'	0	0		

Using an arbitrary pain score, only three out of 21 of my patients failed to achieve an improvement of at least 1 grade after morphine; but if this were to be accepted as 'relief', 8 of 18 patients were relieved by saline. If an improve-

test of two grades was required for 'relief', no patients were relieved by saline and only 2 by morphine. Movement and coughing are especially painful after upper abdominal operations; when ability to raise and cough was taken into account, an improvement of one grade or more was achieved by 19 patients after morphine (31 per cent) and by 9 after saline (30 per cent), while an improvement of two or more grades was obtained by 10 of the 23 morphine cases and by none of those who had saline. Finally, an indication of the painfulness of deep breathing and coughing was obtained objectively by measuring vital capacity improved in 10 of the 23 patients after morphine, and in 2 of 9 after saline; peak expiratory flow rate improved in 4 of 13 cases given morphine and in 1 of 9 given saline. Allowing for a movement that percentages can legitimately be derived from such small numbers of individuals, the incidence of patients who obtained 'relief of pain' from an injection of saline, according to these several criteria of 'relief', was as shown in Table 1.

All these figures relate only to pain after upper abdominal surgery; other types of case yielded different responses to saline. Thus, the percentage of 'placebo reactors' among my patients could be made to vary from 0 to 50 according to the stringency of my criteria of 'pain relief'. As a greater improvement is required before 'pain relief' is deemed to have occurred the number of 'placebo reactors' falls but, at the same time, the 'effectiveness' of morphine diminishes. The investigator is at liberty to choose whether he has 'placebo reactors' or 'morphine nonreactors' among his patients.

All this makes it difficult to understand how so-called 'placebo reactors' can reliably be identified and excluded from a clinical trial, and how the 'true' effects of a drug can be dissociated from the psychological effects. In contrast to Glaser's views, one might observe that bronchial asthma itself not infrequently responds to psychological influences, and that "there must be something the matter with a man who comes to a doctor when there is nothing the matter with him". It is perhaps not even too much to suggest that given the appropriate circumstances each one of us has the makings of a 'placebo reactor'.

#### PPM-002 THE POWERFUL PLACEBO

Becher, Henry K.; American Medical Association Journal, 153:1602-1606, December 24, 1955.

This article is too long to reproduce in its entirety.

**Summary and Conclusions.** It is evident that placebos have a high degree of therapeutic effectiveness in treating subjective responses, decided improvement, interpreted under the unknown technique as a real therapeutic effect, being produced in 35.24±2.2% of cases. This is shown in over 1,000 patients in 15 studies covering a wide variety of areas; wound pain, the pain of angina pectoris, headache, nausea, phenomena related to cough and to drug-induced mood changes, anxiety and tension, and finally the common cold, a wide spread of human ailments where subjective factors enter. The relative constancy of the placebo effect over a fairly wide misstatement of subjective responses suggests that a fundamental mechanism is common to operating, one that deserves more study. The evidence is that placebos are most effective when the stress is greatest. This supports the concept of the reaction phase as an important site of drug action.



Placebos have not only remarkable therapeutic power but also toxic effects. These are both subjective and objective. The reaction (psychological) component of suffering has power to produce gross physical changes. It is plain not only that therapeutic power of a drug under study must in most cases be hedged about by the controls described below but also that studies of side-effects must be subjected to the same controls.

When subjective responses, symptoms, are under study, it is apparent that the high order of effectiveness of placebos must be recognized. Clearly, arbitrary criteria of effectiveness of a drug must be set up. Preservation of sound judgment both in the laboratory and in the clinic requires the use of the "double blind" technique, where neither the subject nor the observer is aware of what agent was used or indeed when it was used. This latter requirement is made possible by the insertion of a placebo, also as an unknown, into the plan of study. A standard of reference should be employed for comparison with new agents or techniques. Randomization of administration of the agents tested is important. The use of correlated data (the agents compared are tested in the same patients) is essential if modest numbers are to be worked with. Mathematical validation of observed differences is often necessary. Whosoever judgment is a component of appraisal of a drug or a technique, and this is often the case, conscious or unconscious bias must be eliminated by the procedures just mentioned. These requirements have been discussed in detail elsewhere.

#### PPM-003 BLACK CORAL AS A CHARM FOR RHEUMATISM

Gardiner, J. Stanley. Nature, 108:505-506, December 18, 1921.

Mr. C. H. Powell, of Bassewangh, Java, has sent to Nature office a letter accompanying three brackets made from the horny skeletal substance of a soft coral or Gorgonian, known to science as Plexaura. This forms great branched growths which are abundant on the outer or seaward sides of coral reefs at from 10 to 40 fathoms, but in protected situations almost reaching the surface. All corals are formed by anemones, and the one in question here possesses eight feathered tentacles round the central mouth. The original anemone of a "colony," as the whole animal is termed, settles on the bottom and buds off other anemones from its sides, these in turn giving birth to further children. All remain attached to one another by canals, so that the whole growth forms a single, many-mouthed animal. It takes the form of long branches, the whole simulating a tree-like shrub growing upon the bottom of the sea. The skeleton is in the centre of the stems, and consists of an axis of black, horny substance in each branch, surrounded by the living tissues of the anemones, these further strengthened by scattered spicules of carbonate of lime. Generally, the branches are regarded as belonging to some form of submarine plant, to which the name Skar Babar is given in the Malay Archipelago.

The bracelets, which are the cleaned, horny axes of stems twisted into rings, are "credited with the virtue of curing rheumatism." "There are," says Mr. Powell, "many doctors in the Malay Archipelago who advise their patients to make use of them. They acknowledge that the bracelets do good, although they cannot account for it. It has been suggested that the substance is radio-active. Personally, I can testify that, during a residence of forty-seven years in this part of the world, I have never met a person who has used one of these bracelets without deriving benefit from it. The bracelets are usually worn on the left arm. All natives are firmly convinced of their efficacy, and all seamen and others who are much exposed to the wet make use of them. They maintain that they must be used quite plain; any ornamentation of gold or silver renders them useless."

Rheumatism is, of course, one of those diseases which can have as many causes as there are weeks in the year. Any contusions in any part of the body, however caused, may give the regular symptoms. The close association of rheumatism with malaria is well known to every tropical traveler, and malaria is particularly rife among coast-dwelling people. In some cases the symptoms described by the malarial patient are such as are usually associated with rheumatism. The present writer, while living in a small tropical island, Rotuma, ran out of quinine, which he had found quite effective. His reputation, however, had been established by that time, and he then found a mixture of cascara, brown sugar, and methylated spirit equally good. Probably these bracelets, if he had had them, would have been quite effective to produce similar faith cures. They exhibit absolutely no trace of radio-activity, and are not composed of a substance which could produce any direct effect. A lady who is a victim to rheumatism has worn one of these bracelets for a month, with considerable comfort and a satisfaction which she herself laughs at.

The association of the bracelets with rheumatism in the Malay Archipelago is interesting, because the use of similar bracelets merely as articles of adornment seems to be widely spread among fisherfolk from New to the most distant islands of the Pacific. They are made either of the stems of some Gorgonian such as the above, or of the true Black coral (*Antipatharia*), in which the central horny rod is slightly hollowed. In the Midways, growths dredged up by the present writer, after he had taken what he required, were eagerly divided up by his native crew, and a large piece was taken by the Sultan's representative to be presented as his return to court. The ornaments made were exclusively used by the women. Other coloured Gorgonians obtained at the same time were quite neglected. One of the black sailors, originally recruited at Zanzibar, on H. M. S. *Engelach* in 1908 always wore a pendant of black coral under his blouse, and all the black "boys" on board begged pieces from us "to keep them from drowning." Inquiries show, too, that black ornaments, bracelets, rings, and pieces strung into necklets are common on all coasts from Zanzibar to Singapore. They are usually described as wood, but, as it is stated that the ends overlap or that the bracelets or rings are spiral, they are probably of coral. A Japanese professor says that black coral is much valued in China and Japan, and largely used by coastal people for jewelry. Branched growths are not infrequently brought up on the hook when fishing outside coral reefs, but, while there are frequent indications of local use, there is no regular fishery for such as an article of commerce.

Rheumatism would seem to be particularly a "charm" disease. All over England a potato is carried in the pocket as a remedy, and several ladies residing in Cambridge derive great benefit from the permanent presence of horse chestnuts below their couches. Rings of metal—tin in many parts of the West—are a regular specific. One of the black bracelets in question has a decorative value of its own. We wonder, however, whether the ladies might not find Chinese jade a still better specific.

## PPM-004 THE CURE OF WARTS BY SUGGESTION

Coghill, Claude P., et al: Society for Psychological Research, Journal, 3:100-104, 1899.

The Journal for January, 1897, contained a description of a case of the cure of warts by "charming," contributed by Mr. Claude P. Coghill, of Frankville, Athboy, Co. Meath. Mr. Coghill, as he kindly promised to do, has continued his investigation of the subject.

Referring to the cure of the warts on his daughter's hands (see Journal, January, 1897) Mr. Coghill writes, under date of November 29th, 1896:---  
"I send certificate of chemist who saw my daughter's hands both before and after the cure." The certificate is as follows:---

Athboy, November 29th, 1896.

About four months ago Miss Ethel Coghill was brought by her nurse to me requesting I should give a cure for warts, the child's hands being nearly covered with them. I gave her an advertised remedy to be applied every day.

Yesterday nurse and child called and the warts were entirely gone, the hands smooth and nice,---no marks of any sort. Nurse told me the bottle did no good, but that a simple cure she got from a humble man left them as I saw them yesterday.

Thos. Fagan, Chemist and Druggist.

In Mr. Coghill's letter, printed in the Journal above referred to, he speaks of a horse "quite unmanageable from the size and quantity of warts over his body," which was cured by the nurse peasant in a similar way. Mr. Coghill says in his letter of November 29th, 1896:---"I now have pleasure in enclosing a statement from Mr. Parr with regard to the cure of his horse. . . . I see that I was wrong in stating that the horse had been seen by a vet before calling in this man. Mr. Parr is, however, such an experienced man with horses, that any statement made by him may be considered equal to the opinion of a vet."

Ballybooy, Athboy, Co. Meath, November 27th, 1896.

Dear Mr. Coghill,---I had a bay horse last spring covered with warts. Some of them were small, and they ranged up to the size of a swan's egg. There were about fifty on him in all, four or five large ones. In June, when the flies commenced, I could not take him out, they would almost set him mad, and my groom persuaded me to let John Kane, a man who lives near, take them off. He got him to go over the horse one morning, about June 29th. That evening I looked at him. The large warts that had been continually bleeding had dried up, and some of the smaller ones had quite disappeared. In a week they were all gone, except about four. He came again, and in another week they were all gone but one, a very large one it was, but it had dried up to about the size of a blackbird's egg. I sold the horse on July 17th. The man who got him told me that one dropped off before a week. No vet. ever saw the horse during the time I had him, which was about a year. He had a few warts on him when I bought him. A herd of mine had a cow. Her spots were covered with warts. The same man took them off in a few days.---Yours very truly, D. W. Parr.

In a letter written on November 9th, 1896, Mr. Coghill says:---"There is a man I know of who has some very bad warts on his hands, and I will try to induce him to undergo the same charms. If I can get him to consent to do so, I will photograph his hands before and after, and will also get it duly certified by the local doctor."

On January 13th, 1897, Mr. Coghill writes thus concerning this case:---  
Athboy, Co. Meath, January 13th, 1897.

