MODERN PSYCHICAL PHENOMENA

RECENT RESEARCHES AND SPECULATIONS

BY

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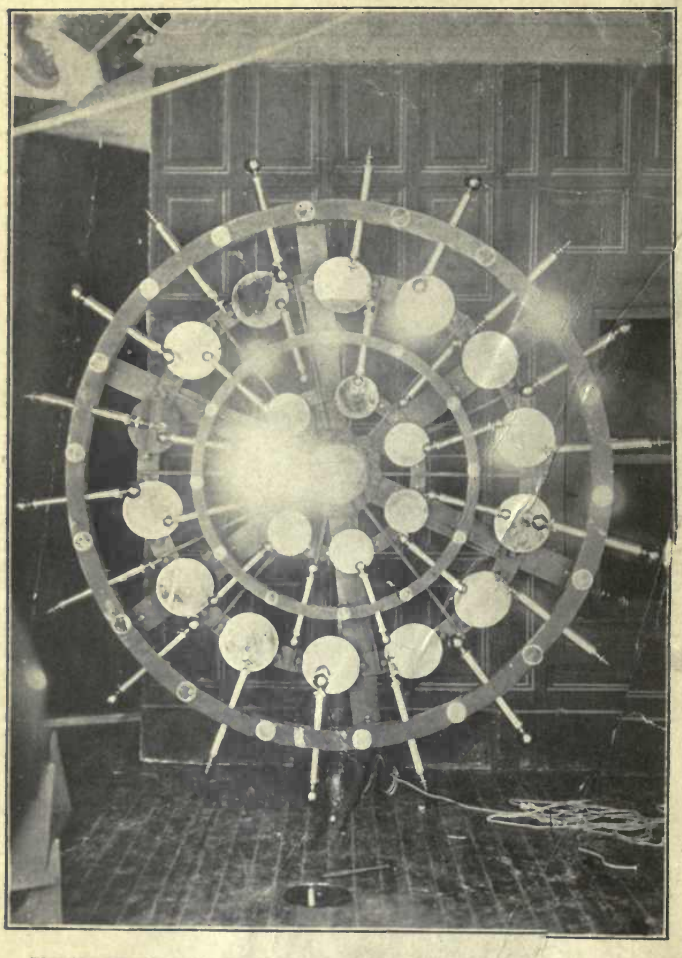


HUGE HYPNOTIC WHEEL, AS USED IN THE "MYSTERIES OF MYRA," CONTAINING MORE THAN 50 REVOLVING MIRRORS, REFLECTING LIGHT

TO

MRS. REGINALD DE KOVEN

WITH SINCERE APPRECIATION

PREFACE

Two objections are frequently made to the study of Psychical Phenomena. The first of these is that this research leads nowhere: we run against a stone wall, in our investigations, and that beyond this point we (seemingly) cannot pass. We have advanced, in other words, into a hopeless *cul-de-sac,* from which there appears to be no egress. The second is the *Cui Bono?* objection: "Even though these phenomena be true, of what *use* are they? Even granting their actuality, of what practical benefit are they to the world?"

Both these objections have been met and answered in the past by pens far more competent than mine; but I may perhaps add a few words, in this place, in order to repeat once again our replies to such objections, which are by no means new!

Many psychical researchers have felt the full force of these arguments. Professor William James, for example, in his *Memories and Studies* (pp. 175–76), says: —

"I confess that at times I have been tempted to believe that the Creator has eternally intended this department of nature to remain *baffling,*— to prompt our curiosities and hopes and suspicions all in equal measure, so that, although ghosts and clairvoyances, and raps and messages from spirits, are always seeming to exist and can never be fully explained away, they also can never be susceptible of full corroboration."

"*But,*" Professor James goes on to say, "it is hard to

believe that the Creator has really put any big array of phenomena into the world merely to defy and mock our scientific tendencies; so my deeper belief is that we psychical researchers have been too precipitate with our hopes, and that we must expect to mark progress not by quarter-centuries but by half-centuries or whole centuries."

That is very true! Yet, compared with other branches of scientific investigation, it might almost be said that Psychical Research in the past few decades has made far *more* progress than any other branch of learning in a similar period of time. When we take into consideration the fact that scientific psychical research is yet less than forty years "old"; when we consider that,— in 1882, in which year the Society for Psychical Research (S. P. R.) was founded — hypnotism, dreams, telepathy, crystal gazing, automatic writing, the vast powers of the subconscious mind, dissociation of personality, multiple personality, and many other phenomena today recognized and accepted by "orthodox" science,— were then still as little understood and as little accepted as the more striking phenomena are today: when we remember how these phenomena have gradually gained acceptance — owing chiefly to the indefatigable labours of the S. P. R.: when we further take into consideration the fact that many other phenomena (such as apparitions, "ghosts," haunted houses, telekinesis, materialization, thought photography — even spirit communication itself) are today gradually but surely winning acceptance, we justly feel that enormous progress *has* been made in this field; and that, doubtless, much more important and significant results will be forthcoming within the next few decades, as the result of better methods of investigation, and a better

comprehension of the necessary modes of research. Personally, I have always liked to compare progress in psychical research with the early progress in electricity — an important but at times a dangerous and ill-understood power.[1] The electricity generated by rubbing the cat's back is a far cry from the enormous power generated by the great dynamos which light our cities and run our railways; but it is the same power, in a different degree. Similarly with psychical phenomena. We are as yet only in the "back-scratching stage"; but a century or two hence it will be a very different matter and we shall then see the enormous value, importance and significance of these phenomena which we are now groping among and endeavouring to establish.

What I have just said is in a sense also a reply to the second of the objections above raised, *viz:* Of what *use* are these phenomena, even if true? We now know that many of them are of the very greatest significance and value — even from a practical standpoint — enabling us to understand our own nature; while, when other phenomena become equally established, their importance will very readily be seen. Is the proof of survival "useless"? Is the proof that we possess astounding and hitherto unsuspected powers within ourselves likewise "useless"? Is the application of all this to our daily lives also "useless"? It would be foolish indeed to think so; and I have endeavoured, in Part I of this book, to point out a few of the many significant influences upon

[1] Dangerous, possibly, yes: but just as we only learned to control and obtain the ultimate mastery of electricity by research and experiment, so we can only learn to control and obviate the possible danger from psychic experiments in the same manner. If men had applied the "too-dangerous-to-play-with" policy to the study of electricity we should not by now have arrived very far in our understanding of electrical phenomena! Surely, it is the same with regard to "Psychics!"

our science and our lives which would naturally flow from our acceptance of these facts. We must always remember that the last thing we know of any science is what it is all about! Conic sections were studied for nearly two thousand years before their utility was discovered; and then, at the end of this long period of abstract study, they were found to be the necessary key with which to attain the knowledge of one of the most important laws of Nature. "The really profound changes in human life all have their ultimate origin in knowledge pursued for its own sake. The use of the compass was not introduced into Europe till the end of the twelfth century A. D., more than 3000 years after its first use in China. The importance which the science of electro-magnetism has since assumed in every department of human life is not due to the superior practical bias of Europeans, but to the fact that in the West electrical and magnetic phenomena were studied by men who were dominated by abstract theoretic interests." (*An Introduction to Mathematics,* by A. N. Whitehead, F. R. S., pp. 32–33.) When Michæl Faraday was asked (regarding induction), "What is the use of this discovery?" he answered: "What is the use of a child — it grows to be a man!" Surely, nothing could be more *à propos* the case in point! Let us see to it that the Child of Psychical Research is not still-born!

. . . . . .

The general character and arrangement of the present book will be sufficiently apparent to the reader from the "Contents" page — Part I endeavouring to outline a few of the many relationships and bearings of psychical phenomena upon our science and our thought; Part II detailing some of the newer researches and speculations

in this fascinating field; while Part III gives an account of some experiments conducted by Dr. W. H. Bates and myself in crystal gazing and crystal vision — in which an entirely new technic was applied — inasmuch as our aim was to study the actual *physiological changes* taking place within the eyes, during the production of crystal visions. This is, we believe, the first attempt so far made to arrive at a definite understanding of the actual *physiology* of crystal visions.

. . . . . .

Several Chapters in this book have already appeared in various psychical and other Journals — *The Occult Review, Azoth, The Annals of Psychical Science, The Psychical Research Review, Munsey's Magazine,* etc.— acknowledgment to which is hereby made, as well as thanks to their editors, for their courtesy in granting permission to reproduce these articles in the present volume.

H. C.

CONTENTS

PART I

THE RELATION OF PSYCHICAL PHENOMENA TO EVOLUTION, PSYCHOLOGY, BIOLOGY AND ETHICS

PART II

RECENT EXPERIMENTS AND THEORIES

CONTENTS

PART III

RECENT RESEARCHES IN CRYSTAL VISION AND CRYSTAL GAZING

ILLUSTRATIONS

PART I. THE RELATION OF PSYCHICAL PHENOMENA TO EVOLUTION, PSYCHOLOGY, BIOLOGY AND ETHICS

MODERN PSYCHICAL PHENOMENA

CHAPTER I

THE DESTINY OF MAN: PHYSICAL AND SPIRITUAL

Of two facts modern science feels quite certain: (1) That this earth, on which we dwell, was at one time in the past too hot to support life; and (2) that at some time in the future it will be too cold to support animate existence upon its surface. Somehow, at some time, therefore, life must have come into being upon this earth of ours; and it is equally certain that, at some distant date in the future, it will be extinguished. We thus come into contact with two terrific and as yet unsolved questions — that of the origin of animate life, and its final destination. Life in a physical organism can exist only within very narrow limits — between the boiling and the freezing points of water. Above and below these, *life,* as we know it, is impossible. Is this all? Let us consider the question a little more fully.

We know, for example, that for the "thermo-dynamic" theory, the universe in its totality is but a vast machine, in which all the changes are due to the differences of temperature existing between its extreme limits — namely, the incandescent nebulae on the one hand, and on the other the absolute Zero of interstellar space (-273° C). In the course of this cooling (the degradation of energy) from one of these limits to the other the chemical combinations are formed — so unstable — which constitute our living being. But this condition, favourable to

the unfoldment of life, would only have appeared very late,[1] and then only to last a short time, since a further fall of some dozen degrees would suffice to congeal for ever this protoplasm. So that one might conclude with M. Henri Poincare that life is but a short episode between two eternities of death, and that, in this episode even, conscious thought has lasted and will last but a moment. "Thought is only a flash in the middle of a long night! Yet it is this flash which is everything!"

There are some of us who cannot believe that this "flash in the pan" *is* everything. For us life is of more value; it has more definite purpose. Yet, still, one must accept facts, if he be a true scientist, no matter whither they may point. This all *may* be true! Let us consider the end of our earth, from the purely physical or cosmic point of view,— so that we may the more fully appreciate the catastrophe awaiting us — or rather this earth on which we dwell. Consider "the end of the world" for a moment — a thought which should give pause even to the most superficial among us,— if thought about at all.

The End of the World! How terrible the mental picture which these words bring to the mind! How fearful the catastrophe that is invariably pictured when they are spoken. The first idea that occurs to one is: "What *could* happen to end this world? What would be the details of the catastrophe?"

Well, there are many theories. Scientific men have pondered over this problem for many years, and without coming to much agreement. Probably the first thought that comes to the mind is that the world will crash into

[1] Toward 40° C.; i.e., quite near the final term of this gigantic fall of temperature, when one thinks of the millions and millions of degrees from its point of departure.

a comet — such as Halley's — and the two, colliding with terrific force, will be shattered to pieces,— our earth, as well as the comet,— which we don't care much about, anyway,— and so every living thing upon the earth would be ground to powder or hurled off into space at an incredible rate of speed.

Probably every one has had this bad dream at one time or another in their lives — of being shot forth, like the stone from a catapult, into the cold, limitless abysses of space.

And the earth from which we fell? That would have been ground to dust in the first terrific concussion. One can imagine the tumbling of giant buildings, the mighty rush of waters, the belch of fire and flame, the deafening roar, and the human shrieks that testified to the greatest tragedy that had ever happened since the creation of the universe.

And yet it is now almost certain that nothing of the sort will or could happen. Of course we cannot say that it is *impossible;* but it is at present considered to be next to impossible — so much so that no one need ever fear any such catastrophe happening to our earth. And why not? For the following reasons:

The old notion was that a comet was a huge mass of solid matter, dense and heavy, like our earth. But modern astronomy has shown us that such an idea is false. The modern conception of the comet is that it is chiefly a cloud of scattered particles, shred-like remainders of ancient nebulous matter, which somehow did not become bound up with the rest of it in the construction of worlds. They are "left-overs"— remnants as it were. The probability of one of these bodies and the earth coming into contact is infinitely less than the probability of a col-

lision between two peas, moving about in different directions in Madison Square Garden. Even if such a collision *did* occur, however, what would happen? Probably nothing more than a meteoric display of some grandeur — of great interest to the astronomer. Our peril from a comet, therefore, is scarcely what we had conceived it to be!

A far greater danger to our earth consists in its collision with meteoric bodies, composed, as they are, partly of iron and partly of stone. Every year numbers of these bodies are seen to fall, some of them being so small they can just be identified as meteors; others weighing a ton or more. It is a rather remarkable fact that practically not one of these larger bodies has ever been seen to fall; but their position and composition makes it certain that they are of celestial origin. So far as we have any scientific record, however, there has never been an instance reported in which these meteorites have injured man or done more than insignificant damage. Even the larger bodies (weighing a ton or more) have had no appreciable effect upon the earth's history. So far as the actual facts go, then, we need have no fear of them. But the questions arise: If bodies of this size and weight can come out of the air, why should not an infinitely larger one do so — one a mile or so in size, for instance, and weighing hundreds of tons? What would happen if such a body came into collision with the earth? Would that not smash it up very appreciably?

If we examine the smaller bodies that fall to the earth — those weighing a ton or less, we find that the greater part of their energy is used up before they reach the earth by their passage through the thirty miles or

more of air through which they have to travel. This is proved by the fact that even the heavier bodies penetrate but a slight distance into the ground. But in the case of a body a mile or more in extent, it would be different. Comparatively a small part of its energy would be used up in its passage to the solid earth, so that the shock to the earth would be considerable. It has been calculated that if a body twenty miles or so in diameter struck the earth squarely, and at the speed of thirty miles a second, it would probably be sufficient — not to shatter the earth to pieces — but to jar it so considerably that life upon its surface would become impossible.

Is the earth to end, then, by its collision with a giant meteor? As we have seen, it would be conceivable, if such a body came into contact with it; so the question is: Will it?

No; it is next to impossible for it to do so, and for the following reasons:

When meteorites are examined, their surfaces are found to be rent and torn; they exhibit cracks and joints of an extraordinary character; they are more or less perfectly crystallized. What does all this show? That these bodies have been cast up by volcanoes, have been propelled great distances into space; so far, indeed, that they have passed beyond the attractive power of the world from which they sprang, and have flown off into space. *Meteorites are, therefore, of volcanic origin.* Now, it has been shown that bodies of more than 2,000 feet in cubic volume are invariably broken up by the violent expulsive action, and are not cast up entire. They are powdered more or less. This being so, it is evident that meteorites can never be very much bigger than those which have been found heretofore upon our

earth; and so *this* danger vanishes. The world will not be destroyed in that manner.

But there are still other heavenly bodies with which the earth might collide — strange bodies, of which little is known as yet, either as to their origin or motions. These are the *asteroids*. Between Mars and Jupiter there are thousands of bodies all the way from a hundred to a thousand miles in diameter, which have recently been discovered. Close to our earth — between us and Mars,— there is one, known as Vulcan. It is of irregular shape, and — what is more important — moves in a somewhat irregular orbit. It is uncertain how these minute worlds originated. They are too large to have been ejected by volcanic action; too small to have become formed after the regular manner of worlds. Astronomers have thought that they are the fragments of worlds, dashed to pieces at some time in the past — just as our world might be dashed to pieces in the future; or which have exploded. by reason of the internal pressure within them. This view is largely given up, however. But whatever their origin, the fact remains that they exist, and there is, therefore, the possibility that they may, at some time in the future, collide with the earth. Might they do so?

It is almost certain that they could not. Briefly, the evidence is this: We know that collisions of this character occurred on the moon long ago — probably a hundred million years or so. But none since! There is no evidence, geological or otherwise, that any similar collisions have taken place since,— either on the moon or on the earth. On the contrary, the unbroken line of animal life seems to prove that such an event has never occurred. It may be considered as mathematically

certain, therefore (as certain as anything can well be), that no collisions of the kind will occur in the future — at least for hundreds of millions of years to come — in which promise we can surely rest content!

If, then, the earth is unlikely to be smashed to bits, as the result of a collision with some foreign world, how else might it end? It has been supposed that the oxygen of the atmosphere — its most important constituent, and that which renders life possible — is gradually being used; the air is being deprived of this gas, for want of which all animals, including man, will eventually die. Will this be the miserable end of our proud world — to suffocate like rats in a trap?

Certain it is that oxygen is being constantly withdrawn from the atmosphere, and it is as yet uncertain how the equilibrium is maintained. It is generally conceived that it is somehow fed into the atmosphere from the vast spaces beyond. At all events, it is clear that the mass of the atmosphere has not appreciably changed for millions of years, as the history of fossil life on the planet shows us. Even a slight increase in the mass of the atmosphere would result in a tremendous gain in the temperature; and this, in turn, would cause a change in the heat of the sea and result in the formation of great clouds of vapour, covering the Earth — something like those on Jupiter — and this would alter or render altogether impossible life on our planet. From all this it will be seen that no great change in the mass of the Earth's atmosphere has been noticed for many thousands of years in the past.

Nor has the chemical composition of the Earth's atmosphere been changed to any appreciable degree for an equal length of time. Experiments have demon-

strated the fact that plants and animals will not tolerate any great change in the composition of the atmosphere which feeds them; and as there has been no great change in the life history of our planet, it becomes obvious that the chemical composition of the Earth's atmosphere has remained about the same for millions of years, and will consequently continue to do so for an equal time to come.

Our belief is that the " end of the world " will be when it has become too cool to support life upon its surface. The earth was supposed to have been a molten mass at one time, which is gradually becoming cooled, and when it has cooled sufficiently, so as to render no longer possible the presence of life upon its surface, *that* will be the real end of the world.

There are two sources of heat for our world — the sun and the earth's own internal warmth. Some scientists have computed that, at its present rate of emitting heat, the sun can only continue to do so for from ten to twenty million years longer. This calculation has, however, recently been shown to be far less than the truth,— partly for the reason that, as the sun shrinks in size it also becomes hotter; partly because of the fact that recent researches in radio-activity have rendered it probable that this length of time may be increased infinitely; so long, in fact, that no possible calculation would serve to show us the immense length of time it would require to cool the sun to the necessary extent.

The earth is hot in its interior, cool at its surface. As the interior shrinks, the cool exterior is forced to shrink to some extent to keep pace with its interior. The result is that inequalities or " wrinkles " are formed on

its surface. These wrinkles are, in reality, the mountains and the depths of the oceans. If the earth were to become cool inside, this "wrinkling" would cease, and in a few million years the whole crust of the earth would sink down beneath the waves. To the extent that the heat at its centre is maintained, however, this would be impossible. The heat is partially maintained by the same process which keeps the sun hot — it becomes hotter as it shrinks. Hence the heat at the centre is constantly increased, as well as decreased, though not in like proportion.

As to the theory that the earth will ultimately cool from its interior outwards, what has been said of the sun holds good here also. Researches in radio-active substances have rendered it certain that activity can be maintained for a length of time so great that all ordinary mathematics are rendered powerless in their attempt to grasp the immensity of the figures reached.

Scientific men have also advanced the idea that a certain amount of the world's energy is constantly being converted into a form of energy which will become no longer available for practical use, and hence the quality of available energy will some day be completely dissipated and lost. All organic life and movement will cease when this condition has been reached; this will be a real "end of the world."

Thus it stands: For science, there is but one acceptable conclusion — namely, that the earth will continue cooling, until that point is reached when physical life can no longer be sustained; and at that point, the human race, as we know it, will become extinct — will perish, together with its thoughts, its arts and sciences,

its strivings, its ideals, its sufferings, its petty bickerings and jealousies as well as its nobility, its courage and heroism, its spiritual aspirations!