Dear Sir,---The cure in this case, unfortunately, is not so rapid, but from the time of going to this man it has progressed in an interesting manner. There was glance an improvement visible in many of the warts, and a number of the

smaller ones disappeared altogether. A fairly large one, in photo, on the second finger, has now entirely disappeared. The large ones on the third and little finger are greatly reduced, and show distinct signs of falling off. This is strange, as all other warts I have seen treated by Kane have gradually disappeared.

I remarked to the subject about a crack visible round the big warts, and he told me that Kane told him on his first visit that all the warts would disappear with the exception of these two large ones, which he foretold would drop off.

The cure in this case is a very severe test, as, owing to the subject suffering from blood poisoning in his hand, he has for some months past been applying an ointment, which apparently stimulated the growth of the warts prior to undergoing Kane's treatment. The subject tells me that he has continued using this ointment, and has used no care in avoiding applying ointment to the warts, and that Kane told him that it was probably due to this fact that the warts had not disappeared before now, as he never before had so tedious a cure.

I have now asked him to forego using the ointment in the vicinity of the warts, and when next reporting I will let you know whether this makes any material change in the rapidity of the cure.

There are a number of good-sized warts between the middle finger and third finger which do not show in the photo. Some of the spots on the back of the hand may have been freckles, but of this I am not certain. ---Yours truly, C. P. Coghill.

The photograph referred to, sent to us with this letter, fully bears out Mr. Coghill's description.

In a letter written on February 15th, 1897, Mr. Coghill requests that he had had no opportunity of taking another photograph, as he did not often see the man.

In response to a recent letter of inquiry as to whether he had anything further of interest to communicate, Mr. Coghill has very kindly written the following letter---

Estab. Office, Ashby, Co. Meath, October 24th, 1898.

Dear Sir, ---...I now enclose two letters from two most reliable men. One is signed by John McKenna, a member of Royal Irish Constabulary Force. On reading it over, I notice that he omitted to mention that he had also a wart on his hand which caused him great annoyance when combing his hair and which was charmed at same time as the one on his hand, the result in both cases being perfectly satisfactory; both warts disappeared in or about same time.

The second letter is from a very respectable shopkeeper in the town and speaks for itself. The man whose hand I photographed has been completely cured, and there is now not a vestige of warts on the hand. I will on the first opportunity take another photo, and forward it to you. I may mention in this case that although from the very first there was a marked diminution of warts, still it took some four or five months before the last of them disappeared. Kane accounted for this, whether rightly or wrongly, from fact that, owing to blood-poisoning in the hand, there was very bad circulation, and also that an ointment which he was using, by the doctor's directions, for blood-poisoning, was detracting from the cure.

I have not seen, since I wrote to you last, the man who was suffering from what appeared to be cancer, but I understood from Kane that he has failed to make a complete cure in this case, although there was a most wonderfully marked improvement during the time he was visiting him. Kane accounts for the failure on account of the man's intemperate habits, and states that he finally told the man that it was useless for him to come to him any more unless he gave up using alcohol.

During the past year I have myself had two opportunities to judge of the reality of the charm, as he has completely cured for me a beetle which had very bad warts on her spine, prior to carving. So bad were they that my man in charge of cows feared that she would never allow herself to be milked.

I immediately sent for Kane, who succeeded by means of his charms in removing the principal ones before calving, and the remainder fell off very shortly after.

The second case was on a bullock, which was the worst case I ever saw of warts, and one which, in spite of all I heard and knew of Kane, I believed to be beyond his powers. There was a bunch of warts, as large as my two fists, hanging from under the belly within a few inches of the ground. There were also a number of warts round the eyes. From the day Kane first began, the warts for the first time showed distinct signs of shrivelling. It took between two or three months before the last of them finally disappeared. I was very sorry afterwards that I did not take a photo before he began, but I looked upon it as such a hopeless case that I did not think it worth while.

In conclusion, I may mention that under the promise of strictest secrecy he has confided to me the charm, which is in the nature of a prayer.

I must confess to my having attempted several cases without success, and which he attributes to want of faith on my part. I certainly admit that I was unable to feel any faith in my own power while making the attempt, but my own opinion is that the man has some inherited power of healing by touch. I am absolutely certain that he uses no drug of any kind.

I think in my previous letter I mentioned that his father had the same power. ---Yours faithfully, C. P. Coghill.

The following are the two enclosures Mr. Coghill refers to ---

Abbey, Co. Meath, January 30th, 1887.

C. P. Coghill, Esq. ---Sir, ---As you have expressed a desire to be furnished with particulars relative to the cure of a wart which I had on my hand, I beg to submit the following facts regarding the same.

The wart referred to has been on the knuckle point of my right hand for about three years. It being in so remarkable a place, and having grown to a pretty large size that I was extremely anxious to have it removed, I showed it to different medical men and chemists, who in their turn applied caustic and several other cures, but all of no use, as the wart appeared to grow larger until it was the size of a pea. At last I gave up the idea of trying to have it removed by caustic, etc. One day a friend observed the wart, and advised me to show it to Mr. John Kane, Mooneystown, Abbey, who, it was stated, possessed a cure or charm for warts. Out of curiosity I showed the wart to him, he looked at it, and gave the wart a rub of his hand, told me to come again. I visited him once a week for four weeks. At the end of this time there were visible signs of the wart disappearing; by degrees it eventually went, and I am now indebted to the kindness of Mr. Kane for having no wart at all. There is no sign on the place where the wart was, more than on any other part of the hand. These are the full and true facts of the case.

Constable Joseph Chambers is within the knowledge of these facts, as he accompanied me to Mr. Kane on each of the four occasions. He also saw the caustic applied with no results. ---I am, Sir, your obedient servant, John McKenna.

Abbey, March 27th, 1887.

C. P. Coghill. ---Dear Sir, ---In September last I had a better cow timed to calve November 1st. She had more than twenty warts of various sizes on both spine and udder, rendering her, I should say, so many more unsaleable.

Having heard that the man, John Kane, could remove them, I sent for him, and, being myself a believer in gags and effects, I closely observed the hand he rubbed the warts with, to see if it contained application or matter, but it did not.

In about ten days the warts became quite shrivelled and withered-looking,

and dropped off entirely within two months.

He saw and rubbed the animal three times, and then assured me that they required nothing more, as they were certain to drop off. They did so, and I now say, "seeing is believing."---Your obedient servant, Hugh Garberry.

## PPM-006    WART-CHARMING

Webb, T. W.: Knowledge, 4:125, 1883.

My father, the Rev. John Webb, who died in the year 1899, aged nearly 95 years, possessed this curious power to a remarkable degree. I have heard him describe the way in which, when a young man, he became conscious of it, from laughing, for mere amusement, a wart on a child's eyelid with a finger moistened from his tongue, and saying that it would go away. Great was his surprise, as well as that of others, to find that his prediction was soon verified. After that time he exercised this power whenever opportunities presented themselves, and with great success. On one occasion, as he was passing on horseback through a tar-pit-gate, he noticed that the arms of a woman who was washing there was covered with warts, which were bleeding from the nature of her work. He touched them and passed on. The next time he saw her, he found they were all gone, though such an inflammation had attended their departure that she thought she should have lost her arm. I have, from time to time, exercised the same power with success. On one occasion I gave the little daughter of a friend, whose hand was much troubled with these excrescences, a small bottle of water sized with some colour, desiring that each wart should be touched with the wetted cork; this, however, having failed to produce any effect, I made her give me her hand through a nearly-closed door, her back being turned at the same time, and slightly pricked each wart with the point of a penknife. This was followed by their entire disappearance. My impression is that, provided the patient has confidence in the process, anything that affects the imagination sufficiently will produce the result--no surprising and no little understood is the connection between the body and the mind. Truly, we are "Fearfully and wonderfully made!"

## PPM-008    FAITH HEALING

Patison, E. Mansell, et al: Journal of Nervous and Mental Disease, 156:385-408, 1973.

**Abstract.** This is a study of 45 fundamentalist-pentecostal persons who experienced 71 faith healings. Each person was interviewed following a structured format to assess: a) life pattern prior to faith healings; b) life pattern subsequent to faith healing; c) medical history prior to and subsequent to faith healing; and d) perceived function of faith healing. Personality status was assessed with the Spitzer Mental Status Schedule, a scaled self-report, the MMPL, and Cornell Medical Index. A typical constellation of ps reactivity traits was found, including the use of denial, repression, projection, and disregard of reality. Faith healing does not result in alternate symptom formation, nor does it produce signifi-

out changes in life style. The primary function of faith healing is not to reduce symptomatology, but to reinforce a magical belief system that is consonant with the subculture of these subjects. Faith healing is contemporary America in part of a continuum of magical belief systems ranging from witchcraft to Christian Science. The psychodynamics are similar in all such systems, the variation is in the abstractness of the magical belief system. Within the framework of the assumptive world view in which faith healing subjects live, their personality structure and magical belief systems are not abnormal, but are part of a coping system that provides ego integration for the individual and social integration for the subculture.

## PPM-007 A RECENT CASE OF FAITH HEALING

*Anonymous, Society for Psychological Research, Journal, 7:172-173, 1996.*

A striking case of "faith-healing" is reported in the *British Medical Journal* for November 16th, 1895. We quote in full the account there given, which recalls some of the cases published in the paper on "Mind-cure, Faith-cure, and the Miracles of Lourdes," by Dr. A. T. Myers and Mr. F. W. H. Myers, in the *Proceedings S. P. R.*, Vol. IX., p. 188.

"A 'miraculous' cure has recently occurred in Moscow, where it has caused considerable excitement. It is, perhaps, a more than usually interesting instance, and therefore deserving of the permanent record given to it by Professor Kozhevnikov, who gave the details of the case at the last meeting of the Society of Neuro-Psychologists in Moscow. The professor had not had the patient under his treatment, but had seen him more than once both before and after the 'cure.' The patient, N. D., was a lecturer in the Moscow University. He had suffered from a severe form of syccosis menti since June, 1894, for which he underwent treatment at the hands of various specialists--among others, of Professors Kapsal, of Vienna; Schwabman, of Buda Pesth; Lassar, of Berlin; Pospislof, of Moscow; and Stekelenko, of Kief. In April last he returned to Moscow; his chin was then covered with a freely-suppurating eruption. He now sought the advice of a 'wise woman,' an attendent at the baths, who was in the habit of giving herbs and 'simples' to her clients. In this case no such remedy was employed. N. D. was told to meet the woman next morning at 5 o'clock in the Temple of the Saviour, the colossal church on the Moskva river, which has been building off the century and is yet incomplete, in memory of the famous events of 1812. He came as told, and, while he remained a passive onlooker, the woman prayed for three or four minutes; the same thing was repeated that evening and again the following morning. But in the meantime the eruption on N. D.'s face had begun to improve; the discharge ceased, the swelling subsided, and in twenty-four hours scarcely a sign of disease was left. Such are the facts as given by the patient himself and confirmed by Professor Kozhevnikov. The professor, however, adds some important points bearing on the case: The patient is of nervous temperament; his sister is highly hysterical; he had frequently had boils on both arms, with a marked tendency to symmetry in position; and the syccosis itself showed some signs of being, if not of nervous origin, at least under nervous influence. The impressive surroundings under which the 'cure' was wrought, and the mysterious cabalistic prayer--which the woman refused to divulge, 'lest it should begin to act with the person to whom she told it and cease to act with herself'--are also factors to be remembered in connection with the neurotic and impressionable character of the patient."

## PPM-008 HEALING WOUNDS BY MENTAL IMPRESSIONS

Anonymous; *Science*, 10:163, 1897.

Professor Delboeuf of Liège is certainly the most versatile of living investigators, when one considers the great originality and suggestiveness of all the work he does. Ancient and modern languages, logic, general physics and physiology, and especially experimental psychology, have received his attention by turns. His latest contribution is to *therapeutics*, and is a communication made on June 4 to the Belgian Academy, which will probably turn out to be of the greatest theoretical as well as practical importance.

We all are familiar with accounts of the wounds inflicted on themselves by African dervishes; but the statement which the narrators always make, that the wounds do not inflame, or may even be quite healed in twenty-four hours, probably often tends to discredit their whole description in the reader's mind. Delboeuf's observations now make these stories wholly plausible. It is well established that in certain hypnotic subjects a suggestion made during trances, that in a part of their body a cautery or a blister is applied, will produce, after due lapse of time, an actual vesication of the skin. The hallucinatory feeling of inflammation produces in these persons a genuine inflammation. M. Delboeuf argued from this, that the feeling of pain, however useful in other respects, must itself be an inflammatory irritant, and went on to infer that the abolition of it from an actual wound ought to accelerate its healing. He immediately thought of some hypnotic subjects whom he had made anaesthetic, and in whom he had often admired the rapidity with which the marks of punctures and piercings disappeared, and proceeded to make systematic experiments, which, so far as they go, seem to verify his hypothesis perfectly. On a young woman whom he could make insensible by suggestion, he marked two corresponding spots, one on each arm, and made on each an identical burn with the hot iron, announcing to the patient that the one on the right should not be felt. The suggestion took effect; and the next day, when the bandages were taken off, and the left arm presented a vesicled sore with an inflammatory area three centimetres in diameter, the right arm showed only a clean scorch of the skin of the exact size of the iron (3 millimetres diameter), without redness or inflammation. On another subject similar results were obtained with burns and blisters, the spots chosen being near together on the same arm or on the neck. The experiments are few in number, and ought to be multiplied; but the reader will immediately see the vista which they open. Many of the results of the 'mind-cure,' and the strange fact, so long known, of opium controlling inflammations, are explained by M. Delboeuf's principle. So is the popular belief in 'hardening' one's self by a little judicious indifference, and neglect of one's condition. Local pain is useful in leading us to protect the wounded part from mechanical abrasion,---several of M. Delboeuf's experiments were inconclusive, because the subjects, being insensible at the seat of their injuries, allowed them to get scraped, etc. . .---but it has the drawback of exciting reflex changes of nutrition of an unfavorable kind. Anesthetizing a wound prevents these reflex changes. M. Delboeuf, suggesting to a very sensitive subject that she should not feel a severe dental operation, was assured by the dentist that what he found most extraordinary in the whole performance was the absence of the salivary secretions which would usually have accompanied it.

It is to be hoped that above, with better facilities for surgical experimentation than a professor of classical literature like M. Delboeuf, will follow the example he has so happily set them.



## PPF-001 SYNTHESIA IN A CHILD OF THREE AND A HALF YEARS

Wolbarsht, Anna K. : *American Journal of Psychology*, 33:503-505, 1922.

Edgar Curtis is the son of Professor and Mrs. G. F. Curtis of Cornell University. At the time of this writing he is three years and seven months old. He has never been particularly interested in colors, and he knows only the names of hues of good chroma. He calls rose, and various tints of pink, red. He uses his own descriptive words, however, and he often calls a color reddish, red and orange, etc.

About two months ago his mother noticed for the first time that apparently he has colored hearing. Their home is not far from a rifle range, and the sound of the guns resounds through the hills with a loud boom. One day Edgar asked: "What is that big, black noise?" A few days later he was being put to bed on the sleeping porch. Two crickets were chirping loudly, one of them having a very high, shrill chirp in comparison. He asked: "What is that little white noise?" When his mother told him that it was a cricket he was not satisfied, and he said: "Not the brown one, but the little white noise." Then he imitated both of them, calling the lower brown and the shriller of the two white. At another time, when a cricket-chirp started from farther away came with a resonant buzz, he called it red.

He calls the sound of the crooked white. The electric fan is orange, and the electric cleaner which has a deep 'burr' is black. The sound of a frog, neither very high nor very low, is bluish. A little Japanese bell is red when rung loudly, and white when it tinkles faintly. A squeaking door is black and white. One could distinguish in that sound two tones of different colors. Drumming on the back of a guitar, when the opening is held to his ear, is black. An engine makes a black noise, but an electric pump is black and white. The low notes of the chroma are brown and black. The shrill crying of a little child is white. The rhythmic rise and fall of the noise made by a street-car in motion is orange. A can is black when it is pounded upon, and when the sound is dulled by touching it with the finger it is red. Thunder is black. A Scotch woman with a broad burr in her speech read him a story, and later he said to his mother: "Do you know what color it is when she reads? It is black."

All the above information has come from the child's casual conversation. He takes it for granted that everyone has the colors that he has, and will often remark: "That noise is red, isn't it?" His parents have been careful not to suggest colors to him, and they have not either suggested that a sound may be of a different color from the one he has named. During a few little experiments, the experimenter sometimes said, "I think that color is white," when Edgar had said it was something else. Every time he was very positive that he was right, and he was manifestly disgusted that anyone could think the sound was white when he had said it was red. He often goes to the piano when he is alone in the room, and to amuse himself touches the keys and tells the colors of the sounds. Notes have been made on these colors when he was not aware that he was overheard. Middle-C is red, and the tones just below are red or red-purple. The bass is black, and the high tones are white. Between middle-C and the white tones are reddish and bluish tones. Edgar never of his own accord named tones yellow, green or gray; but during some later experiments he found tones for them after seeing the color. One day, upon seeing a rainbow, he exclaimed, "A song, a song!" We thought that this reaction might be a mere matter of association, and we decided to see whether, if he were shown colors, he would find the corresponding tones on the piano.

Red, orange, yellow, green, blue and purple papers of good chroma were used, with the addition of black, white and middle gray. He played with the

colors for a few minutes and he was delighted with the idea of trying to find them on the piano. Following are the tones he selected, every color having the tone named and one or two tones above or below:

a' " "	and all tones above	White
b' "		Yellow
e' "		Green
e'		Blue
c' (middle-C)		Red
a		Orange
A		Gray
E and all tones below		Black

He selected the tones by playing about on the keys with one finger, and saying, e.g., "This isn't red! This isn't red!" and then gleefully, when he found a tone that suited him, he exclaimed: "This is red, isn't it?" It was interesting to notice that when he was searching for red he did not explore the white or black region, but when gray was given him he went immediately toward the black, and when yellow was given him he went toward the white tones.

We thought that tones of the same musical pitch might possibly be of the same color to him. We found, however, that on the guitar white was a', which on the piano was blue. On the guitar, a-sharp was black, though that region on the piano was red and orange. On the guitar, again, g-sharp was red and black, while f was red on the piano. One high tone on the guitar was called "a little high white one."

From Edgar's own adjectives, and from the distribution of the colors on the keyboard, it seems that notes or tones of low pitch and large volume are black or brown or gray, white shrill, high, piercing, thin tones are white; the other colors range over sounds of intermediate pitch and volume. The normal order appears to be orange or orange-red, red, red-purple, blue; then yellow, under the experimental conditions, green and yellow. There is some uncertainty as to the red-purple. Our investigation has, however, been so imperfect that such uncertainties were to be expected; it is only the primary and general outcome that we wish to emphasize. We hope that later studies may be made under stricter experimental safeguards.

#### PPP-002 TONE SHAPES: A NOVEL TYPE OF SYNÆSTHESIA

Zigler, Michael J. - *Journal of General Psychology*, 3:277-287, 1946.

The situation of the writer has recently been called to the occurrence in the experience of two Wellesley College undergraduates of an unique type of synæsthesia in which the sound of such of several musical instruments is accompanied by a distinctive tridimensional form. The fact that musical sounds are associated with color impressions, phantasms, bidimensional patterns, etc. in the experiences of certain persons has been reported in various places since Goethe first mentioned the existence of this type of synæsthesia. The writer has been unable, however, to discover anywhere in the literature descriptions of synæsthetic phenomena in which the patterns evoked by musical instruments are clearly tridimensional in form.

**Summary.** We have reported two cases of a novel type of synaesthesia, in which the tones of different musical instruments give rise to correspondingly different tridimensional visual shapes. Every instrument excites a specific form, which maintains roughly the same features at all pitches, intensities, and durations. The higher pitches excite smaller and lighter, the lower ones larger and darker shapes. The forms may appear in colors, but color is not always present and always plays a role secondary to that of form. These phenomena occur chiefly in solo conditions, and possess high aesthetic appeal. One subject has experienced the forms as far back as she can remember, the other discovered suddenly several years ago her capability of realizing them, and they have since gradually somewhat improved in definiteness. There are striking differences in the forms of the two subjects for the same instrument, but the general conditions of their arousal and alteration have many points in common. In view of this fact, the interpretation is made that the two subjects represent a single type of synaesthesia. Evidence for and against the hereditary and acquired theories, although somewhat favoring the latter view, are inconclusive. Relationship of these shapes to eidetic imagery is suggested in the almost perceptual character of the phenomena, especially in the case of Subject A, as well as in the fact that for Subject B under all circumstances and for A under the more difficult conditions of their arousal, the shapes are realized under voluntary attention.

Instrument	Subject A	Subject B
Flute	Thinble or score cup	Hollow tube
Saxophone	Cap with solid inner core	Swelling of a mass into rough, jagged, and optically particles.
Bagle	Mossing glory or pipe	Sphere with opening on upper side
Harmonica	Series of spatially distributed discs	Flat rectangle
Jazz whistle	Thick waving streamer	Lumpy dough-like elongated mass
Simplexophone	Dagger	Microphone of very vague outline
Musical saw	Elongated globe with jagged surface	Yards and yards of round ribbon-like material
Cello	Flat horizontal base with spring-like vertical projections	Thick ribbon
Viola	Tube with enlarged nodes	Ribbon much thinner and smaller than that of cello
Piano	Quadrangular blocks	Spheres

## PPP-003 WORD-BLINDNESS

Anonymous: *Popular Science Monthly*, 28:370, 1892.

M. Magnan, in a communication to the Societe de Biologie, has related two cases of aphasia complicated with a special phenomenon, to which he has given the name of word-blindness. One case was that of a man who was seized with a right hemiplegia and aphasia after a fall. A month afterward, the patient recovered the power of speech, little by little; he understood spoken language; he wrote, of his own accord or from dictation, but was incapable of reading either print or manuscript, even when the latter had been written by himself; and he could not name letters written upon a board. The second patient presented similar symptoms. He recognized objects which were shown him, but could not name them; could write words thought or heard, but could not comprehend what was written. He had lost the notion of the value of gesticulations. A similar case is reported by M. Brunsdel, in which a post-mortem examination revealed a disordered condition adjoining the pit. cerebra. The pathology of the affection is explained by supposing that the communications between the psychic visual center, which is situated about the pit. cerebra, and the convolutions of Broca, are interrupted. In such a case, the patient can still see, speak, and hear, but can not acquire any new idea through his eyes. "Brain" suggests that since no disease of the eye exists, and the affection is owing to a purely psychic phenomenon, it might be better described as "cerebral word-blindness."

## PFS-001 HYSTERICAL STIGMATIZATION

Lifeboats, Joseph E.: *American Journal of Psychiatry*, 114:627-633, 1957. (Copyright 1957, the American Psychiatric Association. Reprinted by permission.)

The purpose of this paper is to review the history of stigmatization, and to report a case in a patient whose state was not associated with religious ecstasy.