And is this the end? Of the physical man and the earth on which he dwells, it assuredly is. There can be no other conclusion. But is there nothing in man which survives? Has all this been for naught? As John Fiske has asked, in his little book upon this question: "Are man's highest spiritual qualities, into the production of which all this creative energy has gone, to disappear with the rest? Has all this work been done for nothing? Is it all ephemeral, all a bubble that bursts, a vision that fades? For aught that science can tell us, it may be so, but I can see no good reason for believing any such thing. On such a view the riddle of the universe becomes a riddle without a meaning." Or, as E. Walter Maunder, F. R. A. S. reminds us, (*Are the Worlds Inhabited?* pp. 159-60): —

"It seems impossible to believe that life, so rare a fruit of the Universe, intelligent Life, conscious Life, to which the long course of evolution has been so manifestly leading up through all the long ages, should have no better destiny than a final and hopeless extinction; that this Earth and all the efforts and aspirations of the long generations of men should have no worthier end than to swing, throughout the eternal ages, an empty frozen heap of dust, circling round the extinct cinder that was once its sun! If we look backward, we seem to discern clear signs of progress; if we look forward, we discern nothing but the veil. Science is but organized experience, and experience of the future we have none. . . ."

All this does indeed seem incredible — and yet —

and yet — it *may* be true! If no spiritual world exists, it *is* true. Life would be meaningless, this world without a purpose. We must then penetrate this veil, and endeavour to ascertain which of these two interpretations is the correct one. For if we can prove, by our researches, that something in man survives the tomb; that there is a real spiritual world,— of light, harmony, happiness and activity,— then indeed is another interpretation of the facts possible. But again the only way in which we can prove this is by *psychical research* — by those very ridiculed and despised phenomena, which are thus seen to be, not mere childish curiosities, but perhaps the greatest interpreters of cosmic truths that the world has ever seen! For by these means alone can we peer into the future,— can we pierce the veil. By these means alone can we prove the truth as to the Nature of our Cosmos!

CHAPTER II

ABNORMAL VS. SUPERNORMAL PSYCHOLOGY

"It will be a great day when the subliminal psychology of Myers and his followers and the abnormal psychology of Freud and his school succeed in meeting, and will supplement and complete each other. That will be a great forward step in science and in the understanding of our nature."— Flournoy, *Spiritism and Psychology*, p. vii.

Abnormal psychology deals with diseased or abnormal mental states and processes; supernormal psychology studies the psychical processes underlying certain unusual phenomena formerly called "supernatural" — such as telepathy, clairvoyance, premonitions, etc. In a certain sense, it is true that where one ends, the other begins. But — and this is a fact often overlooked — it is also true that these two sciences are to a large extent inter-blended, and that abnormal and supernormal phenomena shade off one into the other, and in fact are one and the same thing, to a very large extent. They are not opposed or antagonistic, as psychiatrists seem to imagine; on the contrary, they supplement one another to an astonishing degree, and in fact are very often only different angles or aspects of the same phenomena.

Let me give one example which illustrates in a beautiful manner the point here made. A girl of my acquaintance fell into Lake Minnetonka, sank three times, and was rescued when unconscious. She was very ill for several weeks thereafter, developed pneumonia, became delirious at times, and in short nearly died before

recovering. During her period of convalescence, she became (apparently) clairvoyant; she would tell her mother what letters were in the mail-box in the morning, and often the approximate contents of these letters. One morning, she awoke, feeling much better; coincidentally, her "clairvoyance" had entirely disappeared, and never again did she display the least sign of being "psychic." These facts were told me by the young lady herself, and the main facts were also corroborated by her mother.[1]

Now, here is a case where, *coincidentally* with illness (an abnormal state) supernormal phenomena were manifested. We cannot say that the abnormal condition was *per se* the *cause* of the clairvoyance,— since many thousands of persons have gone through similar experiences, without manifesting any such remarkable phenomena. And certainly we cannot say that the clairvoyance was the cause of the pneumonia! That is, neither *caused* the other, but *both* were due, apparently, to some one underlying cause, which rendered their coincidence in time possible. Here, abnormal and supernormal phenomena seem to go hand in hand — associated in the same case at the same time.

To take another instance: Eusapia Palladino's remarkable phenomena — her mediumship — dated from an accident in which she fell and cut her head upon a cart wheel. The famous "cold breeze" issued from this scar, after a séance; and over it grew her famous "lock" of white hair. In this case, also, abnormal and supernormal phenomena appear to be strangely blended.

In the case of Molly Fancher, again,— her clairvoyant powers developed coincidentally with her illness;

[1] Cf. *Journal* A. S. P. R., August, 1908, pp. 448–55.

and when she became well again (relatively) they disappeared. Charcot frequently insisted upon the connection between hypnosis and hysteria: and Lombroso and other *savants,* as well as Hyslop, have all insisted upon the connection between hysteria and mediumship. Such instances could be multiplied indefinitely, but it is no longer necessary to labour the point. The fact of this frequent coincidence is now well recognized; and the only question in dispute is concerning the *interpretation* of the facts. The psychiatrist would contend that the abnormality of the subject *explained* the facts; while the student of psychics would contend that it does nothing of the kind, but that the abnormal state or condition is only *one* of the *coincidental* conditions present,— apparently favourable for the production of the phenomena. The phenomena themselves yet remain to be explained. As I have pointed out before in this connection in speaking of the medium-trance: —

"No matter what the condition of the medium's nerve centres may be, this would not account for the supernormal information given during the trance state. No matter how much nervous or mental 'instability' or 'disintegration' were postulated, it would not at all explain or elucidate the primary question: *How is the supernormal information acquired?*" (*The Problems of Psychical Research,* p. 35.)

Take again a case such as that of Eusapia Palladino. Dr. Hyslop and others have contended that the primary point of importance, in such a case, is to study the condition of the medium, from the point-of-view of psychological instability, and ascertain whether or not hysteria be present in such a case. I should contend, on the other hand, that the primary question to be settled

should be: *Do physical objects move without contact?* after which — if that were once established — the secondary or subsidiary question would be, the state of the medium's mind during the production of the manifestations — together with many other facts, such as any physiological peculiarities present at the time,— and the physical changes, if any, in the atmosphere or ether surrounding the medium, etc. But no amount of proof of "hysteria" would serve to explain the main facts, or solve the primary question: How do material objects move, when the medium merely wills them to do so?

One of the latest attempts to "explain" psychic phenomena in this manner is by means of psycho-analysis! Replying to a recent attempt of this character, in the *Journal of Abnormal Psychology* (Vol. IX, No. 6), I said: —

"FREUDIAN PSYCHOLOGY AND PSYCHICAL RESEARCH"

(*A Rejoinder*)

The evidence for the supernormal character of "psychical" phenomena may not be very strong — certainly not so strong as desired — but it never appears stronger than when some critic attempts to "explain it away," and to show how normal causes might account for the facts. This bears out Dr. Hodgson's old statement, that "If we could only get the scientific men to attack us, our case would be won." It seems to me that this is made evident by the paper of Dr. Leonard T. Troland, in the *Journal of Abnormal Psychology,* Vol. VIII, No 6.

Let us take up a few of his statements, one by one, and see how far they represent the actual facts:

1. "Modern psychical research aims to prove personal immortality by scientific methods. . . ."

Nothing of the sort is to be found in the original "Objects of the Society," published in Vol. I of the *Proceedings*. Immortality is not even mentioned, no more is proof of spiritism. To many minds, "immortality" is only one of the subsidiary problems involved; *odd facts* form the bulk of the material to be investigated — no matter *what* their interpretation. The majority of the continental psychical investigators do not accept the spiritistic hypothesis to account for the facts. . . .

2. "In the light of the principle of 'repression' we are in duty bound not to accept the affidavit of that person himself in this regard (whether or not he has seen or heard some fact in the past), no matter how honest he may be, for the fact in question and his subconscious record may never have been in his introspective consciousness at all."

This is merely saying again that cryptomnesia plays a large part in our daily lives — which fact has been pointed out over and over again by all psychical researches, and dwelt upon in particular by Professor Flournoy (*Spiritism and Psychology*) and Mrs. Anna Hude (*Evidence for Survival*). The whole question is this: The subconscious mind, on a "naturalistic" theory, is supposed to contain nothing which did not enter through the five senses. If it does, then we have the supernormal demonstrated. In order to prove that the facts might have entered the subconscious mind through the senses, it would be necessary to show that it was *physically possible* for them to have done so — assuming hyperæsthesia, etc. In many cases on record,

it might easily be shown that this was not possible.

3. In discussing the experiments in thought-transference, Dr. Troland calls attention to the possibility of the "number habit." This has been thoroughly discussed in the *Proceedings,* over and over again, and shown to be unable to account for the facts — particularly those cases where *diagrams* were employed, or the numbers or cards were drawn *at random.*

4. Dr. Troland says that the motor theory of consciousness accounts for some (if not many) of the experiments in thought-transference. It does not do so at all, unless *physical contact* be allowed,— and in nearly all the experiments, even at close range, this was prohibited. Let the agent "think with his muscles" as much as he pleases, and I will guarantee that no percipient will ever get a thought, if situated six or eight feet distant from the agent! Let those who think otherwise produce their evidence!

5. Dr. Troland thinks that slight sounds, unconsciously interpreted, or "air vibrations" would account for those cases in which a screen had been placed between the agent and percipient (in thought-transference experiments).

In answer to this:

(*a*) Air vibrations would only affect the percipient if actual motions with the arms or body were made: It is expressly stated that these were *not* made.

(*b*) Where is the *scientific evidence* that air vibrations can do any such thing?

(*c*) Slight sounds, even if made, would have no meaning to the percipient, *unless they represented some specific thing agreed upon beforehand between agent and percipient.* All language is based on arbitrary

agreements as to the meaning of signs — spoken, written or made. If no meaning be previously attached to these signals, what do they mean?

(*d*) In many cases, the ears of the percipient were muffled, so that any ordinary sounds could not be detected.

6. In discussing "Phantasms of the Dead," Dr. Troland attempts to account for practically all the recorded cases by the theory of paramnesia. Worked in conjunction with Freud's theory, it amounts to this: We are all longing for the death of our relatives and friends most of the time; when the news of their death reaches us, we associate with it a phantasmal appearance, and then place the appearance back in time, to coincide with the death, when, in fact, it did not do so. We "read it back" and *make* it coincide that is,— because we wanted to, owing to our habit of wishing for their death!

This is merely an extension of Professor Royce's theory of "Pseudo-presentiments," formulated in the Old American *Proceedings*, S. P. R., Vol I, page 366. It is simply hitched on to Freud's theory. At the time this theory was first formulated, Mr. Gurney replied at length, showing why it would not "hold water"; and the interested reader is referred to his article in *Mind*, July, 1888. In part he said:

" . . . But as regards the third class of cases which he (Professor Royce) mentions — cases of recent date where we have no record of the percipient's experience put into writing before the arrival of the news of the corresponding event — he seems to have ignored the support which is afforded a large number of the accounts by the testimony of other persons, to whom the per-

cipient's experience was orally described before the arrival of the news. . . . He omits all mention of *sensory hallucinations,* and it seems impossible that he can have duly recognized their importance in the argument. . . ."

Indeed, as Dr. Hodgson wrote, after a careful study of the evidence both *pro* and *con:* "I think . . . that the considerations which Professor Royce has adduced . . . do not appreciably affect our views of the accounts of spontaneous experiences on which the proof of telepathy depends." (*Proceedings,* Old S. P. R., p. 541.)

Dr. Troland's theory has, therefore, been fully considered before, by impartial experts, and rejected as insufficient to account for the facts.

7. Dr. Troland's remarks concerning the "medium and her sitter" have been met before — when it was stated that nothing could come out of the medium's subliminal which had not previously been put into it. He assumes that hints and statements made by the sitters gave clues to the medium, which the subconscious mind quickly picked up and elaborated into "communications." How grotesque a caricature of the evidence this is may be seen by any serious student of the records.

8. The same remark applies to Dr. Troland's criticism of the evidence for clairvoyance. Thus: "Suppose that the clairvoyant is told of the death of a certain man with whom she had previously had a number of sittings . . .", etc. Whoever brought forward evidence of this sort? Certainly not the S. P. R. Of course, if you set up a straw man, it is easy to knock it down!

Again, in speaking of "communications," Dr. Troland says: "These (correct statements made by the medium) may be supposed to correspond with chance information picked up by the medium from time to time. . . ." Let me quote *one case,* to show how far this theory may be said to cover the facts! In his first Piper Report, Sir Oliver Lodge said: "Among sitters, I may mention Gerald Randall, late of Trinity College, Cambridge, principal of University College, Liverpool. He was introduced as 'Mr. Roberts,' and a sitting was immediately commenced. The names of his brothers were all given correctly at this or at the evening sitting of the same day, with many specific details, which were correct." (*Proceedings,* S. P. R., Vol. VI, pp. 453-54.)

9. A word, finally, as to Dr. Troland's exposition of Freud's theory of the subconscious, and his dwelling upon this theory as an explanation of most of the facts of psychical research. Without questioning the rest of the doctrine, this fact remains: That, according to this theory, the best people would be the worst, and *vice versa.* We "repress" what we will not have in the conscious mind; it goes into the subconscious. Good! The purest minded man or woman, then — according to this doctrine — is not the one who has the purest conscious mind; but the purest subconscious mind — that is, one who has let out all the "bad" it contains, and retained none! So that, the more vilely we act, the more foul-mouthed we are, the purer we are as a matter of fact. What a delightful doctrine! Does it not occur to the Freudians that we are only *responsible* for the content of our *conscious* minds? Unless we bring the contents of the subconscious mind to the light and gloat

over it, as the Freudians do, we should never know that we had one — most of us. Yet, according to them, this is the man — this muck heap — this is the real man!

In discussing Zola's novels once with a clever and clearsighted woman, she made the remark to me that she could not help comparing Zola's novels to the contents of a dirty clothes-basket. True, the scenes he depicts probably exist — they are "facts." So are dirty clothes! But there is no reason why we should pull them all out of the basket, and brood and gloat over them, saying, "See, these are real facts; here are the realities of life!" We prefer (most of us) to think of other, pleasanter things, which are also realities.

It is the same with the Freudian psychology, and the soiled clothes of the subconscious mind. In some cases — in a few isolated instances, probably, the clothes may get so dirty that they call aloud to be washed. But in the majority of cases, the advice of the frog doorkeeper to *Alice* is quite sound enough — "You let *it* alone, and it'll let you alone!"

To attempt to account for the supernormal phenomena of psychical research by means of Freudian analysis is, of course, sheer nonsense.

It is very evident, therefore, that any attempt to account for the actual phenomena of psychical research by means of psycho-analysis is doomed to failure; and the same may be said of any attempt to "explain away" the facts by means of abnormal psychology. By this means, we can only show that a hysterical or abnormal mental state is present; but *how* this state accounts for the supernormal phenomena is another question — and one which has never been answered by the exponents of

psychiatry, who are at the same time opponents of psychical research.

The only reply which can be made to this contention is that the facts *do not occur* as represented — that apparent "supernormal" happenings are not, in reality,— when analysed by an expert,— supernormal at all, but are merely the delusions and extravagances of a disordered mind. Thus — it is contended — just as many dreams were formerly thought to be due to some "supernatural" influence, but are now seen to be due to perfectly understood workings of the subconscious (or unconscious mind — so all these psychical phenomena can similarly be shown to be due to fraud, delusion, illusion, hallucination and mal-observation, when rightly analysed. And many odd phenomena and curious incidents in history are pointed to, in proof of this contention. Let us take, by way of example, one of the most far-reaching and inexplicable psychical epidemics which the world has ever seen, *viz.*—

THE DANCING MANIA OF THE MIDDLE AGES

In the case of the dancing mania which swept over Europe in the Middle Ages, not only were the rules of decency and common sense abandoned, but the dancing took place in the streets, in the fields, in public squares, and in fact in every available place of public gathering. Whole countries were found dancing madly, to the point of utter exhaustion. Some of the dancers became quite wild, tore off their clothes, ran about the streets naked, went into states of ecstasy, lashed themselves with whips, and only came back to sober sense when too utterly worn out and exhausted to dance and behave in this extraordinary manner any longer!

Curiously enough, this madness afflicted primarily and chiefly precisely those parts of the world where the fiercest fighting lately took place — western Germany, Flanders, and eastern France. By a peculiar coincidence, also, it may be pointed out that this madness first started in Aix-la-Chapelle — for some time headquarters of the Kaiser, if reports speak true!

It was in the year 1374 that this mania first became accentuated. The effects of the Black Death, which had devastated Europe, had scarcely subsided and the graves of millions of its victims had scarcely closed, when this singular delusion swept over the country. Convulsions of the most extraordinary character were seen to seize the person so affected — causing him to leap and prance about, often foaming at the mouth, and screaming and shrieking like one possessed. This "dance" came to be called the dance of St. John or St. Vitus (not to be confused with our present disease, known as St. Vitus' Dance) on account of the Bacchantic leaps which the dancer made. Those who saw one so possessed would soon be afflicted likewise, and soon whole communities could be found holding hands and dancing round and round with irresistible fury, shouting and twitching; or single individuals could be found in corners, shrieking and foaming at the mouth — as they had seen others do a day or so before. In church and out this singular performance was kept up. Attempts to relieve their ravings almost invariably failed; and the "dance" was only brought to a conclusion by the depression and physical exhaustion which terminated the orgy. Extreme debility for some days usually followed these attacks.

Many of those thus afflicted beheld visions in their abnormal condition. "Spirits" appeared to them, and

called them by name. Or the heavens would open and the Virgin Mary, Christ, or God himself appear to the frenzied dancer. Thousands saw such sights. One paroxysm followed another — sometimes for hours — until all were too exhausted to dance longer.

This remarkable delusion was not limited to one town or to one locality — as many might think — but soon spread all over Europe. From Aix-la-Chapelle, it spread to Liége, Utrecht, Tongres and many other cities in Flanders and the Netherlands. In Liége the priests had recourse to exorcisms, and endeavoured, by every means in their power, to allay the evil which threatened so much danger to themselves — for the possessed, assembling in multitudes, frequently poured forth imprecations against them, and menaced their destruction. It also spread east and south — attacking Cologne, Metz, and many another town and city made familiar to us by the present war, including Strasburg, which was visited by the " dancing plague " in 1418. Zabern was visited, and soon all the towns along the Rhine were afflicted by this peculiar, sympathetic malady. Throughout the fourteenth, fifteenth, and even into the sixteenth and seventeenth centuries this dancing mania crept on — finding its soil, doubtless, in the credulous and superstitious character of the folk then inhabiting these various centres.

Inasmuch as this dancing mania came to be known as St. Vitus' dance, a brief mention of the personal history of St. Vitus may be of interest. He was a Sicilian youth, who, together with Modestus and Crescentia, suffered martyrdom at the time of the persecution of the Christians, under Diocletian, in the year 303. The legends respecting him are obscure, and would certainly have been passed over without notice had not the transfer of his

body to St. Denis, and thence, in the year 836, to Corvey, raised him to a higher rank. From this time forth, it may be supposed that many miracles were manifested at his sepulchre, and people from all parts of the country flocked to his shrine. A legend was invented that just before St. Vitus had been slain, he prayed to God that he might protect from the coming Mania all those who should solemnize the day of his commemoration, and fast upon its eve, and that thereupon a voice was heard from Heaven, saying, "Vitus, thy prayer is accepted!" Thus St. Vitus became the patron saint of those afflicted with the dancing plague, just as St. Martin of Tours was at one time the succourer of persons afflicted with small-pox.

It seems strange — almost incredible — to us living in the present century that such an absurd mental contagion could have spread over so wide an area, and continued unabated for so long a time. Yet such was the case; and the dancing mania — certainly mental in its inception or origin — spread to France, Italy and was even found in Abyssinia! For three hundred years it held Europe in its grip, and though it did not *directly* kill off the inhabitants, it left them de-energized, weak, ill and mentally and physically unsound. In Italy, too, many died as the result of the "plague"— for such it came to be. Hundreds of persons in all walks of life left their occupations — flocked to the towns, saw the dancers, and became affected in turn. In Metz alone it is said that eleven hundred dancers were in the streets at one time. Peasants left their ploughs, housewives their domestic duties, to join the wild revels, and the cities became the centres of ruinous disorders. Secret desires were gratified; boys and girls quitted their parents and servants their masters, to amuse

themselves at the dances of those possessed, and greedily imbibed the poison of mental infection. The dancers formed circles hand in hand, apparently lost control over their senses, and continued dancing, regardless of bystanders, for hours together in wild delirium, until at length they fell to the ground in a state of exhaustion. In most cases, it proved almost impossible to cure them, or relieve them in any way until the fury of the attack had spent itself.