Cases of stigmatization may be divided into two groups, religious and non-religious. As Ferenczi put it, "... the word 'stigma' is historically of clerical origin and formerly indicated the amazing fact that the wound marks of the Christ were transferred to believers by the efficacy of fervent prayer." Klauer notes that "Stigma, a Greek word, means a spot, a sign, a wound or mark branded on a slave. In a figurative sense the word has been used to signify the counterparts of the five wounds in Christ's body appearing on persons affected in a particular way by the Passion."

The first person, and the most famous one, known to have experienced stigmata was St. Francis of Assisi. According to the *Encyclopaedia Britannica*, 1953 edition, St. Francis was born in 1181, son of a wealthy merchant. "He was the recognized leader of the young men of the town in their revels, though he was always conspicuous for his charity to the poor." After a serious illness at the age of 21, and after a larticular episode of revelry, his friends found him "in a trance, a permanently altered man." He devoted the remainder of his life ministering to the sick and unfortunate, and died at the age of 45 on October 3, 1226.

"Two years before his death Francis went up Mount Alverno in the Apennines with some of his disciples, and after forty days of fasting and prayer and contemplation, on September 14, 1224. . . . He had a vision: in the warm rays of the rising sun he discerned suddenly a strange figure. A seraph with wings extended flew toward him from the horizon and insinuated him with pleasure unutterable. At the center of the vision appeared a cross, and the seraph was nailed to it. When the vision disappeared Francis felt sharp pains mingling with the delights of the first moment. Dismayed to the center of his being he anxiously sought the meaning of it all, and then he saw on his body the Stigmata of the Crucified." The early authorities represent the stigmata not as bleeding wounds, but as fleshy excrescences resembling the nails. . . .

Francis was so exhausted by the sojourn on Mount Alverno that he had to be carried back to Assisi. His remaining months were spent in great bodily suffering, and though he became almost blind he worked on with joyousness."

A description such as this gives us insight into the personality of St. Francis, and the total dedication of his life to his work. It helps explain the powerful emotional forces leading to the stigmata. As the author of the *Encyclopaedia Britannica*'s article puts it, "Probably no one has ever set himself so seriously to imitate the life of Christ and to carry out so literally Christ's work in Christ's own way."

Since St. Francis there have been over 344 reported cases of stigmatization, the great majority of them in women. The authenticity of many of these remains in question, some undoubtedly being cases of self-inflicted wounds. Perhaps the most famous recent case is that of Therese Neumann of Konnersreuth, Germany. There are abundant, carefully documented reports in the medical literature concerning this case, and to the best of my knowledge Therese Neumann is still living. She was born on Good Friday, April 8, 1896, and received the first stigmata on the upper surface of her hands and feet on Good Friday, April 2, 1926. It is interesting to note that this was 8 months before the 700th anniversary of St. Francis' death, and one may speculate whether Therese was aware of any preparations in her community or in Germany to commemorate the anni-

verrary. Some commemorations did take place, as noted in an article by E. B. Krumpholtz in the *Annals of Medical History* in 1937.

Perhaps the most extensive report in the English literature on Therese Neumann is that of Joseph V. Kladner, an American dermatologist. He examined her about 30 years ago, and gives as the following report concerning her. Ewald, quoted by him in several places, is a professor of psychiatry who had close contact with Therese Neumann.

"In March 1918 a fire occurred in the barn of a neighbor of Therese Neumann's employer. When engaged in carrying buckets of water she suddenly felt a cramp-like pain in the back. From this time she felt pain when she attempted to lift a heavy object, lost appetite, had insomnia, walked around slowly and was unable to work. She was hospitalized for six weeks--the diagnosis was hysteria after shock.... She acquired the conviction that she was ill. After discharge from the hospital she was not entirely well and she was able to do only light housework.

In the summer of 1918 she complained of shimmering light in the field of vision, and vision became impaired. In October, 1918, when attempting to lift a heavy object, she overexerted herself and from then on was unable to walk. She became so ill that her parents thought she was going to die. Vision was much impaired. When an attempt was made to perform an ophthalmoscopic examination, she had what was regarded as an hysterical convulsion. Her physician, to appease her, told her that a vertebra was probably displaced. No roentgen examination was made. All subsequent examinations showed the spine to be normal. About January 1919 she applied for accident insurance and was given the usual accident rate.

She became bedridden, paralyzed, blind and for about one week completely deaf.... She vomited blood and blood from the ears....

From 1920 to 1923 she had no medical attention but was nursed by her parents. According to Ewald, she was frequently visited by her parish priest, who, Ewald stated, may have pointed out to her the sufferings of Christ, so that Therese longed to emulate the sufferings of the martyrs and bore her sufferings with a glad heart.

During the time of her illness her father had rheumatism. Therese asked her pastor if she could pray to little St. Therese that she might suffer instead of her father. Soon thereafter she had rheumatic pain in the left arm, and it became fixed. It remained this way for three months. In 1922 a young seminarian had some pharyngeal affliction which threatened to interfere with his studies. Therese prayed to her patron saint, little St. Therese, that she might suffer in place of the seminarian. The following day she experienced difficulty in swallowing, which persisted....

According to Ewald, the time was appropriate for her cure, since she created the example of the saints. If the saints could cure others, then she, who took the sufferings of others as herself, could be cured.... On the day that little St. Therese was beatified, April 29, 1923, Therese Neumann was suddenly cured of her blindness. Two years later, May 17, 1925, she had a vision in which little St. Therese revealed to her the possibility of cure.... She sat up in bed and said that she had talked with St. Therese and that she could now walk. She got out of bed and with some support walked around the room....

Physical Examination---The physical examination gave essentially negative results....

The Stigmata---The time of the first appearance of the stigmata on the dorsa of the hands is obscure. Apparently they appeared suddenly.... There was no prodromal pain. The patient denied knowledge of the stigmata of Louise Laboue and of Katharina Emmerich. Soon after the appearance of the stigmata she began having trances and ecstasies, and at that time bloody tears first appeared; later

new stigmata appeared over the heart and on the feet. On Nov. 6, 1926, during ecstasy, bleeding appeared on 3 places of the scalp. Now there are 8 places. After 1927 stigmata appeared on the palms and the soles. In the beginning there was a constant but slow oozing of blood from the stigmata; later only some of them bled, and only on Friday. During the Passion of the Holy Week there was bleeding from all the stigmata.

As recorded by Ewald, the stigmata were not penetrating wounds, although there was a subjective sensation of penetration....

The Ecstasy.—...the ecstasy began every Thursday between 11 and 12 o'clock and lasted until Friday afternoon. Theresa would awaken suddenly from sleep, partly sit up and remain motionless for a short period. She would become deadly pale, with eyelids half closed and hands stretched out; blood tinged tears would run down her face and clot on her chin and neck. After five or ten minutes she would sink back into the pillows and appear exhausted.... When asked questions she would describe in a low voice what she had seen. Apparently she would live the whole scene at Calvary, following Christ at each step. In the final hour, when she would experience the Crucifixion, she would sit for the whole hour in a half-spright position, with arms extended and eyes wide open and staring....

She described her visions as not like pictures, but as vivid and colored. Her description of Jerusalem is said to be accurate. The Aramaic dialect is said likewise to fit properly the person whom she quotes."

To my knowledge these descriptions have not appeared in the American psychiatric literature. The case of Theresa Neumann, showing such extraordinary suggestibility, is reminiscent of severe cases of hysteria reported by Freud, and by Charcot and Bernheim.

In 1929 William Needles reported a case of observed stigmata occurring in the course of psychoanalysis. There are only the most scattered reports of stigmatization occurring not in association with religious ecstasy. Needles' case, being observed directly in analysis is more unusual still.

"His case was of a man, age 31, in analysis 8 months, who on 3 occasions was noted to bleed from the pores of his hands. Needles was able to relate each episode of the bleeding to an immediately preceding conflictual situation, in each case stirring up Oedipal strivings, fantasies and guilt feelings. "All three episodes of stigmatization were precipitated by situations reminiscent of the Oedipus.... Their (the stigmata's) psychological importance to their significance to the patient to whom they meant blood.... (He was) consistently recoiling from and punishing himself for his aggressive tendencies." This patient, by the way, was not a Catholic."

Needles notes other cases of non-religious stigmatization. A girl who saw her brother punished by being to run a gauntlet soon thereafter exhibited bleeding on her back at the same site as her brother's wounds. The witness of an encounter between a French and Russian soldier became terribly frightened and soon developed bleeding wounds corresponding in location to those of the French soldier. According to Klusder, in the days of Liebknecht, Charcot and Bernheim when hypnosis was much in vogue, all varieties of cutaneous lesions—erythema, vesicles, bullae, papules, lesions resembling burns, ecchymoses, bloody crusts from previous dermatographia—were all reported as produced through suggestion in hypnosis.

Helene Deutsch describes similar dermatologic manifestations of converted sexual impulses.

"We often find such manifestations of repressed content in analysis, sometimes as disturbances in the motor, and sometimes in the vaso-motor, sphere. I have often seen cases in which the patient's hand would swell up and become red

whenever his associations led him to memories of repressed masturbation. Such a symptom represented a kind of shame-reaction, like, say, blushing, and contained also a self-hatred, a self-reproach in the face of the analyst."<sup>1</sup>

At this point I should like to report a case of non-religious stigmatization of a specific kind.

This was a patient I saw only 4 times, and in whom the stigmatization was not observed, but reported from her past. The patient was a particularly sober and serious-minded person, and there was little question in my mind concerning the authenticity of her report. Her stigmatization fits in well with her personality functioning, and I take her report to be authentic.

She was a 45 year old white married telephone company worker who presented herself for sleeplessness, depression and gastric distress. She was married for the third time. Her first marriage ended with her husband's death from cancer after 14 years of happy marriage. She was 28 at the time. She married again briefly and unhappily 2 years later, and had at the time I saw her been married 3 years, happily, at least on the surface. There were 2 sons from the first marriage.

Her religious history is significant. She was one of 11 children, raised in a big city, in an Italian Catholic family. Her mother became deaf at her birth. Her father was extremely cruel and tyrannical to the mother and all the children, beating them unmercifully. She and her siblings would call in the authorities after these beatings but her father was never prosecuted.

She was raised rather perfunctorily in the Catholic faith. Father never attended church and neither did mother, being deaf. At the age of 11 the patient began working in the garment industry, and at the same time, on her own initiative, with little family opposition, she joined the Congregational Church. Her first husband and children were Congregationalists, and there was complete religious harmony in their home. Her present marriage was to a Catholic, and it was my impression that her anxiety and tension symptoms for which she came to me were due to her inability to follow the Catholic faith. She was trying to live as her husband wanted her to, but yearned for the placid days when the family members were all Congregationalists, and lived harmoniously. She had a previous episode of depression requiring shock therapy in May 1955, 3 years after her third marriage, and she came to see me in May 1956. Our brief contact with her ended because of a serious intercurrent eye disease that prevented her returning to me. I had worked out with her the clear religious conflict, and she felt she could only be happy in the faith of her choosing, rather than her husband's. She intended to return to the Congregational Church, and she said her husband would agree to this if it would restore her mental and emotional balance.

When she was 13, the patient's father scratched her down her back with his fingernails, leaving 3 long scars. These healed over in time. Four years later, at the age of 17 she had left home because of her father's brutality, and was living in the country with her brother. I am not sure for how long she had not seen her father, but it is my impression it was many months, perhaps over a year. Somehow her father found out where she was, and announced he would pay a visit. The patient reports now that as the time of his visit approached, her old back scars, which had been healed for 4 years, would redden and bleed. Her conscious affect at the time was one of fear of her father. When he did arrive he was no longer cruel to her or her brother. This reddening and bleeding of the three old healed scars would recede spontaneously, but these episodes recurred several times, each with the anticipation of a visit from father.