In Italy, the dancing mania took a slightly different form, though in essentials it was the same as in Germany and Holland. Throughout Italy, it was thought that the dancing mania was induced by the bite of the *tarantula,* a ground-spider common in Apulia, of which the natives stood in great terror. No one at the time seemed to have the least doubt as to its origin — though it was obviously not the true cause, since no tarantulas existed in those countries where the dancing mania originated. Those bitten by this insect jerked and started in spasmodic convulsions, and the similarity between these paroxysms and those manifested in the dancing mania doubtless lead to the confusion. "Tarantism" thus spread, with all the added characteristics of the impassioned Italian nature.

It was soon found that *music* had a pronounced effect upon those affected with the mania — some music more so than others being received with pleasure, and seeming to relieve the paroxysms of the patients. Thus the *tarantella* came into being — music, *i.e.,* which aimed to soothe and quiet those afflicted with the dancing mania. In various individual cases, different music was required. Thus, there was one kind of Tarantella which was called "Panno rosso," a very lively, impassioned

style of music, to which wild songs were adapted; another, called "Panno verte," which was suited to the milder excitement of the senses, suggesting green colours, and set to Idyllian songs of verdant fields and shady groves. A third was named "Cinque Tempi"; a fourth "moresca," which was played to a Moorish dance; a fifth "catena," and a sixth, with a very appropriate designation, "Spallata," as if it were only fit to be played to dancers who were lame in the shoulder, etc.

This remarkable hysterical outbreak is not alone in history. Dancing does not hold the position it does unchallenged! In the seventeenth century other manias of this kind began — though none of them on so vast a scale as the dancing mania. Thus, a nun in one of the large Convents in France began to *mew* like a cat; shortly afterward, other nuns also began to mew. At last all the nuns mewed together every day at a certain time for several hours together. The whole surrounding Christian neighbourhood heard, with equal chagrin and astonishment, this daily cat-concert, which did not cease until the nuns were informed that a company of soldiers had been placed by the police before the entrance of the convent, that they were provided with rods, and would continue whipping them if it occurred again, until they promised not to mew any more!

Another convent-epidemic was one which occurred in the fifteenth century, in a German nunnery. A nun fell to biting her companions. In the course of a short time, all the nuns of this convent were biting each other! The news of this infatuation among the nuns soon spread, and it passed from convent to convent through the greater part of Germany, principally Saxony and Brandenburg. It afterward visited the nunneries of Holland, and at

last the nuns had the biting mania even as far as Rome.

These sympathetic manias did not end with the period under review. We need only remind the reader of the "Shakers," the "Convulsionaries" of France, the fanatical "Dervishes," the "Jumpers," many of the early "spiritualists," the "revivalists," to see enacted again before us some of these peculiar mental abnormalities to which crowds are liable. Even in our own day, we see such exhibitions, on a lesser and more subdued scale. Every religious and emotional performance is, in a sense, a demonstration of this spirit — the psychology of the crowd. Here we may still observe the workings of the mind of the populace — may see the sympathetic contagion which thus affects whole areas of humanity — when once the spark has been ignited which sets the conflagration afire. . . .

Such instances as the above serve to show us the curious delusions which have gained wide prevalence in the past; and, all this being so, (we are told) credence can hardly be placed in these modern "psychical epidemics," which closely resemble the older ones — being less rampant and prevalent only on account of the higher general standard of education in our own times — a standard which, nevertheless, permits all kinds of superstitions and odd delusions to creep into the people's minds and colour the thought of the times. Might not the widespread belief in psychical phenomena be similarly shown to be due to suggestibility, delusion, ignorance and lack of understanding of the truly scientific nature of the facts observed?

Such arguments, however — specious as they may appear at first sight — may readily be shown to be

fallacious, when carefully examined. In the first place, it may be well to remind the reader that a lengthy discussion and examination of this subject was undertaken as far back as 1851, by Dr. Herbert Mayo, who wrote a book, *Popular Superstitions, and the Truths Contained Therein,* in which he examined many of these beliefs and delusions, and came to the deliberate conclusion that, instead of science explaining such facts "away," a careful examination of the evidence had just the opposite tendency,— and seemed to prove an undercurrent of truth and reality in even the most absurd beliefs formerly held! (I myself have also attempted to do much the same thing, with regard to "Witchcraft" and "Fairy Stories:" see *The Problems of Psychical Research.*) It is to be noted, moreover, that some of these contagious delusions are constructive in tone, and seem to merge into the supernormal. Thus, Björnström, in his *Hypnotism,* says: —

"Such nervous conditions show great contagiousness. In the beginning of the eighteenth century a single Calvinist priest, hailing from the village of Dauphiné, was sufficient to impart a prophetic spirit to the entire population. By a magnetic inspiration of this spirit through the mouths of some persons, who afterwards communicated it to others, no less than eight or ten thousand prophets arose in Dauphiné, Vivarais and the Cevennes. Men, women, children, old men, all prophesied the future. *Children, three years old, who had never before spoken anything but the patois of the province now, during the trance, spoke the purest French with astonishing ease. . . .*"

This is extremely suggestive, since it seems to show us that even in cases of wide-spread abnormal psychical con-

tagion, we have traces of the supernormal appearing — just as we find it, individually, in certain so-called "insane" cases, or in cases of "obsession,"— as will be shown later on. A critical and historical examination of the evidence, therefore, tends to confirm the underlying reality of these phenomena, instead of disproving them!

And in the second place, modern psychic phenomena,— as at present investigated,— bear almost no resemblance to the older superstitions and beliefs; while the modern method of studying these facts is purely scientific. Psychical research consists merely in applying the cautious and scientific spirit and method of research to the investigation of these curious and sporadic and ill-understood phenomena,— which form the basis of our study.

Two facts, therefore, must never be lost sight of. The first is that to call any phenomenon by a certain name is not to explain it — we thereby only classify it. To assert,— or even to prove,— that a given medium is hysterical, or abnormal, or actually insane, will in nowise serve to explain the *supernormal facts.* We may grant that the medium is hysterical, neurotic, suffers from "nervous instability" and "psychical disintegration," or is even insane; but that does not in the least help us to account for the central fact: *How is the knowledge, normally unknown to the medium, acquired?*

In the second place, it must be emphasized that psychical researchers themselves have always been alive to this connection between abnormal and supernormal phenomena, and the first to call attention to it. Myers discussed the question at length in his *Human Personality;* Mr. J. G. Piddington published a lengthy Review of

the similarities and dissimilarities between visceral and veridical hallucinations; The Census of Hallucinations dwelt at length upon the varied physiological concomitants of hallucinations, and the influence of suggestion, expectancy, etc., in their production. Our observations upon malobservation and lapse of memory, published in the *Proceedings,* and elsewhere, are the very researches which the "anti-psychical researchers" are always quoting — so that we have this curious,— really ludicrous,— situation: the sceptic constantly quoting the psychical researchers themselves, in support of his arguments — hoping to prove thereby that there are no supernormal phenomena,— but of course only succeeding in proving the care and caution of the psychical researchers!

It must be remembered that many psychical phenomena — perhaps all of them — manifest *through* the subconscious, and for this reason are tinged and influenced by the subconsciousness of the psychic or medium. It is for this reason that it is often so difficult to disentangle the genuine messages from the ramblings and dramatic personifications of the medium herself — even granting that genuine messages are obtained.[1] A beautiful example of this is given by Dr. Frederick van Eeden, who, in his report in the *Proceedings* S. P. R., says, regarding his sittings with Mrs. Thompson: —

". . . Being now well on my guard, I could, in this most interesting few minutes, detect, as it were, where the failures crept in. I could follow the process and perceive when the genuine phenomena stopped and unconscious play-acting began. In hardly perceptible gradations the

[1] See our *Death: Its Causes and Phenomena,* pp. 535–39, for a detailed discussion of this point.

medium takes upon herself the rôle of the spirit, completes the information, gives the required finish, and fills in the gaps by emendation and arrangement. . . .

"We see how recklessly the spirit-control, Nellie, enters into explanations about things of which she evidently understands nothing,— though she referred to them spontaneously herself. And we see, moreover, how easily and imperceptibly the rôle of any spirit is taken up by the medium, after the genuine information has ceased. . . ."

It is very evident, from the above passage, how interfused the purely subconscious and the genuinely supernormal phenomena are, and consequently how difficult a matter it often is to disentangle the two,— to sift the wheat from the chaff,— and discover what is genuine and what is false, in such manifestations. This is the task of the impartial psychical investigator; and in this work he stands mid-way between the credulous spiritualist, who accepts the whole message — and all messages — as coming from "spirits"; and the psychiatrist, who rejects the evidence *in toto,* because there is evidence in it of abnormal and subconscious phenomena. Both are equally wrong; and it is because of this fact that the psychical student stands, as it were, between the two — and consequently receives the dislike and abuse of both!

Even occultists and mystics freely acknowledge this connection between the abnormal and the supernormal. Any first-class mystical treatise will bear this out, and lengthy discussions have been held as to the differences between genuine and spurious "ecstasy." Rudolph Steiner, again, in his *Initiation and its Results,* has a chapter devoted to "The Dissociation of Human Personality During Initiation"; and though the "dissocia-

tion" here meant is somewhat different from that usually implied by the psychiatrist, it shows us, nevertheless, that advanced occult and psychical students are keenly alive to the possible connection between abnormal and supernormal mental and psychical states.

I could elaborate this theme at great length; but it is hardly necessary. If I have succeeded in emphasizing two points, and impressing them upon the reader, this chapter will have served its purpose. The first is that the psychical researcher is keenly aware of the fact that there *is* this connection, between many abnormal and supernormal phenomena; and secondly, that, while acknowledging it, he at the same time contends that this does not in the least serve to disprove or invalidate the genuine character of the phenomena themselves — when there is evidence that they really occur. No matter what the state of the medium's "nerves" or "mind" may be, this does not at all affect the primary question, with which the psychical student concerns himself, viz.: *How is the supernormal information acquired?* Why is it that the dream or vision is veridical? How does this object move without contact? How explain the evidence of personal identity obtained through the medium, when in trance? Only when abnormal psychology succeeds in satisfactorily explaining such facts will we grant that it has any right to criticize psychical research, or to do aught than acknowledge it as a sister-science.

CHAPTER III

VITALITY AND THE LAW OF CONSERVATION

At the present time the question of the nature or essence of life and vitality seems to be assuming a large place in scientific thought and interest; discussions are being aroused and issues brought to the surface which almost every one thought had been dead for half a century; and it is, perhaps, not so difficult to see why this has come about, after all. On the one hand, we have the work of men, like Haeckel and Loeb and Butler Burke and Bastian, who are strenuously endeavouring to show that what we have been tempted, in the past, to call "vital force" is nothing more than the total functioning of the body; that the vital phenomena we witness are in reality nothing more than the resultants of such functioning — which, of course, cease with that functioning, at the moment of death. On the other hand, we have the results of the Psychical Research Societies; and also of the modern school of thought which is beginning to question the very fundamental conceptions of our science, held for a number of years past, and to ask itself whether matter and energy and life can be counted upon and pigeon-holed with as great an amount of certainty and assurance as they could be ten years ago. *Then* we all knew very well what we meant by matter and energy and by vitality! For practical science (of course, for philosophy and metaphysics they were always enigmas) these terms stood for perfectly definite things, and we thought they were well enough understood. But now we are beginning to find out that matter is not matter at all,

but something else entirely; that the dreams of the alchemists are in truth beginning to be realized; that energy is far less understood than we formerly believed, and that life and vitality, while better understood in one sense, are certainly less understood in another. In the present chapter I propose to consider the latter series of arguments only. I propose to consider the questions of the indestructibility of matter and the conservation of energy from what is, perhaps, a novel standpoint. There are certain questions of interest that may be treated in this manner, perhaps profitably.

Dr. Gustav Le Bon has recently asserted, in his *Evolution of Matter,* that he has caused matter to vanish without return. In the physical laboratory, he asserts, he has experimentally demonstrated that, under certain conditions, matter vanishes and disappears *as matter* — being resolved into energy or a form of energy — hence becoming invisible, or "dematerializing" in the true sense of the word. The material atom, then — that material basis of all science until so recently — has been resolved back into some manifestation of the ether. There is thus, it is asserted, a "scientific unity" established "than which it would be impossible to imagine anything more complete" — matter and force are finally identified, the one merging into the other, and, in fact, actually becoming the other! And this has been established by purely scientific means in the chemical laboratory. This being so, we might well ask: "What has become of the older of the two laws forming *Haeckel's Law of Substance* — the persistence of matter?" We may well ask, but we shall be slow in getting an answer. It seems to have gone completely by the board.

And so we are pushed back in our search for substance and unity to the ether — that omnipotent, omniscient fluid-solid which Lord Kelvin (I believe it was) said no man could believe in without believing in opposite and paradoxical attributes. Is it not time that some one should cry " stop " to these recent speculations about the ether and its properties? Is not the ether made as great a bugbear in physics as " the subconscious " is frequently, in psychology? It seems to me that there should be some line drawn in this matter, and that some attempt should be made to bring people to rationality when considering it. Dr. A. Rabagliati in his essay on *A New Theory of Energy* points out some of the present-day absurdities, and attempts to throw some light upon this field of speculation. He says in part: —

But what is this ether? M. Le Bon tells us, or at least suggests to us, that it is a solid, without density or weight. Some scientists, indeed, suggest to us that the ether has density and no weight, while others say that it has weight and no density. These are the men, be it observed, who speak somewhat disparagingly of purely metaphysical speculations. They deduce their conclusions from " experiments." But are not the definitions purely metaphysical? And are they any less so because deduced from experiments? It is a highly interesting state of mind that uses metaphysical expressions and justifies them because they are alleged to have been come to by experiments, and not from philosophical considerations. " A solid without density or weight." What is such a body? Is it nothing? I suggest that it is — nothing. But according to the thesis, it is the origin, and it is again the grave of the atom! The atom, then, came from — nothing, and it goes back to — nothing! But is this not the very proposition which, when it has been stated by philosophic or religious men, has been sneered at by the scientists? It is the very proposition. But then it was made from metaphysical speculation! But now that it is stated from physical speculation — (is that it?) or from experiments — it is allowable; nay, we must

yield our consent to it! All I can say is, that never have I been asked to believe anything more transcending reason by any philosopher. The scientific men and the physicists and the experimentalists seem certainly to have got themselves into a quagmire regarding this solid without density or weight, and I wish them well out of it.

Surely, it is high time that some such criticisms were passed upon a few of these newer speculations. Matter and the ether are thus shown to be far less stable and certain things than we had been in the habit of supposing; and it remains for us to consider the second of the two great conceptions of modern science — *the conservation of energy.*

This law, as it is universally held, is too well known to need restatement. Only one branch of it may need emphasizing, for the reason that it does not enter, as a rule, into the theories or the experimental field of the physicist and more closely concerns the physiologist — in whose hands the physicist is usually contented to leave the question. I refer to the application of the law of life or the vital forces — it being contended that here also the law is just as valid as in any other department of physics, and just as demonstrable and conclusive. I shall first of all state the position generally held, and then my reasons for thinking it invalid.

Prof. Robert Mayer, in his *Organic Movement in its Relations to the Mutations of Matter,* thus states the position: —

Plants receive a force — light, and from it produce another chemical change. The physical force accumulated by the activity of the plants comes to the service of another class of creatures who make it their prey, and use it for their own benefit. These creatures are the animals.

The living animal constantly takes from the vegetable kingdom

oxidizable foods to combine them afresh with oxygen from the atmosphere. Parallel with this result is manifested the characteristic feature of animal life; the production of mechanical work, the production of movement, the raising of weights.

The chemical force contained in the ingested foods and in the inspired oxygen is the source of two manifestations of energy — namely, movement and heat, and the sum of the physical energy produced by an animal is equal to the corresponding and simultaneous chemical processes.

Prof. Atwater, in his *Principles of Nutrition and Nutritive Value of Food*, p. 11, says: —

. . . Experiments have shown that the material which is oxidized yields the same amount of energy as it would if burnt with oxygen outside the body — *e. g.*, in the bomb calorimeter.

The position, then, is plain. We ingest so much food material into the body and burn it up (oxidize it), the result being so much heat and energy — just as we should supply and burn up so much fuel in a steam engine and get so much heat and energy. The similarity, it is claimed, is almost exact; in each case it is possible to exactly estimate the amount of heat and energy that the fuel will give off when burnt; and whether it be burnt in the body or in the engine it is asserted that the theory and the law hold good. Vital force, in short, is derived from the food eaten, just as the energy of the engine is derived from the fuel burnt. It is derived from chemical combustion and is given off in muscular and mental work — doing the work of the world. Thus the law of the conservation of energy is said to apply, and life to fall into line and receive a natural explanation — it being essentially no more complicated or mysterious than any other force whatever.

This is the position generally held, and is the one

I propose to attack. I have stated the arguments at length in my *Vitality, Fasting and Nutrition,* and I can only summarize them in the present paper. I shall allude to the most important facts and arguments which would seem to indicate that this position is incorrect, and that the universally held position cannot be maintained when certain facts are adduced, and when the theory is analysed sufficiently far.

First of all let us consider the objections that can be raised to this theory and the facts that may be adduced — apparently showing it to be erroneous. Later we can consider those facts in favour of the opposite theory. If it be true, then, as it is contended, that the heat and the energy given off by the body exactly correspond to the potential energy of the food, then we might at once raise this question: What of the operations of consciousness? Do they consume *no* energy? Are they outside the law of conservation? Certainly no physiologist would contend that such is the case. If he did there would be no need for further argument, for life — or one aspect of it — would be found to lie outside the law of conservation, and hence run counter to it. But physiologists would be the very last men to believe such a theory; they of all men would contend that thought and consciousness do use up energy, and that this energy comes ultimately from the food. This being so it is obvious that we must add to the body's total expenditure of energy this amount used by consciousness — a very large amount, too; of that there can be no question. We know that a man can sit still all day and think and be tired at the end of the day; and that brain workers require as much sleep as manual workers, or even more; while Dr. Thomson asserts that only those parts of the body that

consciousness uses need rest and sleep at all, and that other parts of the body can run on indefinitely without such sleep and rest. All of which, if it does nothing else, will at least impress us that thinking and the operations of consciousness do use up a great deal of energy — nervous or bodily. And this being granted it is obvious that this amount of energy must be added to the amount expended in other ways — in internal work of the body, in voluntary muscular exertion, etc. The result of which is that if the amount of the internal and external muscular activities about equal the amount of potential energy of the food — as it is claimed — then the total energy of the body must *more* than equal the energy derivable from the food — so that it cannot be derived from it exclusively. Moreover, since we have but the faintest idea of the amount of energy necessitated by the internal muscular workings, and none at all of the amount required by the operations of consciousness, we are hardly in any position to state dogmatically that the two correspond, as it is claimed in many books on this subject. These facts would seem to indicate that all our energies are not derived from the food we eat. I believe that we do not at any time or under any circumstances derive any part of our strength and energy from the food we eat, but from another source entirely; and that, so far as life is concerned, it is quite independent of the law of conservation of energy — the bodily energies not being derived from the food at all. I shall state my own theory of the causation of vital energy presently; meanwhile, I shall advance further facts tending to show that the theories held today are incorrect on this point.

I appeal first of all to the facts of every-day experience.

If the current theories of the causation of vital energy by food were correct it would only be necessary for us to retire first to the dining-room and then to the gymnasium, in order to regain our strength and energies.

We should ingest more food, and then oxidize it off, and the process of its internal combustion would add more energy to the system; and so on *ad infinitum.* A truly pretty theory, but unfortunately (for it) we all know, from actual practical experience, that we must, when weary, retire to bed, and not to the dining-room, in order to recuperate our energies; and there comes a time when we must seek rest and sleep, or die; and this, no matter how much food we may have eaten, or how industriously we may have exercised and breathed in order to oxidize it off. As a matter of fact, we know that it is exceedingly unhygienic and unwholesome to eat at all when exhaused by the labours of the day; and that exercise at such a time is most doubtfully beneficial, and that no amount of deep breathing will succeed in indefinitely postponing the oncoming fatigue, exhaustion and sleep.[1]

These facts would seem to indicate clearly, therefore, that we must seek rest and sleep, and not food, when we are tired and need energy. And this fact alone differentiates the human body from the steam engine, and characterizes the one as human and the other as a mere machine.