Again I must say that the sobriety and care to be explicit and correct that this patient exhibited increases the probability of her stigmatization. This case



is slightly different from others reported, in that there was a past specific physical trauma to which the hysterically induced bleeding attached itself. Yet it seems to me that such bleeding, 4 years after a physical trauma can be considered a type of stigmatic bleeding."

It is unfortunate that no further data are available concerning this patient, and that we can only hypothesize concerning the psychodynamics of her stigmata. She may have identified the authoritative childhood Church with the authoritative father, both of whom she rejected. Her bleeding, however, need have had nothing to do with the Church, but may have been an expression of the repressed incestuous Oedipal fantasy so characteristic of hysteria. The rape did symbolically occur, at the age of thirteen, in the father's audacious attack.

A final point is of interest. After years of saying in her adult life, "I'll never help him," when her father was seriously ill in November 1943, she donated blood to him.

To pursue further the psychodynamic implications of stigmata in general, we quote Ferenczi as follows:

"... common to traumatic hemianesthesia and hemianesthetic stigmata is the exclusion from consciousness of touch stimulation, along with the preservation of the other psychic uses of this stimulus. We saw in the anxiety hysteria that the immovability of one half of the body was used to employ the unconscious sensations... for the 'materialization' of the Oedipus phantasy...."

Hysterical stigmata signify the localization of converted excitement masses at parts of the body which, in consequence of their peculiar suitability for physical predisposition, are easily placed at the disposal of unconscious impulses, so they become "anal" conversion manifestations of other hysterical symptoms identical in origin."

And as Ferenczi so succinctly puts it:

"Metasymptomatically hysteria frequently demonstrates Ferenczi's conception of hysterical 'materialization' and 'gestationization.' Repressed thoughts find their substitute expression in a material change of physical functions, and the afflicted organ unconsciously is used as a substitute for the genitals. This 'gestationization' may consist of objective changes within the tissues, for example, hyperemia and swelling, representing erection; or it may be limited to abnormal sensations imitating genital sensations. The so-called stigmata belong to this category."

With regard to the transparently converted sexual impulses involved in such hysterical reactions, one may recall a time in religious history when such unconverted impulses were most directly expressed. The historian, Herbert Muller notes:

"Also touching are the innocent but passionate yearnings of medieval women, who wrote constantly of 'pining with desire' for the God incarnate, and of their intimate ecstasies when the desire was fulfilled. Mary of Orléans spent thirty-five days in silent trances, broken now and then only by the words 'I desire the body of our Lord Jesus Christ.' The saintly Luigard of Tongern had more rapturous transports; 'I am my Beloved's,' she exclaimed, 'and His desire is towards me.' Sister Mechthild of Magdeburg had glowing visions of the 'heavenly Youth Christ,' who spoke to her in lovers' language and called her to the 'couch of love.' 'I am a holygreen bride and will have my Bridegroom,' she rhapsodized; and in her supreme ecstasies she became 'Bride of the Trinity.' Writing before the heyday of Freud, the historian Henry Osborn Taylor asked: 'Are these virgins rewarded in the life to come with what they yearned in this?' Hysteria and hysterical stigmatization appear to be psychopathological entities where the conversion of sexual urges are only somewhat more subtly disguised than these reports from the medieval cloisters.

**Summary.** The history of stigmatization has fascinated observers from the time of St. Francis of Assisi in the 13th Century to the present. That history is reviewed here. Carefully detailed studies of a modern stigmatized person, Therese Neumann, reveals a seriously disturbed young woman, a severe hysterical personality. One even suspects psychotic disturbances before her stigmatization.

Far more rare are reports of non-religious stigmatization. The most striking report is that of William Needles in a case undergoing psychoanalysis. The classical psychodynamic interpretation of hysterical stigmata by Feistchel and Paranczi is quoted in which they are seen as hysterical "materializations" or "ignitions." A non-religious stigmatization is reported in this paper, in which the Oedipal conflicts and ambivalences seem to be directly expressed.

## PPS-002 STIGMATA -- AN UNSOLVED MYSTERY

Smith, Sany; Psig, 26:67-74, March 1973.

One of the most exhaustively studied stigmata in the history of this inexplicable phenomenon is Louise Latour, a simple Belgian peasant girl whose case attracted more than 100 doctors and many eminent Catholic clergymen to the tiny village of Bois d'Heine in the province of Hainault.

Louise was born in Bois d'Heine in 1850 and lived a relatively ordinary life until she was 18 years old. Then, after she suffered for a time from an ill-defined illness involving intense neuralgic pains, the stigmata first appeared on April 24, 1868. Bleeding wounds showed on the palms of her hands and on her feet, as if nails had been driven through them. Blood flowed from her sides as from a spear wound and droplets of blood oozed from her brow. Her stigmata appeared between midnight and 1:00 a.m. every Friday morning and lasted for 24 hours. By every Saturday the stigmata were dry and painless and remained so until the next Thursday midnight when they again began to bleed and hurt.

None of the doctors or clergymen who examined Louise ever had an explanation for the phenomenon nor did they find any indication of trickery. Finally, at the request of religious authorities she spent 20 weeks in the fall of 1888 under the supervision of Dr. Lafereux, an eminent Louvain specialist in nervous diseases. During this time many of his medical colleagues also examined the girl and witnessed the appearance of the stigmata at regular intervals.

A few years later a Dr. Warlomont, who believed Louise herself might be inducing the bleeding in some manner, conducted further experiments, sealing her hands in gloves each Thursday. Nevertheless, when the seals were broken on Friday afternoons her hands were found to have bled as usual. Dr. Warlomont then devised a glass cylinder in which her arm was sealed in such a way that it was impossible to get at her hand. When her hand was encased in the cylinder on Thursday, January 21, 1876, there was no sign of bleeding but on Friday when the apparatus was examined in the presence of medical witnesses, some of them antiseptical skeptics, the hand was found to have bled.

As a result of this careful investigation of Louise Latour's case the Belgian Academy of Medicine passed a resolution affirming the reality of the phenomenon although several members rejected any supernatural interpretation. And today we are no closer than were these 19th Century medical men to understanding stigmatization.

Although the phenomenon is never commonplace it occurs more frequently than we realize. Over the centuries churches have investigated every known case of stigmatization with great care and thoroughness looking for evidence of divine intervention. Medical men study the stigmatic to determine whether hysteria is involved and psychic researchers investigate it for any paranormal factors in evidence. With all this scrutiny it is not surprising that few cases of stigmatization ever are acknowledged as authentic.

Stigmata most often occur in Catholic mystics who have been obsessed with Christ's wounds. Yet the Catholic church is reluctant to admit that any given case represents miraculous intervention. Bearing the wounds of Christ is not considered evidence of superior virtue. Of hundreds of reported cases of stigmatization over the centuries only 30 stigmatics later have been canonized as saints.

The first stigmatic recognized by the church was St. Francis of Assisi. Lesions through his hands and feet appeared and within the wounds was a hard and horny substance in the form of nails.



*Stigmata. (Drawing by John C. Holden)*

Fr. Herbert Thurston, writing in the *Proceedings of the Society for Psychical Research*, Vol. 32, 1922, on "The Phenomena of Stigmatisation," lists on many other cases are on record in which the facts are reliable and reported by respectable witnesses. Among these cases Father Thurston considers authentic is that of a Germana Galgani, a middle class young girl who lived in Tuscany (Italy) and died in 1903 at the age of 25. From childhood Germana was ascetic to an extreme. At 13 she had meningitis and suffered paralysis of her limbs and total loss of hearing. After more than a year of suffering she suddenly and miraculously recovered. Four weeks later she experienced her first ecstasy. Her confessor and biographer, Padre Germano, quotes her description of the ecstasy:

"While spending part of the night in prayer all of a sudden I lost the use of my senses. I found myself before Jesus crucified. He was bleeding all over. I prostrated myself with my forehead on the ground and there remained for several hours. I came to myself with the wounds of Jesus so deeply impressed on my mind that they have never since left it." Several weeks later she developed bleeding wounds which appeared every Friday.

Always recognizing the possibility, even likelihood, of an hysterical origin for the stigmata, Father Thurston says, "It will be readily seen why I emphasize the fact that the wounds in Germana's body corresponded in position and size with those of the great crucifix before which she was in the habit of praying." Yet, in the presence of accounts by well-known oculists who investigated Germana Galgani, he adds, "It seems to me there is no middle term between either accepting the story as substantially accurate or accepting the writer of deliberate falsehood."

"Perhaps one of the most satisfactory cases I have come across from the official point of view," writes Father Thurston, "is that of Blessed Domitilla Allegri, a young nun of Florence (Italy), 26 years of age." In 1677 she sustained a serious illness from which she never recovered. She was so ill that two men sat up with her after she had lain unconscious for 24 hours. During the night of Ash Wednesday a change came over her. She assumed the position of Christ on the cross and seemed to be suffering great anguish. During this time her hands bled. A number of church people were called in to witness the phenomena which happened on Good Friday. Domitilla then lived until the following December.

Stigmatisation is not a condition known only in ages past. There are several well-known modern examples. The best known is Padre Pio of Foggia, Italy, a humble, simple man who speaks freely publicly and who would not show his wounds. (Interestingly, his case is the only well-attested example of complete stigmatisation in a male since the time of St. Francis.)

Father Thurston has accounts of him from two eyewitnesses. One was Monsignor Kennedy, Archbishop of Sicily, who visited Foggia in 1920. Father Thurston writes, "Being himself a Capuchin and a prelate (Monsignor Kennedy) was able to exercise a certain authority over Padre Pio but the Father after allowing his hands to be examined begged so pleasantly to be excused from any further inquiries that the archbishop felt he could not insist. Still his testimony as to the reality of the wound-marks in the hands, which are always hidden from view by mittens, is positive."

In view of the reports of witnesses who reported on the stigmata Father Thurston writes about, he concludes, "We seem justified in admitting the reality of these manifestations, though hardly any two examples are exactly alike. But amid a very great diversity in the character of the wounds, the order of develop-

<sup>11</sup>Although cases of Protestants and unbelievers are known the great majority of stigmatises are Roman Catholic mystics and of these the majority are women. <sup>12</sup>—*Encyclopaedia Britannica*.

ment, the periodicity of the bleeding and so on, there are certain features found in nearly all the cases...."

First there is a background of illness, then a vivid realization and concentration on the wounds of Christ for some time before any bleeding appears. "Whenever we have the opportunity of studying the subject's frame of mind," Father Theoretin says, "we see the intensity of the mental impression. One would think that if any imagination could produce a powerful physical effect upon the body it would be such as is revealed to us in some of these stigmatics."

Even in today's era of psychosomatic medicine we hesitate to ascribe so profound an effect to mere "imagination." Yet if the conscious mind is not capable of such manifestations, can they be brought about by the unconscious mind? Hypnotists have produced blisters and other wounds simply by suggestion to hypnotized persons and in 1885 one Dr. Biggs produced crescentic marks on the chest of one of his subjects. In his report in the *Journal of the Society for Psychological Research*, Vol. 3, Dr. Biggs tells of having "magnetized" a Santa Barbara, Calif. girl. He gave her the suggestion: "You will have a red cross appear on the upper part of your chest, only on every Friday. In the course of time the words *Sancta* above the cross and *Crucis* beneath it will also appear; at the same time a little blood will come from the cross." Dr. Biggs then touched the girl's chest with a cross made of rock crystal. On Friday a pink cross appeared exactly at the place he had touched and after that it appeared every Friday for the period of time he had designated (about four months). It was invisible on all other days. Blood was noticed once and also part of the letter "S" above the cross.

A case highly suggestive of hypnotic influence is that of St. Veronica Giuliani of the Capuchin Order (1680-1727). Her stigmata seemed always to open and bleed at the command of Father Crivelli. This was observed by Bishop Rastachi, who investigated St. Veronica for the inspiration at the end of the 17th Century. Both priest and bishop witnessed the wounds opening and closing.

However, Father Theoretin comments: "I confess I get the impression that if bleeding stigmata have never been artificially produced... it has not been for want of trying... We may perhaps fairly draw the conclusion that the autosuggestion of the subject---if indeed it be autosuggestion---is an immensely more powerful influence than hypnosis."

If we conclude with Theoretin that hypnosis is ruled out as a possible explanation of stigmatization we must turn to the condition called hysteria. Hysteria is seen as an overwhelming invasion of the conscious mind by the unconscious. In this state, according to Fr. Reginald Cress in his book *Psychical Phenomena*, "We observe a raging spontaneity, with an intensification of feelings, emotions and passions and a sort of irresistible craving to make oneself interesting to attract attention, to be talked about, to be blamed and condemned just as much as to be admired and praised."

At times the hysteric is genuinely convinced she has seen, heard or done all her imagination has created, and she believes she is in truth the interesting, dramatic, heroic or tragic person whose part she acts. This conviction can become so intense that the hysteric is capable of swearing false oaths to prove her lies are true. It makes her capable of exposing herself to severe punishment, as if she were guilty of all the sometimes abominable things of which she accuses herself.

Thus in the case of so-called paranormal phenomena of any kind the first question to be asked is whether hysterical mythomata (propensity for lying or exaggerating) has played a part. This was the verdict in a case of a stigmatic who aroused considerable attention in the 20th Century---Therese Neumann of Konnersreuth, Bavaria, who lived from 1891 to 1922.

For many years the faithful flocked to witness the phenomena of bleeding and

wounds which she began experiencing in 1826. Yet when the Bishop of Bayona asked her to enter a university clinic for medical observation, she refused, saying her father would not permit her to go. Her family's opposition also made it impossible for doctors to examine her intensively enough to verify or reject her claims.

Members of a church commission which investigated her never actually saw blood coming from her tissues. Bleeding never occurred except when Therese was hidden under the bedclothes or when every single witness had been compelled to leave the room. It was concluded that no real stigmatization existed and Therese was simply an hysterical.

Prof. Jean Lhermitte, one of the doctors who examined her, stated, "No one the story of Therese Neumann. A major hysterical with the deceptive streak that accompanies severe neurasthenia; it is clear that the stigmata of Korsakowitch reveal herself to us."

Father Thurston cautions, "We might then rest content with the solution that the wounds of the stigmatized mystic were produced by autosuggestion if the problem were limited to the data which we have so far been considering. But this is not the end of the matter. There are other alleged phenomena---phenomena for which very respectable, if not convincing, evidence is producible---which demand a still further extension of the range of the mind's influence over the body. We are informed upon the testimony of surgeons of note in the 17th and 18th Centuries that in the case of several stigmatized persons the tissues of the heart, as revealed in a postmortem examination, have been found to exhibit unmistakable traces of traumatic lesions or lacerations of old date, lesions which under normal circumstances would have rendered the continuance of life impossible for more than a few minutes. (It will be remembered that the blow of the lance was constantly supposed, . . . not only to have pierced the side of our Saviour, but also to have reached the heart.) Our first impulse would naturally be to dismiss these statements as mere fairy tales, but they are not quite so easily disposed of. They rest, in many cases, upon the sworn evidence of medical men who, though belonging to a less scientific age than ours, were nevertheless experienced anatomists."

St. Theresa tells us in her autobiography that she had a vision of a glorious angel who thrust a long golden spear with a fiery point into her heart. After the saint's death her extracted heart was found to have a wide horizontal fissure. However, Father Thurston believes this evidence is unsatisfactory, for her heart was removed by unskilled hands.

An example he believes to be better, for it rests on the testimony of several eyewitnesses whose depositions are still available to us, is the wound in the heart of Caterina Savelli of Soana, Italy. After her death in 1691 the traces of wounds in her hands and feet became perfectly plain and when her heart was extracted it was found to have an old deep fissure. The physician and surgeon who signed the final attestation declared that without supernatural intervention it would have been impossible for anyone to live with such a wound.

Previously mentioned St. Veronica Giuliani believed that the "instruments of the Passion" (cross, swords, pillar, chalice, nails, etc.) actually were reproduced in miniature in her heart. During her life she drew more than one plan of the arrangement of these objects. When she died a postmortem was performed by a surgeon and a physician in the presence of several ecclesiastics and others. All signed a formal instrument asserting that they discovered in her heart the exact symbols she had described, quite hard in texture and clearly defined in shape in the same relative positions she had indicated in her drawing.

Somewhat less astonishing, Father Thurston believes, but still very interesting, are the instances of epousal rings found on many stigmatists. The mystics believe these rings were placed on their fingers by Christ as a token of their

spiritual captives. Such a red ring appeared in the flesh of Marie-Julia Jahenny. Dr. Imber-Goubeyre, professor at the Medical School of Clermont-Ferrand, France, studied her over a period of 20 years with the sanction and encouragement of the bishop of her diocese. In 1873 when she was 28 she exhibited in successive stages the various phenomena of stigmatization. These were crowned by the appearance of a mystical ring, a hoop of vivid red encircling the ring finger of her right hand. In later years the ring seemed like red coral sunk into the skin on her finger and it remained visible all her life.

Despite our marked advancement in knowledge of the human mind we know no more about the cause of stigmatization than did the 17th-Century ecclesiastics. However, we describe it---as hysterical self-hypnosis or a miracle of God--- we are no closer than they were to explaining it.

#### PPS-003 THE INFLUENCE OF HYPNOTIC SUGGESTION ON INFLAMMATORY CONDITIONS

Hadfield, J. Arthur, and Cross, M. A.; Lancet, 676-678, November 3, 1917.

There has from time to time been considerable controversy as to whether it is possible to produce blisters on the skin by hypnotic suggestion alone. Having been fortunate enough recently to have a very susceptible patient (Leading Seaman H. P.) in the Royal Naval Hospital, Chatham, I have succeeded in producing this phenomenon. The following series of experiments in my opinion, and in that of the surgeons who took part, leaves no doubt as to the question as to its possibility.

Blisters on Skin caused by Hypnotic Suggestion. 1. In the first instance the blister was produced somewhat unexpectedly. I had hypnotized the patient, whom I was treating for "shell shock" symptoms, and was exhibiting to another surgeon one or two sensory phenomena produced under hypnosis, including the suggestion to the patient that I was touching him with a red-hot iron. When I touched him with my finger he withdrew his arm with such evident pain that I proceeded to suggest that a blister would form. I then awakened him, and thought little more about the matter. But half an hour later the patient returned and asked if I had done anything to his arm when he was hypnotized, as it was painful and burning, and he pointed to a blister which was indeed forming and ultimately became full of fluid and surrounded with hyperaemia. This experiment, however, I did not regard as conclusive, because the patient had scratched the part, and it might be argued that this alone had produced the blister. In any case, probably the scratching accelerated the formation of the blister. It is worth noting, however, that the patient knew nothing of my intention nor remembered anything of my suggestion during hypnosis. I therefore explained to him what I had done and asked his cooperation, inasmuch as it implied the suffering of pain; this he readily gave.

2. The next experiment was performed under strict conditions. The patient was hypnotized as before, and the suggestions made that his arm was being touched with a red-hot iron and that a blister would form. He was watched for about three hours, part of the time being spent under hypnosis and part in the waking state. The arm was then bandaged up with a large roller bandage, so that it would be impossible for him to interfere with the area touched; the bandage was pinned with a safety-pin, the pin sealed with sealing-wax, and the patient sent to the ward. I returned in six hours from the commencement of the experiment, and the patient told me that in spite of his desire to scratch he had twice

nearly sent across to the officers' mess to ask me to get him out of his pain, but he went on to say that after five and a half hours the pain had suddenly ceased. When I removed the bandage I found that a blister had formed on the spot I had touched. There was a white patch of dead skin in the centre, underneath which was a slight amount of fluid and hyperaemia around. The part was then left exposed. Meanwhile the blister increased in size, and by the next day there was a large quantity of fluid, giving the exact appearance of a blister produced by heat.

3. This experiment was repeated under still stricter conditions a few days after. This time the lateral aspect of the upper arm was chosen instead of the anterior aspect of the forearm. Suggestions were made in the same manner as before, but the following stricter precautions were taken. I was personally never left alone with the patient; the patient was never left alone; and I personally never touched the arm of the patient, this being done by another surgeon present, whilst I made the verbal suggestions. Throughout the day the patient was watched, and at night-time he was not only watched by the night nurse, next to whose table his bed was placed, but his arm was securely bound up and sealed as before. The next morning the bandage was removed in the presence of three surgeons (including the Deputy Surgeon-General). The seal and bandage were found to be intact, and beneath there was on the spot suggested the beginning of a blister as before, which gradually developed during the day to form a large blist with an area of inflammation around. Photographs were taken of this blister. In this case the bandage was removed in 24 hours after the experiment was started as contrasted with 6 hours in the second experiment. The increase in time taken for the blister to form in this case was partly due to the fact that the arm was for some hours exposed to the cold air; and also probably to the extra thickness of skin in this part of the arm as compared with the anterior surface of the forearm used in the second experiment. I may add that the patient was kept "asleep" for about half the time and "awake" the other half, but for the whole time, except in the normal sleep at night (which was, however, induced by means of hypnosis), the patient showed signs of being in pain. The patient had his dinner while hypnotized, and also went to his ward, undressed, and got into bed in hypnotic trance.

4. When I touched one spot with the finger suggesting that I was touching the spot with a red-hot iron and causing pain, I also touched another spot suggesting the same thing, but adding that the patient would feel no pain in this case, but that a blister would form. In this case no blister formed. This seems to indicate that it was the suggestion of pain, and perhaps continuous pain, which produced the blister.

Effect of Suggestion of "No Pain" and "Pain." 5. In the fifth and sixth experiments I actually burnt the patient during hypnosis with a hot iron---the end of a steel pencil-case heated in a Bunsen flame. In the fifth experiment (started simultaneously with the second) I suggested there should be no pain as a result of these burns. There was no pain either when the skin was touched or afterwards. But the remarkable thing was that in these burns there was no hyperaemia around. Round each of the two spots, which themselves presented the ordinary appearance of blisters, there was a thin red line and nothing more. These blisters healed very rapidly and never gave any sign of inflammation or pain.

6. Further, simultaneously with Experiment 5 I made an actual burn and suggested pain---the condition, of course, which would occur in the normal waking state, except that in this case the patient, being hypnotized, forgot all about it when he was "awakened." This continued to pain afterwards, and in this case there was very considerable hyperaemia, and the burn took longer to heal.



The illustration from a photograph taken professionally a few hours after the blister formed in Experiment 3 shows: (a) Blister produced by suggestion (Exp. 2); (b) blister produced by hot iron--with pain (Exp. 4); (c) blister produced by hot iron--without pain (Exp. 5); (d) area which was touched as in (a), but with the suggestion "no pain"; no blister was formed. The safety-pin was introduced through the flesh to indicate the reality of the hypnosis and the analgesia produced by suggestion.