. . . The human engine (the body) reaches a point where it refuses to evolve energy, no matter how much fuel (food) is forced into it, and no matter how full a "draught" is turned on (exercise and deep breathing taken). The engine does not recuperate and restore itself, during its periods of rest, and the body does; the engine continues to wear out, and can never replace its own parts by new ones, and the body can. . . . The main point is that the body does, in time, arrive at a condition in which it cannot possibly evolve or give out more energy, no mat-

[1] *Vitality, Fasting and Nutrition,* pp. 244–5.

ter how much food is eaten, and the engine (being an engine) can. Thus, the great difference between them is that one is self-recuperative and human, and needs sleep in order to effect this; and the other is not self-recuperative, and needs no rest, so long as it works at all; and in spite of this obvious and all-important difference . . . the scientific world has continued to ignore this question of sleep altogether, and to treat this matter of the renewal of vital force by food as a proved fact, instead of a mere theory, open to these very objections, and a most monstrous absurdity because of them. . . .

These are some of the facts of every-day experience — facts which only need observing in order to see their import and bearing. Now, there is another whole set of facts which seem to disprove the current theory of the causation of vital energy by food — the phenomena presented by fasting cases. If we take away food from a man for a number of days, he is certainly going to experience sensations, and phenomena will present themselves hitherto unknown and undreamed of. The food being (supposedly) the source of the bodily energy, it is obvious that if we were to take away this food the energies would decrease and slowly wane until the patient collapsed from nervous prostration. That is the generally held theory, and is what we read would happen were we to take away food from a man for a number of days. The source of the energies being withdrawn, they themselves must necessarily wane. It would, at all events, be impossible for the patient to get *stronger* during this period of inanition; that would appear to be quite impossible. And yet — in all diseased conditions, at any rate — this is precisely what happens! Contrary to our expectations and to what is generally taught in physiology, ever since the doctrine of the conservation of energy was adopted, it can be proved that this is precisely what occurs. The

patient is frequently stronger at the end of a ten or twenty days' fast than at its commencement.! This, I acknowledge, appears self-contradictory and even absurd at first sight, but it is the truth nevertheless. I have seen patients so weak that they could not walk down stairs at the commencement of a fast, and at the end of a thirty-day fast they are so strong that they are walking five miles a day. A number of such cases I have cited in my book, and have therein given references to other works in which similar cases are to be found. Such cases are well known to those who have made a study of fasting cases; they meet with them every day in their practice. And every man, without exception, who has had the opportunity of observing such cases has agreed with me in my contention that the vital energy of the body does not and cannot come from the daily food. His clinical experience in every case coincides with my own, and corroborates the theory I have advanced as to the causation of vital energy. Perhaps I should state this now, in order that the reader may be better enabled to appreciate the argument and the facts upon which it rests.

I contend then, that the body does not nearly so much resemble a steam engine in its workings as it does the *electric motor* — at least so far as its energy is concerned. The sole and only function of food is, I believe, to supply the wastes of the body — the tissues that have been broken down by exercise. The food never supplies any energy to the body under any circumstances. It receives its energy in another way entirely. Physiologists have been misled by the superficial appearance of the facts, and have drawn too hasty conclusions therefrom. The human body, then, does not receive its energy from the food consumed. This comes from rest and sleep alone.

During these periods of rest and sleep the human body (its nervous mechanism) is *recharged with energy,* just in the same manner as the motor of the electrician is recharged with electric energy, from without. During the hours of sleep the human body is put into a receptive attitude, and its nervous mechanism is recharged by some all-pervading cosmic energy, in which we live and move and have our being. For this reason we awake in the morning refreshed and invigorated; and we can receive our strength and our energies in no other way whatever. By sleep alone do we receive these energies; and it will be seen at once that this gives us a new theory of sleep. "It is that physiological condition of the organism in which the nervous system of the individual (in precisely the same manner as the electric storage battery) is being recharged from without. . . ." This theory would enable us to explain sleep, then, which is certainly not possible on any theory held today.

The body, in short, is an *energy-transforming* machine, and not an *energy-creating* machine. It receives its energy during the hours of sleep and rest, and gives forth that energy during the waking hours. It *transmits* energy merely. And this being so, it is apparent that vital energy, or the power of life, is not derived from any process of food-combustion at all, but from another source altogether. It will also be seen that it lies outside the law of conservation. This will become more apparent as we proceed and as we follow this theory to its logical conclusion.

Before proceeding further I must call attention to the radical distinction between "fasting" and "starving," as I conceive the two processes to be entirely different — though they are the same thing to the public mind.

When this difference is understood much of what has preceded will become intelligible enough. Say that a man, as the result of years of living contrary to Nature's laws, is more or less diseased — he is choked and blocked-up with mal-assimilated food material — effete material calling for elimination. Now this man enters upon a fast; he commences going without food. He drinks water, and that is all. His eliminating organs are kept constantly active and continue to dispose of refuse material that had lodged within the system, with the result that he " cleans up " in a few days; his temperature and pulse go to normal, his tongue clears up, and his breath becomes sweet. Also his hunger returns — his first natural hunger since the fast began. He now eats food and finds that he can retain it properly, and that he is cured. Together with natural hunger his health has returned. And, more than that, his energies have returned also, for he finds himself stronger than he was before he began to fast. This is due to the fact that more energy can now manifest *through* his clean organism; it permits more to flow through it. Up to the point of time when natural hunger returns he is only benefited by a fast of this character, whether it last one week or one month. This is not the place to discuss this difficult question, of course; I can only say that it will be found argued at considerable length in my chapter on " The Physiology of Fasting."

But what happens after the return of natural hunger? Do not the energies decline? And if they do how can it be contended that energy is not derived from food? That is the question we must now consider.

First, as to the question of starvation. The return of natural hunger marks the point at which the one ceases and the other begins. Starvation and fasting are two en-

tirely different things, and I have thus distinguished them in my book:

Fasting is a scientific method of ridding the system of diseased tissue and morbid matter, and is invariably accompanied by beneficial results. *Starving* is the deprivation of the tissues of the nutriment which they require, and is as invariably followed by disastrous consequences. The whole secret is this. Fasting commences with the omission of the first meal and ends with the return of natural hunger, while starvation only begins with the return of natural hunger and terminates with death. Where one ends the other begins. Whereas the latter process wastes the healthy tissues, emaciates the body, and depletes the vitality, the former process merely expels corrupt matter and useless fatty tissues — thereby elevating the vitality, increasing the energy, and eventually restoring to the organism "that just balance we term health." As Dr. Dewey so truly and so pithily said: "Take away food from a sick man's stomach and you have begun — not to starve the sick man, but the disease." There is the whole science and philosophy of fasting in a nut-shell.

It will thus be apparent that there is a radical distinction between fasting and starvation, and whereas energy is unquestionably gained by the patient in the first class of cases it is doubtless lost during starvation. Of course, the whole point of my book is that fasting is beneficial, and that it is useless to try and feed a patient with the idea of "keeping up his strength" in time of sickness. It was found that such a proceeding only made the patient worse. But it may be contended that — if all this is so, if fasting benefits and starving weakens the patient — it is proof that my theory is erroneous, and that the generally held theory is correct. There is, however, another interpretation of the observed facts which is quite possible, and brings them all into harmony with the theory advanced — that we do not derive our strength and energy from the food eaten at all, but from another

source altogether. This interpretation of the facts would be as follows:

The body is the transmitter or transformer of energy or life — this merely manifesting through the body. Life is a power separate, distinct, *per se,* capable of existing outside the body and independent of it. This life-force merely *uses* the body for its external expression or manifestation — being transmitted or focussed through the body just as light is transmitted through a glass prism. A good analogy would be this. A burning glass receives the sun's rays and concentrates and focusses them at a point; and in a similar manner the body receives the cosmic energy and focusses and individualizes it. And just as the burning glass would affect the rays, rendering them less intense and active, according to the condition of the glass, so does the condition of the body affect the amount and character of the life-force manifesting through it. If the glass be cracked or chipped or broken or blurred, or in other ways rendered impure and befogged, the sun's rays passing through it would be affected, and the power of the glass would be largely altered or nullified. And in the same way we can conceive that the condition of the body would affect and colour the character and amount of the life-force manifesting through it. If the body were choked and blocked with an excess of mal-assimilated food material; if it were diseased, or if, on the other hand, *it were depleted through starvation,* life could not manifest through it so fully and so perfectly as it could through a body whose health was perfect. In short, the *condition of the body* would regulate the character and amount of the vital influx. Just as the burning glass would affect the rays passing through it, so does the body affect and regulate the energy flowing through *it.*

Now, we can clearly see this in the human body. On the one hand, when the body is diseased and choked with effete material (as it is, generally speaking) it renders impossible the transmission, *through it,* of the life-force. It cannot find expression. And when, on the other hand, the tissues are shrunk and wasted by starvation, the life force cannot manifest either,— for the reason that the vehicle for its transmission is not up to par, and is diminished; the receptivity and power of expression of the human machine is checked and lessened. Only when the human machine is working at its best; when the nutrition is properly managed, so that there is neither too much nor too little food material in the body for its maintenance and proper working, we get the best results and the highest expression of bodily and vital energy.

This enables us to see clearly why it is that we get stronger all the time we are fasting and weaker the moment we begin to starve, and this, on the theory of energy and its relation to the organism advanced, just as readily as on the accepted view. Both of us can take the same set of facts and interpret them differently; and the choice would seem to be open to each to take which he prefers, were it not demonstrable that there are certain facts which are contradictory to the accepted views, and are only explicable on the theory propounded. A number of such facts I have advanced in my book, to which I would refer the reader for a detailed exposition of the view just advanced. There are also other considerations, such as the following: —

Whenever energy acts upon substance, *e. g.,* substance wastes. The body, being a self-regulating and self-repairing machine, sets about to repair this waste; and this process of repair is what we perceive as the nutri-

tional changes going on within the body. The more the waste the more the repair; so it is evident that there is a constant balance and equivalence between the amount of work done and energy expended, and this would account for all the facts observed — the fulfilment of the law of conservation of energy (apparently), and the fact that there is always the coincidence between the O_2 intake and the Co_2 output. . . .

To take an analogy, it seems to me it would be as pertinent to argue that because the strings of the violin or piano or harp waste in proportion to the quantity of the music evolved through or by means of them, therefore the strings are the *cause* of the music, while in fact it is the hand of the player and even the spirit behind the hand which is the real and efficient cause of the music. So the form of the infinite and universal energy which we may call erg-dynamic, is the cause of the waste of the body through which it works; and this is at once made good by the increased trophic metabolism which occurs to replace the waste, this increased trophic metabolism showing itself in increased O_2 intake and coincidentally or correspondingly with increased CO_2 output. If the strings of a musical instrument were self-repairing, we might, perhaps, be induced to think that the material which fed the strings was the cause of the music, since in that case some measure of the waste would probably be discoverable in the *débris* emitted; and we might imagine that the *debris* was the measure of the music, while what it really was, was the measure of the waste of the strings when they were made the instrument of music. If a spade is used in digging, the spade wastes in proportion to every spadeful of earth it is made to lift. The more it digs, the more it wastes. If we could arrange that a stream of fine steel particles flowed into the spade to replace the waste, caused by each act of digging, we might, perhaps, come to think that these fine steel particles were the cause of the digging — especially as the quantity of them required would always be exactly proportional to the amount of work done. Nevertheless this would be a very inconsequent assumption. So it would be also if we were to infer, because the motors at the bottom of

the electric tram-car waste as they are used by electric energy as the means of doing work, and if we could arrange that this waste should be made good by some self-acting mechanism — as well might we imagine that the steel particles flowing in were the cause of the work done as that the food is the cause of the work done by the human body. Yet this is the assumption invariably made by modern scientists.

In other words, food does not *cause* or *create* the bodily energy — any more than the steel particles *cause* the digging or the power contained in the electric motor. Food merely repairs the body — *through which* the energy flows; and the more work done, the greater the amount of food needed, to repair the loss. Hence the *equivalence;* but not the *causation.*

The theory just advanced also enables us to understand and interpret in another light the experiments in the creation of life recently conducted in America, England, and elsewhere. The experiments of Butler Burke, Bastian, Loeb, and others have given a fresh impetus to this interesting question, and have again raised the question of the possibility of spontaneous generation. The newer evidence that has been collected in its favour is certainly stronger than any that has been advanced heretofore; and that certain objections have been surmounted there can be no doubt. It remains to be seen if these newer experiments are evidence of the incorrectness of the theory propounded.

In my *Vitality, Fasting and Nutrition* I advanced three reasons for thinking that the results of these experiments were inconclusive. These were: —

(1) That the organisms obtained as a result of the experiments were doubtfully real micro-organisms at all, but were quite possibly "physiochemical compounds, having many of the appearances of life."

(2) It is next to impossible to say with certainty that all the life present has been killed by the sterilizing and

heating, etc. However theoretically perfect the experiments they would always be open to this objection — which, improbable as it is, must be measured against the tremendous *a priori* improbability of spontaneous generation. There would also be the objection of possible ultra-microscopic germs. However, I let these two objections pass for the moment as possibly begging the question. I come therefore to the third objection, which is really the valid one, and in which we shall see the possible interpretation of the facts according to the theory of vitality propounded above. In this case we can accept the facts and interpret them in another way, so as to show that life may not have been created after all — and probably was not.

(3) Even granting that the conditions of the experiment be theoretically perfect, then, and that no life was really there, and that life appeared afterward, this does not show that the life has been created. There is still another interpretation of the facts open to us. That is the following: —

> I have . . . been contending that life is a thing *per se,* distinct from every other physical force, which force it merely *directs* during its connection with the organism, and that it utilizes during that period the natural body through which it manifests. Now, for this manifestation, it requires a certain material body — a certain arrangement, that is, of inorganic matter and physical forces which are necessary for its manifestation; and, without this arrangement, there could be no manifestation, and consequently no life. It must be distinctly understood that, in order for life to manifest, it must have this certain very intricate and most delicate arrangement of matter and force, and that unless this arrangement is present, and absolutely perfect in every detail, life cannot utilize such a combination of matter and force, or use it to manifest through.

This much being granted, we can readily see that, in all ex-

periments so far conducted, with the object of creating life, this *exact* combination and arrangement was not obtained — some little defect or flaw was present, sufficient to prevent the manifestation of life through the material utilized for the experiment. But now, suppose we meet with an experiment that *has* been successful; where life has, apparently, been created from the inorganic matter used; does this in reality prove that this life had actually been made or brought into being by the inorganic matter, or any particular combination of it? By no means! It simply shows that the experimenters have at last succeeded in arranging their material in exactly the right quantities, qualities and relations — have, in fact, formed exactly the correct material body *through which* the life force can manifest — *i. e.,* they have finally succeeded in so arranging their material basis as to render possible the manifestation of life force through it. And for this reason I do not see how such experiments as those now being conducted can ever prove the generation of life from non-living matter, for the very reason that this other alternative explanation of the facts would always be open, and could be employed by any one who cared to do so — thus rendering for ever impossible this supposed proof of the creation of organic form from inorganic matter — of life from no life.— (*op. cit.* pp. 288-9).

It thus becomes apparent to us that experiments such as these cannot decide the question as to the nature or *essence* of life — and further, that such experiments prove nothing to us one way or the other as to its "creation," or its relation to matter.

But now, is the opposite position provable? Is it possible to prove that life can exist apart from matter,— which it merely utilizes for the purposes of its manifestation? By ordinary scientific methods one might be inclined to say "No"; but certain psychical phenomena apparently give us just this proof. Thus, in cases of so-called "exteriorization of motivity" and "exteriorization of sensitivity," we apparently have examples of a nervous current or power, not requiring the nerves for its transmission; and this is still more exemplified in cases of "astral projection," when another body is apparently detached from the physical body altogether. Finally, in cases of "materialization," we find the *direct manifestations of life and energy,* (to say

nothing of intelligence) *quite distinct from the physical body,* such as that known to us — cases where life apparently manifests directly as a *power,*— separate from the nervous mechanism and the whole gross physical organism! The separate existence of an energy or life-force is thus *proved,* by direct experiment — thereby corroborating the theoretical argument elaborated above in the completest possible manner.

Finally, I would say this: while it is not my purpose here to touch upon the wider problems of world philosophy or metaphysics, I cannot refrain from adding one or two remarks upon what I conceive to be the logical philosophic import of this theory. For I can see in it far more than a mere scheme of vitality; more than a mere speculation as to its nature and its relation to the human organism and to the intake of food; more than its revolutionary effect upon medical practice — important as these should be. It is more than all these. It is an answer, if not an absolute refutation, of the present generally accepted materialistic doctrine of the universe, and its influence upon our conceptions of the origin and destiny of the human soul. Without further ado, let me illustrate the great importance of the theory in its application to the phenomena of mind, and the world-old question of the immortality of the soul.

I have endeavoured to show that the life or vital force is in no way inter-related, transformable and transmutable into any one or other of the physical forces known to us; that it seems to stand absolutely *per se* in this respect, and that, in fact, its laws and actions are, apparently, totally different from — if not actually opposed to — the other forces, in its action and laws; it is in no way related to them, and that the nervous or life energies are different, *toto cælo,* from all other forces or energies whatsoever. But if this be the case, we must most certainly revise our ideas and beliefs with regard to the supposed impossibility of the soul's immortality; for that problem at once assumes a different and a new meaning in the light of these newer facts.

Let me better illustrate my meaning by first quoting from Professor Shaler's excellent book, *The Individual* (pp. 301-2), the following paragraph, which tersely states the argument of the

materialistic philosopher and well illustrates the position assumed by the majority of physicians, psychologists, biologists, physicists, and in fact by most scientific men today. It is this: —

" . . . The functions of the body are but modes of expression of the energy which it obtains through the appropriation of food. As regards their origin, these functions may be compared to the force which drives the steam engine, being essentially no more mysterious than other mechanical processes. Now, the mind is but one of the functions of the body, a very specialized work of the parts known as the nervous system. We can trace the development of this mind in a tolerably continuous series from the lowest stages of the nervous processes, such as we find in the *Monera* or kindred *Protozoa* to man. Thus it is argued that, though the mental work of our kind is indefinitely more advanced than that of the primitive animals, there is no good reason to believe that it is other than a function of the body; that it is more than a peculiar manifestation of the same forces which guide digestion, contract muscles, or repair a wound. Furthermore, as is well known, at death all the functions of the organic body fall away together in the same manner and at essentially the same time, so there is, in fine, no more reason to believe that the functions of the brain persist than that a like persistence occurs in the digestive function or in the blood-impelling power of the heart. All this, and much more, can be said to show that the phenomenon of death appears to possess us altogether when we come to die."

Now this position is, to my mind, perfectly logical. The conclusion arrived at is, indeed, the only one to which we can possibly come — is, in fact, the actual " truth " if the premises were correct. Provided these premises be true, I can see no possible loophole of escape for the logical mind; the conclusion is inevitable. Professor Shaler's attempts to abstract himself from the position into which he had been led, and which he so well and plainly stated, are to me pathetically futile; it is a hopeless failure; his arguments would, I think, prove quite inconclusive to the critical, scientific thinker; and, in any case, philosophic and metaphysical speculations have no place whatever in a purely scientific argument of this kind — which should deal with facts and facts only.

No: provided that the premises are correct, the conclusion stated by Professor Shaler is not only legitimate, but absolutely incontrovertible, and the conclusion we are driven to adopt if the premises of the argument are sound.

And now we perceive the great significance of my theory in its relation to the problem of immortality and of its revolutionary effects upon the present-world philosophy. It is not only anti-materialistic or negative but pro-vital and positive in its attitude. It is not destructive, but constructive; not devolutionary, but evolutionary. For we now perceive that this great argument against immortality crumbles to dust; it is worse than useless. The premises are not correct; for, as we have seen, nervous or vital force is not dependent upon food combustion at any time, nor under any circumstances whatever; and consequently mental energy — one form of nervous energy — is not dependent upon this physiological process either; it is altogether independent of it; mental energies together with all other bodily activities, are quite separate and distinct from, and independent of, this process; so that when the process itself ceases, it is no proof whatever — and there is not even a presumption in favour of the argument — that mental life ceases at the death of the physical organism. In fact, the presumption is all the other way. So that this main, oft-quoted and central argument against survival is no valid objection at all. Provided my theory be true, it proves to have no foundation in fact. The possibility of conscious survival of death is thus left quite an open question — capable of scientific investigation or of philosophic dispute; [1] but the grand, negative physio-

[1] I would point out in this connection that if this theory of vitality be true, there can be no valid objection to the actual existence — far less the investigation of — psychic phenomena, because the objections to a future life would thus be cleared away, and the field left open for facts. Such facts psychic phenomena apparently are; and at least there can be no objection to their study any longer. I would also point out that the old, materialistic notion, which compared the body to a lamp, vitality and life to the flame, which simply ceased to exist with the extinction of the lamp, is thus shown to be invalid, and based upon an incorrect interpretation of the facts. Life is not the result of any process of combustion or oxidation whatever, but on the contrary, the guiding, controlling principle — the real entity, for whose manifestation the body was brought into being.

logical argument vanishes. And it is because of this fact that I think my theory not only of practical importance to the physician, but of theoretical importance in its bearing upon human thought; upon current scientific and religious opinion; upon the morals and the ethics of the race.