Conclusions. These experiments, it will be noted, are all in the sphere of non-bacteriological inflammations. I had intended proceeding to experiment with bacteriological inflammation, but the demands of the Service compelled me to postpone it. The experiments, however, point to conclusions of some importance, namely:---

(a) The effect of pain in retarding healing processes. The best blister produced in Exp. 5, where there was pain, reacted considerably and also took longer to heal than the blister with no pain produced in Exp. 4. This confirms, by experiment, the suggestions put forward by Miller in his "Heat and Pain" that pain may act as a deterrent to healing. He therefore advocated that the nerve-ending of an irritable pain-producing nerve in a wound should be clipped off. These experiments under hypnosis suggest that if a patient can be hypnotized deeply enough and pain be abolished the healing process would be greatly facilitated. This might apply not only to surgical conditions, but also to medical conditions such as pleurisy. Pain is a very valuable indicator to point us to physical disorder or injury, but this seems to exhaust its function, and its abolition, either by the surgical means suggested by Miller or, if possible, by hypnotic means, would conduce to greater rapidity in healing.

(b) The regulation of the blood-supply. It is a well-known fact that hyperaemia may be produced by suggestion. The experiments made in producing blisters show to what lengths this regulation of the blood-supply can go in a susceptible patient. This seems to indicate that when we know more about hypnotic suggestion, and have attained a greater skill in inducing it in a larger proportion of patients, we may be able to affect for good any organic inflammatory condition whether medical or surgical, both by regulating the blood-supply (imitating Bier's congestion method, for instance) and also by the abolition of pain.

I do not suppose for a moment that these experiments will convince those who are unacquainted with hypnotic work, and some of whom deny even the existence of hypnosis altogether. But they were conducted under the strictest scientific conditions, and were such as to satisfy the surgeons, of whom there were eight or nine, who had a share in them. Moreover, in order to show my good faith in the matter, I am quite prepared to repeat the experiments under any conditions that may be considered necessary, when the exigencies of war permit of my doing so, provided I can obtain the consent of the patient, to whom endurance during several hours of pain I am indebted for the opportunity of conducting the experiments, and by whose permission, as well as that of the Surgeon-General of the Royal Naval Hospital, Chatham, I am enabled to publish them.

## PPS-004 [SKIN MARKINGS THROUGH HYPNOSIS]

Reagan, M. H.: *Society for Psychological Research, Journal*, 3:100-109, 1937.

From Dr. Biggs, of Lima. We owe the record to the kindness of Mr. R. Roeburg, of L. Victoria-buildings, Weston-super-Mare, to whose brother the account was addressed.

October 18th, 1888.

Dear Mr. Roeburg,---In reply to your favour of 1st ult., asking me to give you a statement in regard to the cross which you saw on Maria's arm, and which I caused to appear there by acting on her mind while in magnetic sleep, and which was done in this way:---I put her into a magnetic or mesmeric sleep by laying my hand on her head for about a minute. I then said: "Maria, do you hear me?" Answer: "Yes." "Are you thoroughly magnetized?" Answer: "Yes." "Now listen attentively; a cross is going to appear on your right arm, and remain there until I tell it to go away. Here is where it is to appear." (I then described a cross with my forefinger on the inner side of her right forearm.) "Have you understood what I have said to you?" Answer: "Yes." I then magnetized her by two or three up-passes; for the next two or three days she seemed sulky and out of sorts, would now and then rub her right arm, over the part where the cross was to appear; when asked why she did this, said there was an itching and she could not help scratching the place; although there was nothing to be seen that could cause the irritation. I then magnetized her as before, and asked: "Do you recollect what I told you the other day about the cross that is to appear on your arm?" Answer: "Yes." "Will it appear?" Answer: "Yes." "When?" Answer: "In a few days." "Well it must come out in three days; do you understand?" Answer: "Yes." By the time appointed a dusky-red cross, four or five inches long and about three inches wide, made its appearance. At first we pretended not to notice this, although we could often see the lower part of it when her sleeve was partly rolled up in course of her duties in and about the house; she was our housemaid. It was only at intervals, when thrown into the magnetic sleep, that we could get a full view of the cross; never a word had been said to her about the cross in her waking moments, for some time, several weeks, until one day I pretended to have caught sight of the strange mark on her arm, and said: "Why, Maria, what is the matter with your arm? have you hurt it? What mark is this? Let me see; roll up your sleeve." She did so with a slightly sulky, ashamed air. "Why it looks like a cross; where did you get this?" "I don't know, sir." "How long has this been on your arm?" "More than a month, sir." "Have you felt anything?" "No, sir; only at one time I had a great deal of itching and burning, and a few days afterwards this mark came out on my arm." After this we frequently spoke to Maria about the cross, and when requested to she would roll up her sleeve and show it to visitors, although she always seemed reluctant to do so. Many months afterwards she left our service, and in about two weeks she made her appearance at my office in town, asking me to remove the cross from her arm as it attracted the notice of the family with whom she was now living, and she was much annoyed at the many questions asked her. I magnetized her, and then told her that the cross would disappear in a few days, and she would be no more troubled with it. I saw her a few days afterwards at Bath; the cross had disappeared.

Another case, which I recollect having told you of. This was the first of this kind of experiment that I tried; it was in Santa Barbara, California. I was staying there in 1877 with a friend, Mr. G., a long-resident chemist in that town. His wife had a kind of half-sevent and half-companion, a girl of about 18, who complained to me one day of a pain through her chest. Without her knowing what

I intended to do, I tried magnetism; she fell into a deep magnetic sleep in a few minutes. With this subject I tried many interesting experiments which I will pass over. One day I magnetized her as usual and told her in a whisper I had found her to be more susceptible this way than when I spoke aloud in my usual voice: "You will have a red cross appear on the upper part of your chest, only on every Friday, in the course of some time, the words *Sagitta* above the cross, and *Crucis* underneath it will appear also; at some time a little blood will come from the cross." In my vest pocket I had a cross of rock crystal. I opened the top button of her dress, and placed this cross on the upper part of the manubrium, a point she could not see unless by aid of a looking-glass, saying to her: "This is the spot where the cross will appear." This was on a Tuesday. I asked Mrs. G. to watch the girl and tell me if anything seemed to ail her. Next day Mrs. G. told me she had seen the girl now and again put her left wrist over the top part of her chest, over the dress; this was frequently repeated, as if she felt some tickling, or slight irritation about the part, but not otherwise noticed; she seemed to carry her hand up now and then unconsciously. When Friday came, I said, after breakfast, "Come, let me magnetize you a little; you have not had a dose for several days." She was always willing to be magnetized, as she always expressed herself as feeling very much rested and comfortable afterwards. In a few minutes she was in a deep sleep. I unbuttoned the top part of her dress, and there, to my complete and utter astonishment, was a pink cross, exactly over the place where I had put the one of crystal. It appeared every Friday, and was invisible on all other days. This was seen by Mr. and Mrs. G., and my old friend and colleague Dr. B., who had become much interested in my experiments in magnetism, and often suggested the class of experiments he wished to see tried. About six weeks after the cross first appeared I had occasion to take a trip to the Sandwich Islands. Before going, I magnetized the girl, told her that the cross would keep on showing itself every Friday for about four months. I intended my trip to the islands would last about three months. I did this to save the girl from the infliction of this mark so strangely appearing perhaps for a lifetime, in case anything might happen to me and prevent me from seeing her again. I also asked Dr. B. and Mr. G. to write me by every mail to Honolulu, and tell me if the cross kept on appearing every Friday, and to be very careful to note any change should any take place, such as the ceasing of blood or any appearance of the words "*Sagitta Crucis*." I was rather curious to know if distance between us, the girl and myself, over 3,000 miles, made any difference in the apparition of the cross. While I was at the Sandwich Islands I received two letters from Mr. G. and one from Dr. B., by three different mails, each telling me that the cross kept on making its appearance as usual; blood had been noticed once, and also part of the letter *S* above the cross, nothing more. I returned in a little less than three months. The cross still made its appearance every Friday, and did so for about a month more, but getting paler and paler until it became invisible, as nearly as possible four months from the time I left for the Sandwich Islands. The above-mentioned young woman was a native Californian, of Spanish parentage, about 18 years of age, of tolerably good health, parents and grandparents alive. She was of fair natural intelligence, but utterly ignorant and uneducated.

The third case was this: A lady asked me to try the power of magnetism in reducing the size of a large goitre which troubled her. Her neck was 42 centimetres in circumference. Within a few days it began to decrease; it gradually came down to 37-1/2 centimetres, and it gave her no further annoyance. This lady felt the magnetic power in a very limited and singular way; her eyelids would close in a few minutes, and she could not open them until demagnetized, but she retained the use of all her faculties perfectly, so that while I was magnet-

holding her, and occasionally manipulating the guitar, we usually kept up quite a lively conversation on different subjects, she being a highly educated and clever woman. She speaks several languages with great fluency. One day I conceived the idea of making a cross appear on the guitar, on which I was manipulating. I took the little crystal cross out of my vest pocket, and gently placed it on the guitar for a few seconds, desiring as strongly as I could that a corresponding mark should appear there as soon as possible. I am sure she did not perceive my doing this, or she would most certainly have made some inquiry. She was conversing all the time on some indifferent subject. I usually went to see her every day at a certain hour; the magnetizing and re-magnetization usually occupied about 15 minutes. Every day I anxiously looked for an appearance of the cross for a week or so, and then made up my mind that the experiment had failed, until one day, about six weeks afterwards, she received me in rather an excited manner, and taking hold of both my hands, she said, "Did you ever wish that any mark should appear on any part of my body? and what was it?" I said, much astonished repeat. "Yes, nearly two months ago I wished that a cross should appear on the guitar." She immediately removed her collar, and said, "There it is." Sure enough there was a pink cross. She then told me that the evening before her dressmaker had come in to try a new dress on, and asked her, "What a curious mark is on your neck?" She immediately went to the looking-glass and saw it, and afterwards showed it to her husband. This mark only lasted two or three days, gradually fading away.

In the case of the Californian girl, it might be asked why I conceived the idea of making a cross appear only every Friday. It was because I once saw in San Francisco, in 1853, a girl who every Friday became cataleptic, in a position as if she were nailed to the cross. She had marks of the nails on hands and feet, blood oozing from them. The medical man in attendance said there was the wound in her side also bleeding. This girl was a protegee of the Catholic Archbishop Alemaris of San Francisco. She was very fervent at her prayers, and strict in all her church observances.

The San Francisco papers of the beginning of 1875 had a great deal to say about her. These cases have not been infrequent. I then supposed it to be a case of *galeo-magnetisation*, and my experiments since have proved it to have been so, to my satisfaction at least. I once sent word to the Archbishop that I thought I could explain to him the how and the wherefore of these wonderful occurrences; all could be accounted for through the power of animal magnetism. His answer by a mutual friend was "that magnetism was of the devil, and he would have nothing to do with the subject." So the poor girl was first called a saint full of miracles, and afterwards condemned as an impostor and expelled, if not from the Church, at least from the kind protection of the Archbishop.

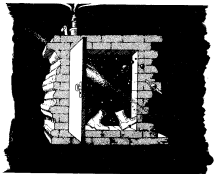
## SECTION PS: PSYHIC SOUNDS

Psychic sounds, whether table rapping, mysterious bell-ringing, or the rattlings of ghosts are the acoustic analogs of hallucinations. Fraud is even more common here because noises are usually easier to counterfeit than images. As ventured in the Introduction to Section PL, where legitimate, these sensations (visual and aural) are usually the joint products of the subconscious and external suggestion. The peculiar part of the whole business is that the phenomena have come down through the centuries essentially unaltered. Table rappings and religious revelations have been with us for thousands of years. What are the stimuli for these apparitions?