CHAPTER IV

The Origin of Evil; with a Discussion as to its Nature

Doubtless, it is a rash undertaking to endeavour to say anything new upon this world-old problem; "Fools rush in," etc.— and it is quite possible that much that I have to say has been said before, unknown to me, far better than I can say it. Nevertheless, inasmuch as I believe that I may be able to shed some light on this great problem from a little different "angle" than has been attempted in the past, I shall set forth, here, my theories as to the nature and origin of sin and evil — advancing these theories for what they may be worth.

The origin of evil, and the nature of evil, are usually considered two separate problems; and in a certain sense they *are* so — but in another sense they may be shown to merge into one. On the current view, the nature of evil must be settled prior to the question of its origin; St. Augustine discussed the *Quid est Malum?* problem before the *Unde est Malem?* In my view, on the contrary, the problem of its nature is very largely solved by the discovery of its origin; the one is wrapped up in the other to such an extent that they are inseparable. When we discover the one, we shall, I think, also see the nature of the other. This I hope to show as we proceed.

One or two fundamental misconceptions must be cleared away, however, before we can proceed to the main theme of our discussion. And the first one is that "the problem of evil is virtually meaningless unless we admit the reality

of a personal God." This is a position the validity of which I wholly deny. Yet it is one very frequently held. Thus, Marion LeRoy Burton, Ph.D., in his work on *The Problem of Evil* (p. 1), says: "The problem of evil exists because mankind believes in a wise and benevolent Creator. . . . Abolish God and evil needs no explanation." This is a statement, which is, it seems to me, wholly opposed to fact and common sense. Assume that there is no personal Creator, and the mystery of evil still remains — in another form, it is true; but yet remains. Crime, sin, wickedness, cruelty, would still exist in the world as undoubted "evils," even though there might be no personal God in Heaven at all. The tendency of present-day science and philosophy is certainly to do away with the older, anthropomorphic conception of God; and, this being the case, we must discuss the problem without seriously considering its relation to "God" in the sense that St. Augustine and other older writers on this subject conceived him.

My second contention (and this is far more important than will at first sight appear) is that *evil,* in any ordinary acceptation of the word, certainly *did not exist in this world before the advent upon it of animate existence.* No matter whether we adopt the older Laplacian or the newer planetesimal theory of our world, it is at least admitted that the presence of *life* upon its surface was at one time in its past history impossible; it only arose (we do not know *how*) at a later stage in the cosmic evolution; with the appearance of life a series of complicated new factors were introduced. And with life appeared the psychological and philosophical implicates of life — simple at first, more detailed and complicated as they proceeded, in accordance with the general law of evolu-

tion. Before life (in its crudest form) appeared upon our globe, these complicated metaphysical problems were non-existent. Just as there could be at that time no smell, touch or taste — so likewise there could be no justice, no injustice, no bravery, no cowardice, no sin, no good, no bad, no evil — no anything of the kind, save only the play of opposing cosmic forces, influencing inanimate matter in a purely blind, impersonal, "physical" manner. Moral qualities did not and could not have existed in such a world. Only the great cosmic forces were engaged, and these were as incapable of "good" or "bad" actions as they were of altruistic or selfish ones.

It was only with the appearance of *life* upon the planet, therefore, that the problem of evil was introduced; it was coincident with animate existence that this metaphysical question was, or could be raised. Coincidental with the origin of life appeared at least the potentiality of the origin of evil.

Now, in discussing this question of evil, many of us — even moralists and philosophers — are apt to limit it to the human race entirely — as though "evil" did not exist in the animal or vegetable worlds. In the same way that psychologists, until comparatively recently, limited their discussions of "Mind" to that of mature human consciousness, so moralists and philosophers are inclined to limit this question of the origin and nature of evil to the species *homo* — quite ignoring all the rest of the world; but just as a study of the lower forms of life — physical and mental — threw a flood of light upon our psychology, and indeed even served to explain and interpret it to us very largely (in the light of evolution), so likewise, I believe, will an evolutionary study of evil, and kindred moral problems, serve to explain this to

us; and enable us to perceive the problem in its true light. Viewed in this manner, I believe we shall find that the problem, so far from being insoluble, or even difficult, becomes very easy of comprehension and interpretation.

Now let us return to our main question, from this newly-acquired standpoint. We must not then seek the origin or the nature of evil in man alone, but far lower in the scale of evolution — in some animal or possibly some plant. Starting from this primary basis, we may perhaps see how this psycho-moral factor increased and became psychologically more complex, as we rose in the scale of evolution — just as all other factors did — until we find, in man, their ultimate fulfilment and culmination, as the higher moral factors find their culmination in him also. The good and bad evolve and become increasingly more complex — in exact proportion to the increasing complexity of life.

Now, it is manifestly wrong to limit moral qualities to man alone; animal experimentation has shown us that many of the lower animals have a "conscience" in the sense that man has; we say "good dog" or "bad dog" in the full confidence that the animal's good or bad conscience is active, *in proportion* to the relative degree of the dog's mental development to that of man. Cats, horses, and other animals also show this sense of right and wrong in an appreciable degree. But we should be wrong in limiting our application to these cases of self-conscious, highly-evolved sentient life. Good and evil certainly exist, in one form or another, all the way down the scale of animate existence. The bird which eats the insect on the tree may look upon it as its legitimate prey, and believe, in its bird-heart, that a wise and good Providence put the insect there for its consumption; but we can

hardly expect the insect to share this view! To *it,* the Intelligence which " runs " this world must appear very far from benevolent — malevolent to the last degree, in fact. The same view would doubtless be taken by the smaller fish which were eaten by the larger fish; and, throughout the whole scheme of creation, this attitude would apply in a greater or lesser degree. What is good for the one is bad (evil) for the other. Viewed from an external point of view, this is certainly so; and to the extent that internal perception can take place in the lower forms of life it would be true there also.

Even in the very lowest forms of life, the same laws would apply. Though Binet's *Psychic Life of Micro-organisms* may have been overdrawn, there is nevertheless good evidence for thinking that these lowest forms of animal life possess a mental life of some sort, and to that extent their torture and destruction by other forms of life, or by external conditions, would be the greatest possible catastrophe and evil *to them.* Descending yet lower, to the vegetable and plant world — we find still the same upward-striving of life, the same destruction by parasites, weeds, poisons and various external and internal conditions which thwart life's highest efforts, and maliciously destroy its power to live. Must not all this appear malevolent and evil to the plant — viewed internally by its own plant-nature — and as viewed externally by ourselves? Is not the destruction of crops and forest trees an " evil "— which we are now trying to lessen? And if the " right to live " is true for us, must it not be true all the way down the scale of animate life also — for if not, who can draw the line as to where this ends, and where destruction of life becomes right and a justifiable cosmic necessity?

All this may seem very wide of the mark and far-fetched to the reader; but to the psychologist it should appear less so, because he has grown accustomed, of late years, to see that even the noblest and highest of our mental and spiritual functions have the humblest origin — they are merely complex evolutionary creations, resulting from countless thousands of years' combining, arranging, synthesizing. Just as the fair lily springs from the slime and mud, so man arises from the primitive psycho-physical complex which constituted his original primordial self. Just so have his moral qualities evolved also, and their present highly developed character, in man, stands in precisely the same relation to their first instinctive beginnings in the germ-plasm, as the mind of a Darwin or a Kant or an Archimedes stands to the primitive reactions of the amœba. The one is no more far-fetched than the other.

Evil, therefore, appeared — potentially at least — in the world simultaneously with the appearance upon it of *life*. The origin of evil was practically simultaneous with the origin of life, and is as much a mystery as — but no greater a mystery than — it. We need not consider here the innermost nature of life, but only its origin on this planet (or some other — but then the problem would only be removed from this world elsewhere). With this preliminary statement, then, I think we are now in a position to perceive, quite clearly, the origin of evil, and also its nature — to a very large extent.

Assuming that the mechanical play and inter-play of forces was all that existed upon this world before the appearance upon it of life, we should have to assume — and in fact all biologists *do* assume — that the conditions upon this planet (or at least that part of it whence life

originated) were favourable to the formation and continuance of life. If this were not so, life could not have developed — so that this is, in a sense, a self-evident proposition. Very well! The environment was at that time, and in that particular place, favourable for the production and manifestation of life.[1]

So long as these conditions lasted, life prospered; it grew and increased and multiplied; everything favoured its growth. This first living matter grew and finally split up, or in some manner gave birth to other living matter, and the procession of life had begun. But — mark this — death had not yet appeared upon the earth; sickness and decay had not yet made their presence felt — for if they had, at the very origin of creation, life would have become extinct as soon as it came into being. Death, therefore, must have appeared shortly after the origin of life — how long after we cannot now tell. It could not have been present at the very beginning of things as an active factor. Sickness and decay must have been absent for a time, for the same reason.

So long as life went on in an uninterrupted and peaceful manner, just so long was "everything in the garden lovely." Life increased and multiplied, and nothing had come to destroy it. But one fine day the living substance reacted wrongly — contrary to the laws governing its environment, and then the external forces of nature burst forth, swept down and destroyed a portion of this living substance, and injured another portion, causing it to become "diseased" and decay. The uninjured portion

[1] For a discussion of the actual conditions, environment, etc., probably present at the time of the creation of life upon its surface — see Henderson's remarkable book *The Fitness of the Environment;* also the works of Bastian, Burke, Le Dantec, Loeb, Snyder, Gregory, Arrhenius, Moore, Osborne, etc.— as to the origin of life on our planet.

continued to live and propagate: the injured portions died.

Now, on my theory, so long as life went on uninterruptedly in this universe of ours, good and only good prevailed; but this first destruction of animate life marked the *first appearance of evil.* In this sense, therefore, evil is synonymous with disease and death — a curious confirmation of the old Genesis legend as to the simultaneous appearance of evil and death in the world. [1]

For on my view, *evil,* in its first primitive form, would be merely *divergence from the normal* — departure from those helpful cosmic laws which fostered and helped the increase of life and the growth of living matter; and *good* would be merely *conformity to those laws.* The moment that life departs from, or runs counter to, the play of helpful forces, " evil " (harm) results; as long as it remains in that channel, only " good " results.

It must be remembered, in all this, that I am speaking only of the very lowest and most primitive form of life possible — the very first life upon our planet, in fact — and if one attempts to see in all this a solution of the problem of evil, as presented by the highly developed and complex human mind, he will of course be disappointed. The trouble with those who think of " mind " only in terms of the developed human intellect find difficulty in appreciating the attempts of biologists to account for the origin of mind by tracing it through the lower forms of animate life, back to the primitive amœba, and so on back to the vegetable world. Only one who has grasped the full significance of evolution in all its bearings can appreciate this. In the same way,

[1] See, also, in this connection, Henry M. Alden's interesting work: *A Study of Death.*

one who makes the attempt to account for any complex and highly evolved quality of mind (such as the conception of evil) must be prepared to trace it backwards, through the ever-descending forms of life, until its first primitive counterpart is discernible in the lowest forms of animate life which exist.

This attempt of mine, therefore, is to trace the origin of evil back and find its true source not in the psychological field at all, but in the *biological* — in the primitive, instinctive, simple reactionary sphere whence all our highly evolved and complex mental and spiritual powers have sprung. *Evil has a biological origin.* Its first appearance was coincident with the first divergence from normal of those forces and functions which constituted life — in fact, actually resulted from that divergence. Its nature is thus explained in its origin — it consists in *running counter to the laws of nature* which govern and foster the normal growth of life and living matter. *Disobedience to cosmic law* thus constituted the first evil — *protoplasmic disobedience* — the penalties for which were disease and death.

Starting from this primitive and humble standpoint, we can trace, and readily perceive, the gradually increasing complexity and progress of "evil" throughout the ages. It becomes more complex with the evolution of the living being as *it* rises in the scale of evolution and complexity. At length we arrive at man. Here, as in the simplest living organism, the same law holds good — disobedience to cosmic law constitutes the essence of evil — conformity to that law the highest good. Just as a living organism conforms in all particulars to its environment, just so long does health, harmony, and "good" result; but the instant it diverges even in the remotest degree from the

powerful forces which play all about it — that instant disease, disharmony, death, and "evil" (for the organism) result. In its lowest terms, then, good consists essentially in the non-divergence — and evil in the divergence — from the ordered and all-powerful forces of Nature.

As we ascend the scale of evolution, the nature of evil necessarily becomes more complex — just as the mental life of the living being becomes more complex. Evil would become relatively intricate — just as the mental structure of our sensations, volitions, associations, etc., became more complex. Possible lines of divergence, conscious and unconscious, would become more frequent; and these would extend to the mental and spiritual worlds, no less than to the material world. If a "mental world" of any sort exists — as it certainly does, in one sense — no matter what view of the mind we may hold — it is only natural to suppose that it too has its set cosmic laws and forces, and that divergence from *these* would result in mental disaster, just as the bodily divergence results in the destruction of the physical organism. As we gained more and more self-consciousness, and the power of voluntary choice was apparently given us — the right and ability to decide which course of action to pursue would result in this or that result being attained —"good" or "bad" as the case may be. Evil would still be divergence from cosmic law, but in this case it would be *voluntarily* and with full knowledge of the ultimate consequences. This, then, is SIN — *conscious choice of evil.* That is, we sin (psychologically or biologically) when we voluntarily choose to follow a certain course of action which both experience and science have shown to be ultimately detrimental. Sin is thus a subsidiary problem to

the central problem of the nature and origin of evil. Solve the one, and the other solves itself.

To this extent, then, man is responsible to himself for the sin he commits; if he is ignorant of the harm he does (to himself or to others), then it is not sin, only evil — evil in its broadest sense — meaning that which is not good for the mental and physical life of the organism performing the act. The degree to which one is capable of judging and choosing, the degree of the free-will and free choice, determines the amount of " sin " in any given act; its absence removes the act from the sphere of sin altogether, and places it in the broader field of evil. If the act harms oneself, it is evil for oneself; if it harms others, it is evil for them. If one unknowingly and unconsciously performs an action, or a series of actions, detrimental to the organism, one has to suffer just as much as though one were in full possession of that knowledge. " Ignorance of the law is no excuse." The mother who loses her sleep night after night, because of her babies, suffers the ill-effects as surely as the one who loses it in the vainest and most selfish of pleasures. The body knows nothing of motives; poison is poison, no matter whether given with good or evil intent. Psychology alone takes motives into account, and gives them a place in the world as true realities of life.

What, then, of the motives that inspire us? Some of these are good; others bad. Some urge us to good deeds; others to evil ones. Let us not be led astray here, however, by those moralists who would say that the motive is everything. We have just seen that they are all-important as to the question of sin; but not that of evil! There is just the difference here between the older psychology — which dealt only with the conscious mind in

human beings — and the broader evolutionary psychology of today, as there is between the older and this newer conception of morals — of good and evil. We must study the problem from the evolutionary standpoint, just as we study any other psychological or physiological question connected with our complex make-up; and viewed in this light, it will be seen that "evil" has a far wider range and significance than before attributed to it.

But, apart from man's responsibility to himself, what about his responsibility to others, and to God? These are ethical questions which deserve the fullest consideration; but they can only be touched upon very briefly here, and then only from the particular standpoint occupied by the writer of this book. Obviously evil, so far as one's neighbour is concerned, is injury done to him in any way; sin would be the voluntary choice of the commission of that crime. As to man's relation to God — so far as evil and sin are concerned — this finds a comparatively simple solution in the theory just advanced, as it is easy to show.

For, on the basis of materialism (or monism) no God enters into the problem at all; and the same is virtually true of Pantheism. Only in the more orthodox systems of dualism is it necessary for us to consider this problem seriously. Of course, if we accept an all-wise, all-benevolent Creator — a true anthropomorphic Deity — then we should doubtless be faced with many of the problems which so perplexed the good St. Augustine —"if God is all-good, how came evil into the world?" etc. But for modern scientists and philosophers it is hardly necessary to consider, seriously, this primitive conception. Even were we to admit a God, the modern view would be that He works *according to law*: that there are certain

fixed laws which govern the universe, and that these are never transcended nor thwarted. This being so, we are practically where we were before; for, no matter whether the laws that govern the universe were made by God, or originated themselves, or were the result of blind chance, they nevertheless *obtain;* and it is the divergence from these laws which constitutes evil — according to our view. Therefore, no matter whether God exists or not, for our purposes it makes no difference; the same definition of evil holds good, and would continue to hold good both as to man's actual transgression and also as to man's relation to God — for man could do nothing higher or better than obey implicitly the laws which are made here for his strict observance.

This view of sin and evil, it will be observed, does not at all agree with the doctrine, defended by Campbell and many others, that evil is a mere nothing — a sort of *vacuum* — the "absence of good." Mrs. Eddy's doctrine thus falls to the ground; for we see that evil is a positive reality: it consists not so much in *not* doing what we *should* as in doing something we should *not.* It is a positive, not a negative thing. It is an actual force, a factor, an entity. It is doing something we should not do. And this view of the case enables us to include in our conception meanness, cruelty, perversions, evil motives and evil passions, and a thousand other manifestations of human depravity and sin which the "vacuum moralists" find it hard to account for fully on their theory. For it is certainly hard to see (if evil be merely "the absence of good," as darkness is merely the absence of light, as Campbell and others maintain) how cruelty and premeditated vice and crime can find their place and be fully accounted for, on this view of the facts. Surely

the appearance, in such cases, is that the evil deed springs from an evil motive; and this evil motive is an entity — a real "thing" as much as a good motive. If psychological facts exist *as facts* at all in the universe, a bad thought must be just as substantial a reality as a good one; and the deed committed — as the result of this thought — would be its logical effect or consequence — just as much as the good deed would be the effect or consequence of the good thought. Otherwise, what becomes of our doctrine of cause and effect?

But whence this evil thought — this evil motive? I reply, it differs more or less in differing cases; but the majority of them find their solution in the doctrine of *evolution.* Physiological evils — such as gluttony, drunkenness, sex-impulses (morbid and excessive), etc.— find their ready explanation in abnormal developments of the original first instincts — the instinct of self-preservation and the instinct of perpetuation of the race. The artificiality of our lives, the desire for stimulation, false physiological teachings, morbid restraints and licenses, etc., would fully account for these evil desires. On the other hand, cruelty, vice, revenge, blood-lust, and similar perversions of the human mind and spirit are doubtless the result of psycho-pathological conditions — actual *diseases* — calling for treatment just as much as smallpox or leprosy. All these evil motives, therefore, can be accounted for, either by the abnormal condition of the mind of the person performing the evil act; or as resulting from excessive gratification of normal cravings resident in the bodily organism — which we are only gradually learning to master as we ascend the scale of evolution. Viewed from this standpoint, all the difficulties as to the

"temptations of the flesh," etc., vanish. For we now know that man was not originally "perfect"; there was no "fall" in the Biblical sense of that word; but rather that we are constantly struggling upwards, against the cravings and desires of the flesh — which thus constitute a genuine source of evil. But — be it observed — these bodily cravings only become *evil* as the result of their abnormal development; they are normally good, our best helpers and friends. Obedience to their voice all through life would prevent much "evil." So long as the appetites remain unperverted, they are normal. Exercise is healthful; but if overdone, it becomes harmful. The flow of the nervous current gives pleasure; but if unduly prolonged, it gives rise to actual pain.

Then, again, we must be careful to distinguish apparent evil from real evil. Many of the things we suffer from in life are for our own betterment or ultimate benefit — as we subsequently find out. These "hard-knocks" cannot be called evil. On the other hand, many of the hardships we have to bear from the hands of others are entirely due to lack of imagination or insight on their part. If they could see things as we do — look out of our eyes, think our thoughts, imagine themselves in our place — these things would not be done. Many of the lesser ills of life — trials, "crosses," minor evils — are doubtless due to this lack of sympathetic imagination. Up to a certain point it is a pathological condition. Prove this to a man, and he frequently changes his attitude and life-habits. The "source" of evil is removed.

In the above argument, I have endeavoured to outline a theory as to the origin and nature of evil, from a slightly different and more fundamental standpoint than

has been attempted in the past. I have tried to show that the roots of evil lie, not in the psychological but rather in the biological field — as do all our mental and moral activities. Disobedience to Cosmic Law is the root and essence of evil — protoplasmic disobedience first of all, gradually becoming more and more mental and conscious as we ascend the scale of evolution; until, in man, we find *sin* possible — which is the voluntary choice of evil. Buried deep in the past lies the origin of evil — in the primitive struggling "bioplasm" which first inhabited our globe. Evolution has developed this into man. Coincident with this growth, man's mind and morals evolved also — his conscience and his conception of good and evil. The explanation of these problems is to be found in the doctrine of Evolution, and there alone.

And now what of the bearing upon all this of Psychical Research? I have shown, above, that *Sin* is the voluntary choice of evil — hence dependent upon man's *free will.* If there were *no* Free Will, there could be no free-choice, in the absolute sense of that term. Is the will of man free? I have already endeavoured to prove, (in *The Problems of Psychical Research,* pp. 198–203), that the problem can be solved, affirmatively, by the proof of the reality of psychic phenomena; also why it is that, if these be true, Free Will is a possibility — nay, practically proved. This being so, the problem of evil is seen to depend upon the proof of free-will, and the proof of free-will upon the validity and reality of psychic phenomena! We see, therefore, that on the proof of these rests the whole case — the true solution — of the problem of evil! With free will once proved,— and the reality of a spiritual world demonstrated,— our whole system

of ethics is thereby affected,— our fundamental conceptions concerning it altered. For this reason, therefore, we may contend that upon the proof of the reality of psychical phenomena depend, not only an ethical conception of the world, but also a true solution of the problem of evil.

PART II. RECENT EXPERIMENTS AND THEORIES

CHAPTER V

THE COMING SCIENCE: PSYCHICAL RESEARCH [1]

WHEN one undertakes to speak or write upon the subject of "psychical research," one is always in danger of shipwreck — shipwreck to one's reputation; and one has to sail with all the skill and care that a natural level-headedness and common-sense can avail, between the rocks of Scylla and Charybdis — the Scylla of Credulity and the Charybdis of Scepticism! One is as fatal as the other; both are a block to further progress. We wish really to sail between the Pillars of Hercules and on, into the Unknown Sea,— until, perchance, we catch a glimpse of the Isles of the Blest: of Immortality!

For if, on the one hand, we err on the side of credulity, we immediately draw upon ourselves the charge of incompetence and even insinuations of being unbalanced mentally; or else a poor observer, or finally of being in league with the medium! On the other hand, if one is unduly sceptical,— if one doubts and hesitates, and demands strict and stringent "tests" before he finally yields consent to the reality of the phenomena he sees, then, forsooth, he is blamed for obstinacy, stupidity, refusal to see what is before his eyes,— conceit in setting up his opinion in face of that of men and women his superiors, perhaps, who have in the past yielded consent to the reality of the manifestations. But, as William James so aptly said: "We all live on an inclined plane of credulity,

[1] Part of the present chapter consists of an address delivered in New York, in 1912, and published in my *Problems of Psychical Research.* The title "The Coming Science" has no relation to my book, of the same name.

and let him whose plane tips neither in one direction nor the other be the one to cast the first stone!"

Every science must have its beginnings, which seem at the time weak, useless and ineffectual. Let us not forget the experience of Galvani, who, when he was conducting his first experiments upon frog's legs, was laughed at by learned and unlearned alike and derisively called the "frog's dancing master." "Yet," as he pathetically said at the time, "I know I have discovered one of the greatest secrets of nature." And today we know that his experiments are classical, and have given us a knowledge of the phenomena of *Galvanism*. Similarly, Galileo. When he wished to prove the rotation of the earth, and the fact that the sun, moon and stars were stationary,— and did not revolve around the earth as taught at that time,— he begged his contemporaries to place their eyes to his telescope, and see for themselves. But they would not look, "for fear of being convinced." Science and theology of his day said that such facts were "impossible,"— and hence they could not possibly exist! No matter what the evidence may be, if men do not want to believe a thing true, we cannot force them to believe it. We believe to be true that which we wish to believe true; and we disbelieve what we do not wish to believe true. This may sound paradoxical, even untrue; but, if put to the test, it will be found to be true, nevertheless.

We witness the same mental attitude, the same scoffing scepticism in our day — we have by no means outgrown it. Were you to tell any one that it is possible to boil water containing ice without melting the ice it contains, he would probably laugh at you for a fool, or politely insinuate that you are lying; and yet this is a very simple little experiment in physics which any chemist would explain

to you in a moment. If we turn to the history of hypnotism, we find that its early exponents of "mesmerism" or "animal magnetism," as it was then called — were laughed at for their pains, and branded as "frauds" and "humbugs," and their subjects as "hardened rogues"; yet, as we now know, hypnotic suggestion is recognized as possessing tremendous therapeutic value and power, rendering possible painless dental and surgical operations of all kinds; while as a means of exploring the human mind, and curing bad habits and vices, it stands unsurpassed as a regenerative agent of the first rank. Hypnotism is today utilized by the medical fraternity in many of our greatest Institutions and Hospitals; and its value is well known. Here, then, we have an example of a revolutionary truth suppressed and scoffed-at as "humbug," whereas, as a matter of fact, it is of the utmost value. I believe that the case is very similar with psychic phenomena of all kinds. These too are true; but they are discredited without a hearing and without investigation just as hypnotism was but a few years ago. Prof. Schiller, of Oxford University, called psychical research "the Dreyfus Case of Science"; it has never received a fair trial in an open court, before an impartial tribunal. Let that be once granted, and we shall see that here too is a great truth; that here too are phenomena of the utmost value and significance to science and to mankind!

I have just said that every science appears petty and of small account in its inception. During the early years of its growth, progress is slow and indefinite; and many false steps have to be taken before the final, glorious goal is reached. We must remember that more than two thousand years of work were necessary before the dis-

coveries of the past years in physics were possible; and during all that period, and especially at the very beginning of the study, many false theories must have been advanced, and many apparently ridiculous experiments made in an attempt to unravel the mystery of this universe. So we must not forget that this question — which we are to discuss here — this science of "psychical research," is as yet in its veriest infancy — yet less than forty years old — for it was not until the year 1882 that the first organized and systematic attempt was made to investigate these problems and ascertain how much of truth there might be in any of them. In that year a group of thoughtful men met in London and formed the nucleus of the Society for Psychical Research,— whose influence is today far-reaching, and to all thinking men and women, of the greatest significance and importance. I shall dwell upon these results very shortly. For the moment I wish only to emphasize the fact that we cannot,— in the present embryonic stage of the investigation,— hope for more than crude and imperfect results — for facts, alas! too few and ill-observed to warrant our adhesion at all points; of theories ill-digested and premature,— as must needs be the case in the present state of our science.

But should such a state of things continue to exist? Should we not rather band together and determine to unravel this tangled skein — to ascertain what may be true and what false in this obscure region, where so much is asserted to occur? Perhaps I cannot do better than to quote here the words of Professor Henry Sidgwick, when he said, in his first presidential address before the Society for Psychical Research: —

"We are all agreed that the present state of things is

a *scandal* to the enlightened age in which we live. That the dispute as to the reality of these marvellous phenomena — of which it is quite impossible to exaggerate the scientific importance, if only a tenth part of what has been alleged by generally credible witnesses be true — I say it is a scandal that the dispute as to the reality of these phenomena should still be going on,— that so many competent witnesses should have declared their belief in them; that so many others should be profoundly interested in having the question determined, and yet that the educated world as a body should still be simply in the attitude of incredulity."

These words were first spoken some thirty-five years ago; but they are as true today as they were then! An ever-growing host of investigators — otherwise sane and sensible, apparently — are testifying to the reality of these facts; the great mass of humanity feels the importance of the outcome of this investigation,— in the present state of anarchy and schism within the Churches — and yet, in spite of these facts; in spite of the enormous mass of evidence now accumulated,— in spite of the rapidly increasing number of adherents to this cause — there is still a state of utter incredulity and even bitter opposition by the majority of persons, who either do not or will not take the trouble to inquire into the actual facts,— being so prejudiced against the subject that,— like the theologians in the days of Galileo,— they will not apply their eyes to the telescope of reason, " for fear of being convinced! " At the present stage of the world's history, it is true, *they* are the majority and *we* the minority; they are the giant Goliath and we the stripling David; but even then, if you remember the tale, " it was not safe for the Goliath of Authority to stalk forth into the

field of Debate without a risk that a little pellet of reason should pierce the thickness of his skull and put an end to his pretensions." Let us enter the field, then; and boldly throw down the gauntlet to our opponents; and see who is the better man!

There exists, I know, a bitter opposition to these subjects in many quarters, but it is often hard to see *why*. I myself have known many such persons. These individuals fairly froth at the mouth whenever the words "psychics" or "spiritualism" are mentioned! I have in vain attempted to discover the real reason for their animus. I cannot stop to analyse this mental attitude, or reply to their criticisms at the present time; but I shall merely say that they are altogether untenable and unjustified when analysed. Moreover, they are founded on a misconception of the facts; it is just as easy to be scientific in the investigation of thought-transference or trance-mediumship as it is in the analysis of table-salt or the sounding of the ocean's depths. In science, the attitude, the *method* of investigation is everything; the subject-matter nothing. The *facts* of science are constantly changing; the *method* never.

The object in this long preamble has not been in vain if it has succeeded in impressing upon you the fact that there is here a field for legitimate study; if I have in any way shaped your minds into a sufficiently receptive attitude to receive without constant subconscious antagonism the facts I am about to lay before you. Those of us who have spent a number of years in the investigation of these phenomena have encountered many strange things; and unless they are led up to by a gradual series of facts of greater credibility, they will probably be re-

jected as " impossible " or incredible at once,— and without further inquiry!

To mention a few of these: —

A number of striking experiments seem to indicate, in the clearest manner possible, that, in addition to our physical body, we possess another body of the same shape, composed of a sort of etheric or semi-fluidic substance,— which has given rise to the supposition that it is composed of matter of a different degree of density or solidity than the matter we know. The nature of this etheric body — the " spiritual body " of St. Paul, is now known; and many experiments have been conducted in an attempt to detach it from the physical body, and with some success. It is presumed that this body survives the shock of death, and that it is the seat of consciousness, or at least that consciousness somehow manifests through it. Now, if such a theory were true, it would help us to explain many difficult facts — cases of apparitions occurring at the moment of death; cases of so-called spirit-photography, cases of clairvoyance at a great distance; cases in which the " soul " has apparently left the body and returned to re-animate it,— remembering its journey into the other world — these and many equally strange manifestations would find a ready explanation, were such a body found to exist. For, in such a case, we should only have to assume that the etheric and the physical bodies became in some way disjointed and severed; and that this etheric body was seen or photographed at a distance during its absence from the body. The figures seen in so-called " haunted houses "; " ghosts," and even the supernormal knowledge so often imparted in *dreams* might readily be explained on such a theory,— which is, as you

will see, not so very far removed from reason and physical science after all.

Have we any proof that such a body exists other than that afforded by the experiments themselves? We have a number of facts; of which I shall enumerate a few.

In some experiments which I have conducted, I have succeeded in partly dissociating the two organisms, by means of hypnotic suggestion, while the subject was in deep trance, and the independent existence of this astral or etheric body has been proved by phenomena of sensibility and motivity. Thus, after the inner body has been to some extent loosened, I have pricked this body with a needle; and, though the prick was some inches distant from the surface of the real, material body, the subject, nevertheless, felt this prick as if it were on her "real" body. I pricked the surface of the etheric body, that is, distant some six or eight inches from the material body, but, by a phenomenon known to psychical students as "repercussion," it rebounded or re-acted upon the material body in such a way that the subject felt the pricks actually in the body itself. Experiments of this character have been conducted on a large scale in France, and are known as "exteriorization of sensibility," or the sensation of pain and feeling. On the other hand, we have the phenomena of "exteriorization of motivity,"— in which this etheric body moves solid objects at a distance, in response to suggestion, or the request of the sitters; and here we have cases of movements of objects without contact, and other physical manifestations of a supernormal character, such as those manifested by Eusapia Palladino, and other mediums of a like nature. And this brings me to the case of Eusapia.

As you will remember, this medium had been investi-

gated for more than twenty years by noted men of science in Europe; and all of them testified that, while this medium would trick whenever the opportunity was given her to do so, she nevertheless possessed remarkable powers — powers which have never been explained. Year after year went by; an ever-growing number of scientific experts testified to the reality of these unheard-of marvels; but the case was never explained. In 1908, the Society for Psychical Research delegated a Committee of three of its most sceptical investigators to study this medium in Naples — men who were known to be thoroughly familiar with the tricks of the professional medium, and also amateur conjurors; men, in short, who would be the most unlikely to be taken in by the tricks of this medium,— whose methods of attempted trickery were well-known to them, from past reports, and which they were on the constant lookout to guard against. I had the honor to be one of that Committee; the other members being the Hon. Everard Feilding, and Mr. W. W. Baggally, of England. In November and December, 1908, we held a series of ten sittings in our own rooms in the Hotel, under conditions of perfect control; the result of which was to convince us all that genuine phenomena of a remarkable character *did* occur,— phenomena which no system of trickery could account for; and we published our Report in the *Proceedings* of the English Society for Psychical Research. I may say that my own conversion was contrary to what was generally expected, and to what I myself expected.

On my return to America in 1909, I thought constantly of our investigation; and the importance of the facts, if true; and I conceived the idea of bringing Eusapia to this country, so that American men of science might have an

opportunity to see and test her powers, just as those of England, France, Germany, Russia, Italy, and other European countries had done. I believed that it would be a burning shame to let so interesting a case as this slip by without any serious attempt to investigate her claims upon American shores; and it was because of this that I brought her to this country and arranged a long series of sittings which were attended by members of our Society and by others; and finally by a small group of scientific men at Columbia University.

The results of a few of these séances you know — Eusapia was discovered in fraud, and the report spread broadcast that she was nothing more than a common trickster. This is doubtless the report which the majority believe today; but I want to say that it is an entirely false impression, and that I am today still as convinced of the reality of her remarkable powers as ever; in fact far more convinced of them than when she came to this country. In spite of her fraud, she can yet produce genuine phenomena; and those who have seen them do not for a moment doubt this. Only, when she is tired-out, exhausted, and these phenomena fail to appear, she will invariably endeavour to reproduce them by fraudulent means,— and herein lay her undoing. At many séances given towards the end of her trip here, Eusapia was so tired out from numerous previous séances that she was unable to produce any genuine phenomena of note; and those she did produce were largely fraudulent! Naturally, the result was an unfavourable verdict; but this does not preclude the fact that, under better conditions, she can also produce genuine phenomena which have astonished everybody, and have never yet been explained. I have seen many of these in good light, and when all pos-

sibility of trickery was out of the question. I base my belief upon these undoubted manifestations; and not at all upon those dubious phenomena which occur in the dark, and which might easily be duplicated by fraud,—if only the medium had one hand free.

It would, of course, be useless on my part to attempt a defense of this medium now; since the subject is so riddled with misconceptions and misrepresentations; and is, moreover, so complicated. I shall only state that my belief in her powers remains unchanged; that I not only think, but *know,* that these manifestations are genuine; that all talk of collusion by myself or others is, of course, nonsense — not only from the personal point-of-view, which I am willing to excuse in a problem so irritating as this — but because of the fact that these same phenomena had been going on for eighteen years before I ever saw Eusapia; while to attribute all she does to the few simple and clumsy tricks which were discovered here, and which had been discovered years before in Europe also is, of course, merely an insult to the intelligence and good sense of those eminent men of science, who have, during all these years, worked over her case in Europe. Physical phenomena of a supernormal character are undoubted! I hold that this will be proved to the satisfaction of all, before many years have passed. And *then* what will be thought of Eusapia; and of the fact that she was allowed to go hence, without adequate scientific investigation — with only the most superficial inquiry accorded her in this country? [1]

But fortunately the case for the reality of these physical phenomena does not rest upon Palladino alone. There

[1] See my *Personal Experiences in Spiritualism* for a full account of the American sittings with Eusapia Palladino.

are many other mediums who are now attracting considerable attention among European men of science; and, most interesting of all, perhaps, it has been proved that a very large number of persons,— who are not at all mediums in the common acceptation of the word,— possess the power in a lesser degree to move physical objects at a distance. Prof. Alrutz, of Sweden, a well-known man of science, has invented a little instrument by means of which it is possible to register this force, which emanates from certain individuals, where the "will" is exercised in the proper direction,— which force moves solid objects placed at a distance from them.

These cases certainly throw a backward light upon the phenomena obtained through the mediumship of Eusapia Palladino and others, and tend to confirm, very strongly, the authenticity of their manifestations. For we now see that this power *is resident in us all;* and that it is only more strongly developed in some than in others. We are all mediums *potentially;* we need only to cultivate these powers to make them actual and manifest, though, of course, the degree of psychic capacity differs widely in different individuals.

Now the point I wish to make is this. If such powers exist; if they are a part of humanity as created; then surely their study becomes of the greatest importance; for here we are on the threshold of the discovery of a *new force* — a force just as new as electricity or magnetism; and one that more vitally concerns us too,— since it deals with the human body which we inhabit. The manifestations of this force which we at present see may be feeble and fugitive enough; but they are indications of something beyond. The attraction and repulsion of the pith-ball; or the rising of the hair on pussy's back may be

trivial phenomena; but they are the manifestations of the same power which wrecks houses and vessels in the lightning-flash; which turns the wheels of thousands of manufacturing plants in our land today. It is the same power; but in a different degree. Similarly, the sporadic and capricious manifestations seen in the presence of mediums, and persons similarly gifted are but the limited manifestation of a power whose discovery will, I venture to predict, be one of the next great advances of science; and it will be marked as one of the leading and most important discoveries of the age.

Now, there is no reason why *we* should not be the ones to discover this force! The trouble in the past has been that psychic investigation has been handicapped by the lack of suitable means wherewith to work,— let alone the scarcity of men to investigate! What we need is a *laboratory,*— devoted to the investigation of the supernormal — to the study of mediums and psychical phenomena. Years ago, Sir Oliver Lodge pointed out the necessity for such a laboratory, and indicated what instruments would, in his estimation, be necessary for carrying on this research as it should be conducted. Why should we not inaugurate the first psychic laboratory in America — the first laboratory dedicated to the study of this science,— which is destined to become the science of the present century? William James opened the first psychological laboratory; why should not the honour be ours of opening the first laboratory devoted entirely to the scientific investigation of psychical phenomena? Such an undertaking would arouse a considerable amount of interest and of speculation; and the world would wait in breathless anticipation for the results of the investigations carried on within it, and for the reports of experi-

ments conducted under its direction. And such a laboratory would redound to the glory and the reputation of its founder — as the first man (or woman) possessing the necessary tact, judgment and foresight to foresee the drift of the times, and perceive that such a laboratory is one of the prime needs of our day! Who is there who sufficiently appreciates the importance of the cause to come forward and assist in such good work? I earnestly hope that this appeal will not fall upon deaf ears; that this request will not be forgotten, but that some men and women will consider this earnestly, with a view to founding such a valuable scientific institution.

Hitherto, most of the work in this field has been conducted in the clinic, in the laboratory of the psychologist, or in the dubious gloom of the seance room. We desire to demonstrate the reality of psychic phenomena in a more open and public fashion, so that every one may *see* the manifestations,— and not only witness but actually assist in their production himself. It is only natural that the "personal factor" should enter into all that we do. Every one wishes to see and be convinced for himself; — *here* is the chance to do so! But we must have subjects; we must find mediums for experiment; and all this takes time and money to bring about. There are but few good mediums in this country; it may be necessary to go abroad in order to procure suitable subjects for study and investigation. The result is that it is impossible for us to undertake this colossal work unaided. We need support and co-operation in this work — help and financial backing — in order that these investigations may be carried on at all. Not a very great deal would be required; but one would be astonished, nevertheless, to ascertain how much it takes to manipulate such an undertaking

successfully. I have had my experience with Eusapia, and I know! This science *should,* of course, endow a certain number of qualified men to investigate this realm,— just as professors of physics and chemistry, and botany and zoology, and anthropology and psychology and philosophy and other 'ologies and 'isms are provided with competent men to study and teach them! Why not this subject? If any of these phenomena are true,— if we are here on the borderline of a new world of science,— then, surely, this investigation is as important as any other — yes, far more important, for do we not deal here with phenomena which more intimately concern us than any other? If "the proper study of mankind is man,"— then, assuredly, we are here in a realm which offers great possibilities,— in one of the most promising of all the byways of science; on the threshold, in fact, of what I believe to be a *new* and a "coming science."