PSP Poltergeist, spirit rapping

\*PSV Vocal revelations, voices

\*This subsection not included in Vol. PL.



*Woken in the night (wachgewekt).* (Drawing by John C. Holden)

## PSP-001 "SOUNDS FROM THE UNKNOWN"

Bennett, Edward T.: Society for Psychological Research, Journal, 3-28-20, 1888.

Under this title the following account appears in Papstische Studien for February, 1888, p. 112. It is taken from the Sunday Supplement of No. 589, Vol. for 1888, of the Hallescher, edited by Dr. Beckel, at Marburg. John Henry von Thunen, who was born on June 24th, 1788, at Kammerlohhausen, in Jeverland, is stated to have been a prominent land owner and agriculturist, a man of considerable mental power, the writer of various books, especially of a standard work entitled Der landliche Staat und seine Gesetze. In his letters Thunen is said to exhibit himself as a man of thorough sincerity, noble disposition, and elevated character. Thunen had three sons, the second of whom, Alexander, his favourite child, died in the year 1831, at the age of seventeen. The following is an extract from a letter to his friend Christian von Bittel in reference to this loss, which he felt greatly.

"In the night between the 18th and 19th of October, three days after Alexander's death, my wife and I were awake between two and three o'clock. My wife asked me if I did not hear the distinct sound of a bell. I listened, and heard such a sound, but put it down to a delusion of the senses. The following night we were again awake at the same hour, and heard the same sounds, but more clearly and distinctly. We both compared them to the striking of a bell which was deficient in melody, but in the reverberation of which there was music. We listened long. I asked my wife to point in the direction from which the music seemed to come, and when she indicated exactly the same spot from which I seemed to hear it, it almost took my breath away. My two sons, in spite of all their efforts, heard nothing. The same thing was repeated during the following nights. A few days later I heard the music in the evening, but it died away towards midnight, beginning again soon after 2 o'clock in the morning. On October 28th, Alexander's birthday, the music was particularly beautiful and harmonious. My wife found it extremely soothing and strengthening. But to me the feeling of rest which it produced was only transient. The uncertainty whether it was a reality or only a delusion of the senses continually disturbed me, and the endeavour to arrive at a conclusion kept me in a constant state of strain. For more than four weeks my sleep at night was so broken that I became quite worn out. I used carefully to listen if I could detect any connection between the beating of my pulse and the time of the music, but could find none. In the course of these four weeks the character of the music greatly changed; it became much stronger, so that it was audible in the midst of all kinds of noise, and was a hindrance to my reading and writing in the evenings. But as it grew stronger, the beautiful harmony diminished, and at this time we could only compare it to the sound produced by a number of bells clanging simultaneously. At last even my wife wished it would cease, as the clanging shook our nerves and greatly affected them. In the middle of November entire silence ensued, neither my wife nor myself hearing the least sound.

"Now the doubt again arose whether this music of the spheres had not been only a result of our excited state of mind and feeling. My wife felt sad and melancholy. But again after about eight days the music began, very gently at first, and continued until Christmas. On Christmas Eve it sounded with unusual strength, clear and melodious, and with a force and variety of expression we had never before experienced. After Christmas it again ceased. On New Year's Eve we listened in vain, and this silence continued through most of January. My wife and I had now heard the music, both when we were cheerful and when we were depressed, both when we were ill and when we were well. It always

came in the same manner, and apparently from the same direction. It was not possible for us any longer to entertain a doubt as to its reality. At this time we thought it had entirely departed. However, at the end of January it began again, but entirely changed in character. The sounds of bells had gone, and tones of flutes took their place. At the beginning of March the music was remarkably loud and harmonious, but the tones of the flutes had now vanished again, and we could only compare it to the staging of a choir with musical accompaniment. At one time, we both thought,---though only for a moment---that we could distinguish words. On March 21st, my wife's birthday, the music assumed once more a different character, beautiful, but at the same time almost fearful. We were neither of us able to compare it with anything earthly."

Here the extract from J. H. von Thunen's letter ends. The following paragraph is cited in *Psychische Studien*, apparently taken from his biography:---

"This wonderful music was often heard subsequently, especially on lonely adventures. It did not cease, even after the death of the wife, but continued as a faithful and loving companion through the lives of both Herr and Frau von Thunen. They admitted that these sounds, which were undeniably perceived by their ears, gave them no information as to that which was separated from them by time and space, that their intelligence and ideas were in no way extended;--- but believed that 'your son Alexander is yet alive,' was thus declared to them, and this firm conviction was to them their greatest joy."

#### PSP-002 RAPS AND RANGES AND SOUNDS RESEMBLING FOOTSTEPS

Luther, Martin *Noted Witness for Psychic Occurrences*, W. F. Prince, ed., University Books, New York, 1963, pp. 280-281. (Originally published in 1928, Boston Society for Physical Research.)

Luther (1483-1546) was, of course, one of the most forceful and significant figures in the history of Western civilization. Peasant, scholar, monk, consummate papal critic, fighter against papal abuses, finally supreme leader of the German religious reformation, unarmously prolific writer, translator of the Bible into the vernacular of his people, he seems like a superman of boldness, energy and industry.

He was a believer in not only the devil, but in devils everywhere seeking to ensnare men. What was very likely an innocent ordinary experience of an apparition he interpreted to be the devil, threw his infant, ink and all, at the head of the figure which disappeared, as it would probably have done, devil or no devil. But he does not leave on record that the figure had horns. If it appeared, as probably it did, like an ordinary person, Luther was no less convinced that it was the devil, for did he not know that that personage could take on whatever form he pleased?

We would not give a rap for his opinions or interpretations about such things, but so far as he testified to and describes facts of his experience he is entitled to be heard.

Here is his testimony, given in his *Table Talk*:

When, in 1521, on my quitting Worms, I was taken prisoner near Elsnack, and conducted to my Prison, the castle of Warburg, I dwelt far apart from the



world in my chamber, and no one could come to me but two youths, sons of soldiers, who waited on me with my meals twice a day. Among other things, they had brought me a bag of suits, which I had put in a chest in my sitting-room. One evening, after I had retired to my chamber, which adjoined the sitting-room, had put out the light and got into bed, it seemed to me all at once that the suits had put themselves in motion; and jumping about in the sack, and knocking violently against each other, came to the side of my bed to make noise at me. However, this did not harm me, and I went to sleep. By and by I was awakened up by a great noise on the stairs, which sounded as though somebody was knocking down them a hundred barrels, one after another. Yet I knew very well that the door at the bottom of the stairs was fastened with chains, and that the door itself was of iron, so that no one could enter. I rose immediately to see what it was, exclaiming, "Is it thou? Well, be it so!" (cursing the devil) and I recommended myself to our Lord Jesus Christ, and returned to bed. The wife of John Berthels came to Elisenach. She suspected where I was, and insisted upon seeing me; but the thing was impossible. To satisfy her, they removed me to another part of the castle, and allowed her to sleep in the apartment I had occupied. In the night she heard such an uproar, that she thought there were a thousand devils in the place ("Tischreden," 208).

"Once," he says, "in our monastery at Wittensberg, I distinctly heard the devil making a noise. I was beginning to read the Psalms, after having celebrated masses, when, interrupting my studies, the devil came into my cell, and there made a noise behind the stove, just as though he was dragging some wooden measure along the floor. As I feared that he was going to begin again, I gathered together my books and got into bed. . . . Another time in the night, I heard him above my cell, walking in the cloister, but as I knew it was the devil, I paid no attention to him, and went to sleep."

## PSP-003 [BEALINGS BELLS]

Anonymous: *Society for Psychological Research, Journal*, 9:27, 1888.

Bealings Bells were well-publicized at the turn of the century as good evidence of "haunting" or poltergeist activity.

We now come to the remarkable bell-ringing at Major Moor's house, Great Bealings, near Woodbridge, Suffolk, in 1834. It began on February 2nd, and continued almost daily till March 27th. The most careful examination and observation by the Major and his friends failed to discover any natural cause. All the bells rang either together or separately, except the front door bell, which would be the most easy to play tricks with. They rang just the same when all the servants were brought together by Major Moor; and also in the presence of reporters and others. The violence of the peals and the rapidity of the moving bells could not be imitated. Major Moor wrote an account of the disturbances in a letter to the  *Ipswich Journal*, and besides many inadequate or foolish attempts at explanation he received letters from all parts of the kingdom describing similar occurrences in various houses. A clergyman, who wrote from a rectory in Norfolk, described various loud and disturbing noises resembling those at Epworth, which had been heard by himself and family for nearly nine years, and which could be traced for sixty years back. Lieutenant Rivers had equally mysterious bell-ringing with these at Bealings in his rooms at Green-

with hospital. Constant watching by himself, by friends, by the official surveyor and bell-hanger, failed to discover any cause whatever. This ringing lasted four days.

In a little book called *Feelings Bells* Major Moor gives an account of his own case and those of the various other persons who had communicated with him; and the whole constitutes a body of facts attested on the best possible evidence, which is alone sufficient to demonstrate that "something inexplicable" of which Mr. Bodmore declares he cannot find any good evidence at all!

#### PSP-004 THE RINGING OF HOUSE-BELLS WITHOUT APPARENT CAUSE

Tweedale, C. L.: *Nature*, 81:189, August 12, 1899.

Kindly allow me space for a few remarks upon Sir Oliver Lodge's theory, put forth in *Nature* of July 22 (p. 34), to the effect that "the bells get charged with electricity (atmospheric), and are attracted to a neighbouring wall or pipe, and then released suddenly by a spark." Now, while it is conceivable that a bell might be rung under certain conditions in this manner, during the progress of a thunderstorm or display of sheet-lightning, and granting that ordinary non-electric bells have been rung and wires fused when a house has been struck by the electric current during such storms, still, this theory is inadequate to explain those cases of mysterious bell-ringing on record, and for one reason, among others, that these ringings, often violent and prolonged, have been extended over a term of several weeks or months, and have constantly taken place when no storms or strong electrical conditions were apparent, and when every effort was being made to ascertain the cause.

I speak from personal experience of a case which occurred in my house when resident in the south. For a period of two months there were constant ringings ---often violent, the bell lashing to and fro---of the indoor bells, without apparent cause. In the case of one bell the wires were cut, but still it rang. The utmost endeavours were made to solve the mystery, but it defied all our efforts. There were no rats, the house having been made rat-proof, nor did we see one rodent during our stay. The wires were carefully traced and examined. Pendulums were affixed to all the bells to detect slight motion, and they were strongly illuminated by a powerful light and a watch kept, sometimes all through the night. The chief offender among the bells was one communicating with a private room. The wire from this ran, high up near the ceiling, upon the varnished paper, except where it passed through a wall, which it did through a half-inch pipe. It was impossible for a rat or mouse to touch it all along its course. This bell rang repeatedly from early morn to late at night. The room was thoroughly searched and secured---the shutters put up and barred and the door locked. Still the bell rang, and defied all our efforts to elucidate the mystery. On one occasion, when the whole household was together in another room, some little distance away, one of them said, "I wonder if it will ring to-night?" The words were scarcely spoken before the bell rang out, first faintly, then so violently that the bell lashed from side to side. All ran out and saw it swinging. I can state that during the whole period we had no thunderstorms, it being winter, and the ringings were so frequent that it would have needed scores of storms and abnormal electrical conditions to produce them, even if these had been the cause. This theory is hapicious, but one doubts whether Sir Oliver advances it seriously. Whatever is the cause of these mysterious ringings, it is asked to anyone having had experience of them, or knowing the cases on record, that it is not electricity, atmospheric or other.

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