The phenomena which we desire to study are the following:

Experiments in thought-transference; experiments in clairvoyance, normal and induced; experiments upon the human "aura" (should it be proved to exist) so as to ascertain its structure, constitution, etc.; the exteriorization of motivity; the exteriorization of sensitivity; the so-called "polarity" of the human body — tested by instruments and otherwise; automatic-writing, crystal-gazing, shell-hearing; the projection of the double; astral-projection; exploration of the subconscious mind; experiments in magnetizing animals and inanimate objects; experimentally induced dreams; experimental apparitions; experiments in magnetic healing — the "laying-on of hands," etc.; study of "obsession" cases; experiments

with the so-called human "Fluid"; study of the power of the Will over inanimate matter; experiments in levitation; experimental study of the Yogi exercises — breathing, awakening of the so-called "Chakras," etc.; thought-photography; spirit-photography; materialization; study of the "cold breeze" felt at séances; study of the action of drugs on consciousness, and the influence of powders, incense, perfumes, etc., on the senses; experiments in duplicating spiritistic phenomena by physical and electrical means; study of "dowsing" or water-finding; experiments with magnets — *à la* Reichenbach; experiments in trance, ecstasy, etc.; study of the psychology of deception; study of suggestion, normal and abnormal; experiments in the induction of illusions and hallucinations; experiments in the "passage of matter through matter"; study of secondary personality cases; psycho-analysis; experiments in telepathic hypnotism; visions of the dying; weighing and photographing the soul at the moment of death, supernormal psychology and physiology, etc., etc.

My plea, then, is that there is here a field for experiment,— a field which offers untold rewards and a rich harvest of facts. Progress in this direction can only be accomplished by an organized and systematic attempt to study the phenomena at first hand. A Club or a Society can accomplish what no individuals can accomplish, simply because the facilities and the backing are not forthcoming. Christ himself said: "When two or three are gathered together in my name there am I"; and in the spirit of truth we come together in this inquiry as in none other! "In unity there is strength." This is true in every field of human endeavour,— and it is certainly true here also. The harvest to be reaped is laden with golden grain; shall we not assist in its reaping — help to garner

such facts as,— rightly interpreted,— will help us not only to understand the Universe aright, but will bestow a spiritual significance upon all that we see? Life without love and hope is a desolate waste; and when the light has gone out of our lives, in the form of some ideal,— some spiritual interest,— we have left a nature hard and barren: pure metal which has been rusted and blackened by some corroding acid; a velvety peach, from which the bloom has been brushed by some ruthless hand; a delicate pink rose, whose petals have been crushed and bruised, by some blighting, withering force! Such is a life devoid of spiritual hopes and ambitions; and it is because these phenomena furnish us with this hope, with these ambitions, that I consider them so important and so valuable. As the late Mr. Gladstone said: "It is the most important work in the world today — by far the most important." Let us, then, join hands in the will and determination to investigate them!

CHAPTER VI

PERSONAL REMINISCENCES OF EUSAPIA PALLADINO

WELL I remember the first day we called upon Eusapia Palladino — the Hon. Everard Feilding and myself. We had travelled to Naples, on behalf of the English Society for Psychical Research, to hold a series of séances there; and *en route* — to assist in our amicable reception — I had procured courteous letters of introduction to her from Dr. J. Maxwell, M. Flammarion, and M. Courtier, of the General Psychological Institute, of Paris. I had arrived in Naples one rainy day in November, 1908, and had been joined the next day by Mr. Feilding, who had come on direct from England. (Mr. W. W. Baggally, the third member of the Committee, only arrived several days later, after our fourth séance.) The day following Mr. Feilding's arrival, we journeyed to Eusapia's home, in order to make arrangements for the sittings. We drove through a maze of back streets, through an old courtyard, and finally reached her abode by climbing up a number of steep flights of stairs. To our disappointment, we learned that she had gone out, but that she would soon be back. Would we not wait? Her young and handsome husband admitted us into a small and stuffy room, closely shuttered, the walls of which were adorned with scores of signed photographs of celebrities. Here were portraits of Lombroso, Morselli, Schiaparelli, Botazzi, and other men of science who had inquired into, and endorsed, her phenomena. Here were also photographs of men and women famous throughout

the world in the realms of art, letters and politics. It was truly an impressive collection. We waited, chatted with Eusapia's husband, drank the *curaçao* offered us, until, after ten or fifteen minutes, steps resounded upon the stairs. The great Eusapia herself stood in the doorway!

I shall never forget my first impressions of this remarkable woman. Her charm and magnetism were truly extraordinary. Though unlettered (she could neither read nor write, save her own name) she possessed a keenness of mind, an alertness, a scintillation, a personal charm and magnetism, quite unique and unrivalled. Whenever Eusapia entered a room, she was sure at once to be the centre of attraction and interest. Her bright, flashing eyes seemed to emit streams of living fire; her whole form radiated magnetism; her conversation was so witty and so pungent that it often required an intellect of no mean order to keep up with it. Her conversation was animated and gay; she was in a good humour. Arrangements were soon completed for a series of sittings, to be held in our rooms at the Hotel Victoria (Naples), and we left, well pleased with the result of our interview.

How different a picture was presented to us, now that I look back upon it, by this same Eusapia, at the conclusion of our first séance: Weak, drawn, ill, nauseated, hysterical, deeply lined about the face, physically and mentally ill — such was the wreck of her former self which we perceived at the conclusion of the first two-hour séance. Hardly able to walk, she leaned heavily upon us for support. All her energy had vanished. Her memory was gone; likewise her interest in everything — her magnetism, her vitality. She seemed to

have actually lost weight during the proceedings. (Experiments subsequently proved that she actually did so, at times.) She descended the hotel stairs with dizzy feeble steps, leaning heavily upon our arms. We saw her drive off — a broken shrivelled old woman.

Yet the next day, when we again called upon her, she was practically as vivacious and lively as ever: A night's rest and sleep seemed to have restored her completely. From this we learned a valuable lesson — viz., that Eusapia's powers, vital in character, seemed to accumulate as the days passed — and particularly at night — and were expended during a séance with prodigious rapidity and extraordinary force. We later learned that this expenditure was usually greatest with strangers — when she was not feeling well or at ease; and that she was relatively weak when she was unhappy, worried or unwell. In other words, those conditions which would normally prevent or hinder the manifestation of physical, mental or moral force in any other channel, also inhibit its manifestation in so far as psychic manifestations are concerned. The same factors which would prevent a musician from composing a masterpiece or a scientist from writing an article "On Relativity," would also prevent a medium from giving a good séance.

It is hardly necessary, at this time, to remind the reader of the general character of Eusapia Palladino's séances. They are well known to every student of psychical science. They consisted, for the most part, of purely *physical* manifestations — movements of objects without contact, levitations of the séance table, cold breezes, playing upon musical instruments without apparent cause, raps, materializations — partial or complete — impressions in clay of hands, faces, etc. These

phenomena would often display a certain intelligence of their own, however; as though some mind were behind them, instigating and inspiring them; and it is an interesting and significant fact — which I have before pointed out and commented upon — that the deeper the trance of the medium, the more immobile she became, the better and more striking were the phenomena, and the greater the distance from her at which they occurred. This is, of course, precisely what we should *not* expect, were the manifestations the result of trickery pure and simple. We repeatedly noticed that, when the medium was restless and fidgety, constantly moving her hands and feet, the phenomena were sporadic and flighty, undependable, and many of them suspiciously resembling those which might have been produced by fraud. On the contrary, when the medium allowed herself to become deeply entranced, when she trusted the sitters, felt that they understood her trance, and that she could rely upon them to look after her properly when in that state — when she allowed herself to sink back, immobile and passive, into the arms of her controllers, and remain in that condition, hardly moving a muscle for an hour or more at a time, the best and most striking manifestations took place. Under these conditions — when both hands and both feet were under perfect control; when the head of the medium was resting upon my shoulder, and every part of her body was passive and adequately controlled — the most startling occurrences were witnessed, sometimes at great distances from her; where she could not possibly have reached, even were her hands and feet free; and when there was a clearly lighted space between her body and the object — in which every one could see that nothing visible existed.

The ten séances which I shared with Messrs. Feilding and Baggally, in Naples, were happily supplemented by more than thirty others, in New York, during which I had ample opportunity to judge the value of her phenomena judicially and impartially; and become thoroughly accustomed to their general characteristics. I emerged from them more than ever convinced of the genuine nature of her phenomena; and, in spite of the trickery which Eusapia unfortunately resorted to, at times, and in which she was caught more than once, I nevertheless base my belief upon those manifestations which I have seen, and which could not possibly have been accounted for by any of the methods detected or suggested, which fail completely to account for the more striking and convincing manifestations.

Let me state, just here, my own theory as to the nature of the trickery which Eusapia was known to practise and its relation to the apparently genuine phenomena; also, why it was that Eusapia — granting that she had genuine power — resorted to trickery at all. I have many times set forth my views in this connection; but I will state them once again.

Eusapia Palladino depended, for the production of her phenomena, upon a power over which she had no control. At times, this energy would be strong, at other times it would be weak. When it was strong, the phenomena would begin at once, and nothing we could do would prevent them. We might tie her with ropes, encase the legs of the table in wooden cones, etc.— nothing mattered. The manifestations went on, very striking in character, and continued almost without a break. When, on the other hand, the power was weak, we would wait for an hour or more before anything hap-

pened. Then, rather than send her sitters away, Eusapia would endeavour to "produce" phenomena — and it was at such times that she would resort to trickery. If she had been a wise woman, she would have said to her sitters: "I am sorry, ladies and gentlemen; I can do nothing tonight. We will try tomorrow"; all would have been well. But no! She would not do this. She was "the great Palladino"— she must not fail! Here lay her streak of vanity; herein lay her undoing. For, every now and then, she would get caught in this trickery, and then there would be a big fuss and wide publicity, and her mediumship would receive a blow from which it would take years to recover. This is what happened at Cambridge, in 1895; and this is what happened in America in 1910.

Of course the objection has been raised, that if a medium is ever caught cheating, she must be discredited in the future; and in the majority of cases, this may be a solid enough rule to follow. But in such a case as Eusapia's, where scores of scientific men of the greatest eminence have professed their belief in her powers, while acknowledging her trickery, the case is surely different. William James has answered this objection with his usual clarity of language. Speaking of this very subject, he says *(Memories and Studies,* pp. 179-83*)*:

Falsus in uno, falsus in omnibus, once a cheat, always a cheat; such has been the motto of the English psychical researchers in dealing with mediums. I am disposed to think that, as a matter of policy, it has been wise. . . . But, however wise as a policy the S. P. R.'s maxim may have been, as a test of truth, I believe it to be almost irrelevant. In most things human the accusation of deliberate fraud and falsehood is grossly superficial. Man's character is too sophistically mixed for the alternative of 'honest or dishonest' to be a sharp one. . . .

Personally I base my belief not upon those manifestations which might conceivably have been produced by fraud, but upon those relatively rare ones which could not possibly (or to my mind conceivably) have been so produced. Let me cite two or three examples of these — chosen almost at haphazard.

At the conclusion of our second Naples séance, Eusapia standing up, about a foot in front of the curtains of the cabinet, which were closed behind her, the strings of the mandolin were strummed, in exact synchronism with the movements of her fingers. Here were the conditions. The mandolin was leaning against the corner of the room. In front of it, lying upon its side, *within* the cabinet, and forming as it were a sort of "fence," was the small table which had been placed in the cabinet. In front of this were the cabinet curtains. About a foot in front of these stood the medium — a clearly lighted space being between her body and the cabinet curtains. Her head and her hands were completely visible. We repeatedly passed our hands between the medium's body and the cabinet, to assure ourselves that no attachment of any kind existed between the medium and any object in the cabinet. Under these conditions, Eusapia took one of our hands in one of hers, holding it palm-up, "picked" the palm with her finger (of the other hand), and in synchronism with this movement, a string of the mandolin in the cabinet would resound with a distinctly audible "ting." No one was present except Mr. Feilding and myself; the séance was held in our own rooms in the hotel; a moment after the manifestation occurred, we parted the cabinet curtains, and assured ourselves that no one was in the cabi-

net, and that no connection of any kind existed between the medium and the instrument.

On another occasion, in New York, Mr. S. S. McClure was forcibly pushed away from the cabinet, as he tried to approach it, by what he described as "two hands, placed upon his chest," when every one in the circle could see that nothing visible touched him, and that there was a clearly lighted space of about four or five feet between his body and that of the medium.

On other occasions, Eusapia being securely held hand and foot, outside the cabinet, I have gone into the cabinet, during the height of a séance, and taken hold of the small séance-table, upon which the musical instruments were placed. I could see across the table; see that nothing visible was there; yet an invisible "being" of some sort wrestled with me for the possession of the table, and finally succeeded in throwing myself and the table completely out of the cabinet — though I have always been considered quite athletic, and done much boxing, etc., in my younger days. All this, be it remembered, when nothing visible held the opposite side of the table, and when the medium was held very securely hand and foot, by two sitters, *outside* the cabinet. This happened on several occasions.

On still another occasion, the mandolin floated over the séance table, outside the cabinet, and in the middle of the circle of sitters, and continued floating about there, playing all the time, for at least half a minute, while every one could *see* that nothing visible was touching it. We repeatedly assured ourselves. during this manifestation, that no "reaching rods," threads, hairs, etc., were present, and that nothing material supported the instrument in any way.

On yet another occasion, I assured myself most particularly that both feet and both hands of the medium were securely held; at my request, the sitters on either side lifted up each one in turn, to show me that they were actually holding separate hands and feet. Under these conditions — and the medium's head being visible — I knelt upon the séance table, and stretching up as high as I could reach, held the accordion against the curtains of the cabinet. A "hand" grasped the other end of the accordion, and played it with me, by moving it back and forth, for fully half a minute — all this about four feet above the medium's head, while her hands and feet were visible and securely held.

It is useless for any one to try and tell me that these phenomena were produced by means of the medium's toe, which, slipped out of her shoe, she had cunningly introduced under the leg of the séance table! I know better. I have seen phenomena which such critics have not seen; and it is upon these that I base my opinion and my faith. These once accepted, however, I am prepared to accept, as genuine, many of the lesser phenomena — since I feel that the phenomena are undoubted; and if genuine in greater things, why not in lesser ones also?

Every group of scientific men that ever experimented with Eusapia knew very well that she would defraud them, if the chance were given her to do so; and twenty years ago these precise forms of trickery were described by the French and Italian scientists, the same tricks which were rediscovered with such pomp and ceremony by her American investigators.

No *new* form of trickery was discovered during her American visit, only the old tricks rediscovered. From

the accounts at the time, one would gain the impression that a complete system of trickery, hitherto unknown, had been unearthed; whereas, as a matter of fact, the American investigators had only discovered for themselves what the European men had known all the time! It will be seen then that the tremendous publicity given to these "exposures" was not warranted; nor did they give to the public a fair idea of what had *really* been discovered, or what had been found at these sittings.

In order to convey to the reader a fair idea of the inadequacy of many of the explanations offered, let us take a single instance — table levitation. The explanation put forward and accepted as the true one by the vast bulk of the American people is that contained in the Jastrow-Miller exposure, and is as follows: During the tiltings and oscillations of the table, Eusapia manages to release one of her feet; then, inserting the toe of this foot under the table-leg nearest to her (and by pressing down upon the surface of the table with her hands), she is enabled to lift the table several inches off the floor. This is the "explanation" usually accepted as the true one.

Now let us consider the following facts: (1) During the course of the séance, complete levitations have repeatedly been obtained when both the medium's hands were held away from or clear of the table. Now, it may be ascertained by any one that it is impossible to lift a table completely off the floor by means of the feet and knees *alone*. The utmost that can be done is to *tilt* the table *away* from one — provided the hands do not rest on the top. These levitations, therefore — and there were many of them — can not be explained in the manner postulated. (2) Table levitations have re-

peatedly been obtained when both legs of the table nearest the medium were inserted in wooden tubes, which effectually prevented the medium from reaching the table legs with her feet. (See my article in October, 1909, *McClure's Magazine;* and *Eusapia Palladino and Her Phenomena,* pp. 66, etc.) (3) The nature of some of the levitations quite negatived the idea that they could have been done in the manner suggested. Thus, if they were produced by the toes of her feet, it would be possible only to produce levitations of six or eight inches, or at most a foot, high. Now, some of our levitations were more than two feet high, and the medium had to stand in order to keep her fingers on the table-top. *In this condition she walked seven or eight feet across the séance-room, before the table fell with a bang to the floor.* In such a case, the explanation proposed completely fails. (4) Levitations have repeatedly been obtained when both the medium's feet were *held* beneath the table, by some one kneeling beneath it — as they were during the first séance by the reporter from the New York *Herald.* We see, therefore, that the proposed explanation is completely insufficient to cover the more striking facts, and we must believe one of two things: Either the American investigators did *not* see any of these more striking manifestations — in which case they should have waited, before publishing their verdict, and studied her further, as did the European investigators; or they did — in which case they must explain in detail how a medium can produce levitations of a table by means of her feet, when these feet are held beneath the table, or when the table-legs are inserted into protective wooden cones; or when the table is lifted to a height of two feet or more from

the floor, and every one can see her walking about and not touching it. The absurdity of the proposed explanation should be very apparent — and *is* so to any one who has seen the more striking and convincing of her phenomena.[1]

I have dwelt thus at length upon the table-levitations and the proposed "explanations" of them for two reasons. In the first place, we see that the proposed explanations do not, in reality, explain the facts; and in the second place we see that the verdict arrived at by the American investigators was superficial and based upon an inadequate knowledge of the phenomena. This verdict, it seems to me, applies to the whole of the investigation, and is not limited to the table-levitations alone.

In addition to the table levitations, which we have just discussed,— there were other phenomena that took place at every one of Eusapia's séances, which deserve special mention. Of these, the "curtain phenomena," or the blowing out of the cabinet curtains as though impelled by a strong breeze from within the cabinet; and the breeze from a scar over Eusapia's left temple — the famous cold breeze of which so much has been heard,— are the most common. This breeze from Eusapia's forehead was noticed, in all, five or six times, and I have learned one rather interesting thing in this connection. It is this: After a good séance this breeze is strong, and after a poor séance it is altogether lacking — or so feeble that it can hardly be detected. On three occasions Eusapia gave a sort of "after-sitting" to three or four of us who had remained (after the other sitters had departed), and

[1] The reader is referred to Dr. W. T. Crawford's book, *The Reality of Psychic Phenomena,* for recent striking evidence regarding table levitations.

the most startling phenomena I have ever seen occurred at these informal séances. A strong breeze was *always* found to issue from E. P.'s scar, after these sittings — though none had been noticed after the regular or formal séances given earlier the same evening!

Apropos this breeze, it may be said that the supposed "explanations" of it are as absurd and as unsatisfactory as are the explanations of the table levitation. Professor Münsterberg. *e. g.*, in his article in the *Metropolitan Magazine,* stated that it was produced by an apparatus concealed under Eusapia's clothing, and consisted of an elaborate system of metal tubes, rubber bags, etc., concealed beneath her dress. Messrs. Jastrow, Miller, Kellogg, Davis, etc.,— who also have supposedly "exposed" this manifestation,— assert, on the contrary, that she had nothing of the kind, but that she merely produced this breeze by blowing with her mouth, and diverting the air current upward by puckering the lips in a certain direction! Professor Münsterberg's explanation is of course insulting to the intelligence of those eminent men of science who have investigated her case for years in Europe, and who have repeatedly witnessed this breeze after a most careful search of the medium. On the other hand, the later explanation completely fails when we take into consideration the following facts: That this breeze has been obtained when Eusapia's mouth and nose have been covered with the hands of the investigators; and it has been felt when the medium, at our request, exhaled as forcibly as possible during the occurrence of this breeze. It did not increase or decrease during this process, but continued in a perfectly even stream,— without check, hindrance, or augmentation. The inconclusiveness of the supposed "explanation" is thus made

manifest — this characteristic extending also, it seems to me, to the other theories which have been offered of Eusapia's phenomena during her visit to America.

At nearly every one of our séances, we had one or more of the musical instruments played upon. The music-box has been played upon for several seconds together — the handle being turned twelve or fourteen times, to judge by the sound. Ample time was afforded the controllers to ascertain that they were holding separate hands. The tambourine has been played upon for almost a minute — it being seen to play over the medium's head, then beyond the left-hand curtain, again over the medium's head, over the head of the left-hand controller, again over the medium's head, again beyond the left curtain, and finally it was thrown to the floor of the cabinet. The small bell has repeatedly been rung for several seconds together — a hand being seen ringing it.

One of the most remarkable manifestations, however, was the playing of the mandolin on at least two occasions. The instrument sounded in the cabinet first of all — distinct twangings of the strings being heard, in response to pickings of Eusapia's fingers on the hand of one of her controllers. The mandolin then floated out of the cabinet, onto the séance table, *where, in full view of all, nothing touching it, it continued to play for nearly a minute* — first one string and then another being played upon. Eusapia was at the time in deep trance, and was found to be cataleptic a few moments later. Her hands were gripping the hands of her controllers so tightly that each finger had to be opened in turn — by the aid of passes and suggestion.

We also obtained an imprint on a photographic plate, which had been wrapped in several thicknesses of black

paper, and placed in the cabinet. It will be remembered that Professor Lombroso gave an example of this in his book, *After Death — What?* p. 84 (Fig. 35). The plate was provided by Dr. Frederick T. Simpson, of Hartford, Conn., who placed it in the cabinet. It was brought to New York wrapped, and taken out of Dr. Simpson's bag just before the séance. When developed, the impression of three fingers was found on the plate. There is no normal explanation of this fact, as every precaution was taken. The photographer who wrapped the plate took an impression of his own fingers, and they were about three times the size of those on the plate. Whatever their interpretation, they cannot be explained by normal means.

Intelligent action has been shown on numerous occasions. Once a gentleman seated to the left of Eusapia had his cigar case extracted from his pocket, placed on the table in full view of all of us, opened, a cigar extracted, and placed between his teeth. It was light enough at the time to *see* that no one was touching the case, which was lying on the table. . . .

It must clearly be borne in mind that these striking manifestations did not *always* occur. They only took place when the medium was in deep trance; and I have only seen her in that state four or five times, in all the séances I have held. When the trance was only light, or when there was no trance, only minor manifestations took place; and one who has only seen these phenomena is not entitled to make up his mind regarding the value of the case as a *whole* until he had seen both sets of phenomena. This the American investigators did *not* do; and herein lay the fault of their investigation. They saw only poor and inconclusive séances; and upon these they

were not justified in forming an opinion. They also caught Eusapia in trickery of the character frequently described before. But, in view of the mass of evidence which had been accumulated in the past, and the eminence of the men who had previously investigated her, it was surely ill-advised to publish negative conclusions, based only upon these poor séances — which, as I have tried to show, differ radically from the conclusively "good" ones.

On a number of occasions, also, curious things happened which could not be accounted for, by any normal means. Thus, during one séance, Eusapia said she felt that Lombroso would materialize: As a matter-of-fact, Lombroso did *not* materialize, nor did any one else; but, directly over the séance-table, there formed what I can only describe as a vortex of energy — a sort of psychic whirlpool or waterspout, so apparent to all the circle of sitters, that one or two of them had to leave the table — it made them so dizzy. It could be felt, very plainly, for a radius of about three feet; beyond this, it was insensible in its effects. As soon as one came within this distance, however, its power was very noticeable — though nothing was visible, as I have said, and nothing formed. I remember that, at the time, I was reminded of Algernon Blackwood's story *Sand,* which so vividly describes a similar phenomenon in the Sahara Desert.

On several occasions Eusapia transferred her power to me (seemingly) by placing her hand upon my shoulder — in much the same way that D. D. Home transferred his power of handling redhot coals to his sitters upon occasion. (I called attention to this fact in my communication to the Second Psychological Congress, held in Paris.) [1] I felt nothing, but Eusapia, placing her hand

[1] *Report,* pp. 135–38.

upon my shoulder, said to me, "Now, *you* do it!" Whereupon, if I placed my hands in front of the cabinet curtains, they would blow out, as though my hands attracted them; or I would place my hand over a small stool, and *that* would follow wherever I moved it — backwards and forwards — the stool moving about over the floor during the process. During these experiments, which were always made in fairly good light, we could all *see* that nothing visible was attached to the moving object.

Aside from her séances, however, Eusapia seemed to possess little or no mediumistic power. Experiments conducted here in New York, in crystal gazing, automatic writing, etc., yielded negative results; nor could I trace any connection between her dreams and the séance memories. (I undertook a series of tests, in this direction, to see if any connection could be discovered between "John King," her *soi-disant* "control," and her dreams.) Aside from her séances, Eusapia presented no unusual manifestations of any kind.[1]

Eusapia has now gone from us; she is no longer within the reach of direct experimentation; and her interesting personality — if it returns to us — must in turn manifest itself through some other medium. Her case will assuredly live for ever in the annals of psychical science as one of the most baffling, the most interesting, the most puzzling, and in a sense the most annoying, that it has ever been the lot of investigators to explore. Undoubtedly, she was a genuine and remarkable physical medium; while at times independent intelligences seemed to manifest themselves through her. This was, however, but rarely, and (quite naturally) more rarely with Anglo-

[1] See my *Personal Experiences in Spiritualism*, 251–53, for details of the experiments.

Saxons than with her own countrymen, or with the French experimenters, with whom she felt more at ease and at home. The majority of her manifestations seemed to depend upon a peculiar form of energy, radiated from her, which exuded from her body, and particularly from her fingers, toes, and, in the form of a "cold breeze" was particularly noticeable after good séances, issuing from the scar in her head and from her left knee. This last manifestation was very rare (I have only seen it twice, in all), while the emanation from her forehead was more frequently seen.

Had the genuine character of Eusapia's phenomena been recognized by the scientific world as a whole, in 1894, when Sir Oliver Lodge urged they should be, we might by now have discovered some permanent and valuable truths regarding them. As it is, we shall have to await the advent of another Eusapia — or another Home — before scientific research along these lines can be continued. It is earnestly to be hoped that some medium of the kind will make his, or her, appearance after the present war; and that an adequate, impartial and prolonged investigation of the phenomena presented will then be possible. Eusapia was always willing to submit to test conditions; always willing to sit with new groups of sitters; she could nearly always produce extraordinary phenomena, more or less striking in character; and I regard it as one of the cruellest things I know that she was allowed to pass from us, without having had her marvellous and scientifically valuable phenomena accepted by orthodox science — and studied as such phenomena surely deserve to be studied.

NOTE

Since the above was written, several remarkable documents

have appeared: Baron Schrenck-Notzing's *Materialization Phenomena;* Mme. Bisson's *Phenomena of So-called Materialization;* and Dr. Geley's *Report* on his experiments with Eva C., in the *Bulletin* of the "General Psychological Institute" of Paris. An excellent summary of these latter experiments is to be found in the March-April, 1919, number of the *Occult Review* — by Stanley de Brath; —"Supernormal Physiology and Materialization." These experiments appear to be of the profoundest interest, value and significance.

CHAPTER VII

WHAT ARE GHOSTS?

THERE is a deeper and more widespread belief in ghosts at the present day than at any time since scientific methods of thinking came into force, in spite of the opinion of the man-in-the-street that such things are " pure rubbish " and that " medical science " has shown them to be nothing more than " popular superstitions."

This you may readily prove by a preliminary census among your friends. If you question them you will be surprised to find how many of them have had some experience of the kind, though they may not care to have it known, especially if you are not sympathetic.

But nearly every one has had some sort of occult or strange experience in his or her life, if you question him deeply enough, and this fact was brought out by the startling census taken some years ago in England, when it was mathematically shown that about ten per cent of the average population had had some experience of this character. This is astonishing, but it is a fact. Ghosts have, so to say, received the endorsement of science to some extent.

But in thus saying that ghosts exist I must not be understood as saying that the ghost of tradition is with us still. Ghosts which were semi-material beings and paraded about in sheets, clanking chains behind them, are no more. Their place has been taken by a more ethereal being, by a creature which even our science can accept. Thus, when I say that ghosts exist, or that such things

as haunted houses certainly exist, we must understand what we mean by these terms and ask ourselves the question, "What is a Ghost?" and "What is a Haunted House?"

I say that such things as haunted houses exist, but I do not pretend that material phantoms walk about such houses, tormenting the inmates and making their lives miserable. But that there are certain peculiar influences at work in some localities which cannot be accounted for, no one would deny who has had much experience with these phenomena or who has himself lived in a "haunted house" for any length of time.

Before I can answer or define accurately and simply the modern scientific conception of a "ghost" a few preliminary facts must be stated.

When the Society for Psychical Research began collecting its material it soon found this remarkable fact: — That, of the ghost stories collected the great majority of them seemed to hinge upon the moment of death. Most of the apparitions which were seen were found to correspond, in point of time, with the death of the person represented. Perhaps the seer might only have experienced a case of this character once in his lifetime, yet that once was found to correspond, in a very remarkable manner, with a distant and tragic event.

The question, of course, at once arose, Are these cases due to chance? One might be, perhaps a dozen, a score, but when the coincidental cases began to mount into the hundreds the theory of coincidence had to be strained to the utmost to make it work. In fact, when it was mathematically figured out it was found that the chances were millions to one against this number of cases happening at the supreme moment they did. Several hundred such

cases were published in a book entitled *Phantasms of the Living,* which made a great sensation at the time.

But the cry was at once raised:—"Too few cases! Your point is not yet proved." Some thirty thousand replies of all kinds were then collected. These were put to the test, and it was again proved mathematically that the chances against possible coincidence were so huge as to render that hypothesis all but inconceivable. Thus, Professor Sidgwick's committee was forced to the following conclusion:—

"Between deaths and apparitions of the dying person a connection exists which is not due to chance alone. This we hold as a proved fact."

Now, coincidental cases of this type are called "apparitions of the dying," to distinguish them from the "apparitions of the living"—*i. e.,* figures or phantoms of people still living, as occasionally happens; and "apparitions of the dead"—or phantasms which have appeared long after the death of the person symbolized. There are thus these three broad classes of "ghosts" to begin with.

The question arose, therefore, might not all these cases be explained by some underlying cause which is the same in all cases? We now believe that they can to a very large extent. But to make plain what this cause is we shall have to digress for a moment to explain another factor involved in our problem.

This is telepathy, or thought transference. Most people now believe that telepathy between living people takes place on occasion, and, if they don't believe it, they are referred to the records, where proof is to be found (the *Proceedings* of the S. P. R.). If you think of a playing card, for instance, the ace of hearts, the

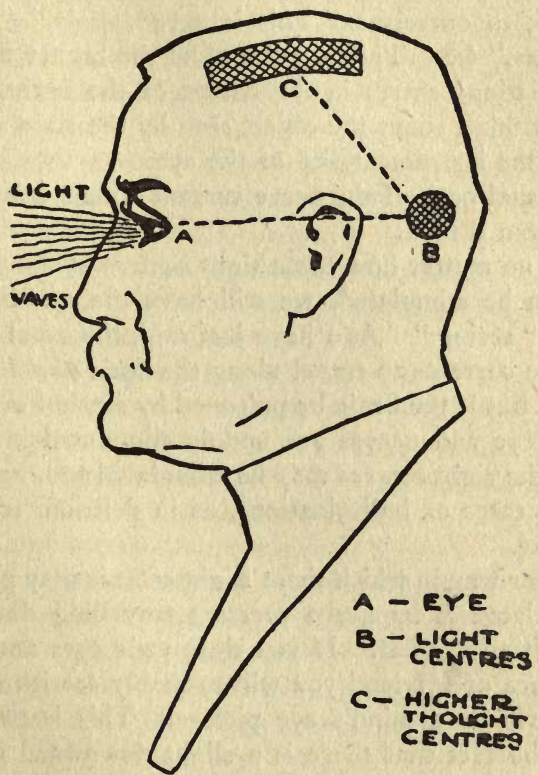
recipient of the impression will see the ace of hearts if the experiment is successful. It takes visual form in his mind. It is a hallucination — a mental picture — yet it owes its origin to another mind, external to itself. It is subjective, yet at the same time objective. It is a real thing, yet does not interfere with the mechanical laws of our world.

We believe that much the same thing takes place in apparitions of the living, of the dying and of the dead. In cases of apparitions of the living one mind influences another in sleep, trance, in ill health or for reasons as yet undetermined, and the percipient of the apparition sees the figure of this person, as previously he saw the vision of the playing card. In cases of apparitions of the dying, some mental energy seems liberated, facilitating this telepathic impulse from mind to mind. And in cases of apparitions of the dead — ghosts, proper — this telepathic impulse is supposed to emanate from the mind of the "dead" person, still living and active, however, in another sphere, but yet able to influence the mind of a friend or relative yet alive and cause him or her to see the vision of the departed one. In all cases the apparitions are of telepathic origin, on this theory.

In a similar way mysterious voices and touchings are explained. Experimental thought transference has shown us that a name, a sensation, an emotion, a sensory impression of any kind, can be transferred from mind to mind almost as easily as a visual image. It all depends upon the form the phantasmal impression takes. For instance, we can "will" the subject to hear the word "mother" spoken, and he will hear it; or that he shall feel a grasp on his right arm, and he will. Yet there was no real, external sound — such as would be recorded by

a phonograph — and no real material hand which grasped his.

The reader may well inquire here how such a thing is possible — how science explains the actual mechanism at work in the production of phantasmal experiences of



How One "Sees a Ghost."

this character. A diagram will help to make this clear.

When we "see" a thing what happens is something like this: —

Reflected light waves coming from the object strike the eye (A) when they are transformed into nervous currents, and in this form travel along the optic nerve to the "sight centres" at the rear of the brain (B), where we have the "sensation" of sight or "seeing." But that is all! We do not reason about the object seen. We do not think to ourselves "This is a red apple," "I like red apples," &c. This is all done in the higher thought or association centres in the cortex of the brain, at C. Then we think about the object seen by the sight centres through the instrumentality of the eye.

The usual path of the nerve current is thus from A to B and from B to C.

Now, no matter how these sight centres at the rear of the brain be stimulated, we still have the sensation of sight or "seeing." As I have just said, the usual way is for nerve currents to travel along the optic nerve to this centre. But if the brain be poisoned by alcohol or toxins and the eye and nerves are unduly stimulated in consequence, the sight centres may be stimulated too, and then we have cases of hallucinations, as in delirium tremens, illness, etc.

Another way in which these slight centres may possibly be stimulated is by nerve currents travelling down the nerves, from C to B. If you close your eyes and think of the face of a friend you will probably see it more or less clearly as a mind's eye picture. This is probably due to the fact that there is a slight downward current of nervous fluid from C to B. If this downward current were as great and powerful as an ordinary eye impulse would be, we should have the sensation of seeing equally well — that is, we should have a "full blown hallucination" — of purely mental or psychological origin.

Conceivably, one method by which these centres might thus be stimulated is by means of a *telepathic impulse.* This, influencing the mind and brain of the person seeing the "ghost," has caused a tremendous downward rush of nerve energy, with the result that the sensation of sight is produced, and a figure seems to stand before us, in space, as though real. Thus we have what we call a "telepathic hallucination." This telepathic impulse may originate in the living, the dying, or, if they persist, in the dead. Similarly, if the impulse thus received stimulates the auditory centres, instead of a picture, we have the sensation of hearing a voice; or, if the tactile centres, of being touched, etc. The origin is the same in all such cases; but the manner in which the impulse is "externalized" or made real and objective to the seer differs with his habits and mental make-up.

All this is confirmed by the so called "experimental apparition" cases — in which one person deliberately wills to appear to another person at a distance, and succeeds in doing so — the seer believing that he has seen a ghost. Here again, we have evidence of telepathy — causing a phantasmal appearance or figure.

So far as to ordinary run of cases, which may doubtless be explained in this manner, rationally and scientifically. There are cases, however, which seem hard to reconcile with this hypothesis, and which seem to point very strongly to the older view that ghosts may sometimes be real, outstanding, objective entities. Among such facts I may mention:—

1. The fact that several people may see the figure at one time. These are the so-called "collective cases," of which there are a number on record. Explanations have been offered, but they are all rather far-fetched.

2. The fact that these appearances have occasionally been photographed. Apart from the ordinary cases of fraudulent "spirit-photography" respective scientific evidence exists in favour of the view that an ethereal body of some sort has been photographed in such cases.

3. The fact that animals often behave queerly when a ghost is seen, or even felt. Aside from mere legend, this has been observed at first hand on a number of occasions.

4. The fact that these phantasmal forms sometimes move material objects — close the door, snuff the light, etc. A hallucination, no matter how vivid, cannot do this! It rather points to the existence, in space, of a semi-solid body.

5. The fact that such figures have often given information unknown to any person present, but afterward found to be correct. (This might conceivably be covered on the telepathic theory.)

6. The fact that the person seeing the phantasmal figure may afterward recognize the face on a photograph shown him — he never having known the person in life. In so-called "haunted houses" this has often been observed.

Many of these reasons might be urged against the view that ghosts are mental in origin, and in favour of the older view that they are material beings — having space-occupying bodies. On such a view some sort of ethereal or astral body is present, which is seen or perceived by the seer. One is here reminded of the "spiritual body" of St. Paul.

Many objections might be urged against this view, however. The most obvious one is that of the clothes of the ghost. If the figure seen be real and outstanding, if it is a space-occupying form, how about its garments?

Are they, too, Spiritual? Are they the ethereal counterparts of the material garments as the body is the ethereal counterpart of the physical body? It is possible — but, we must admit, most improbable. The mental picture hypothesis is far more plausible, because here the clothes of the ghost would be part of the picture — just as in our dreams the clothes which the figures wear are part of the picture. We imagine them, and they exist. The clothes of ghosts have bulked large in the literature of the occult —chiefly because of the apparently good evidence on occasion of the objective reality of the phantom form (for example, it moves objects, etc.) Still there *is* a possible explanation of " the clothes of ghosts,"— even assuming that the figure is objective and outstanding.

In the first place, if such things as " thought-forms " exist — that is, phantasmal forms built-up by the thought and will of the " projector," it would be possible to project or create the clothes of the form as easily as the form itself. They would constitute merely a part of the built-up image, and be " created," as a part of it. On this theory, the clothes would be no more difficult to account for than the phantom itself.

Secondly, assuming that genuine " materialization " be a fact in nature, the clothes of the phantom would be " materialized " as well as the form,— as we often see in so-called " materializing séances." On this theory, the clothes would be " manufactured " in much the same way as the phantom's body is — and would form no greater problem than *it* does. Personally, I am quite convinced that genuine materialization is a fact in nature; so that there is, for me, less difficulty in accepting this latter extension of the belief than there would be for the majority

of people,— to whom materialization itself would be inconceivable.

Whatever the interpretation of the facts, however, certain it is that there is a great deal of evidence to show that at least *some* phantoms are objective; and, this being the case, we must account for them as best we may. Needless to say, these cases do not in the least deter us from believing that the vast majority of "ghosts" are subjective and hallucinatory, and can be accounted for by known psychological and physical laws. But "ghosts"— like most other things in life — when analysed, are found to be more complex than originally supposed,— more so than a mere superficial examination would seem to disclose or intimate.

CHAPTER VIII

PSYCHIC PHOTOGRAPHY

THE question of psychic photography has perhaps been the subject of more debates than any other in the whole field of psychic investigation. Many thousands of photographs have been taken, showing abnormal and unaccountable markings upon the plates; but unfortunately a large part of these have been shown to be due either to normal defects on the plates or films used or to premeditated fraud and trickery on the part of the medium.

The methods which have been resorted to, to obtain these fraudulent pictures, are many and various, and a number of these I have described in full in my *Physical Phenomena of Spiritualism,* pp. 206-23. Substitution and manipulation of the plates, double-printing, double exposure, chemical screens, and a thousand and one other devices have been resorted to, in the past; while Mumler, Hudson, Parke, Buguet, and practically every professional " spirit photographer " of note in the past has been detected and exposed at one time or another in his career. (See Mrs. H. Sidgwick's paper on the subject in the English *Proceedings S. P. R.,* Vol. VII, pp. 268-89.)

Of late years, however, a mass of evidence has been forthcoming tending to show that genuine psychic photography is indeed a fact — this new evidence coming from private sources, that is, from individuals who have experimented by themselves, in the absence of any professional medium, and who have obtained very striking — perhaps convincing — results in this manner.

Dr. Ochorowicz, late Professor in the Universities of

Warsaw and Lemberg, conducted a series of very remarkable investigations in this field, and has published his results in the French magazine *Annales des Sciences Psychiques,* which includes on its editorial board Professor Charles Richet, Sir William Crookes, Professor Camille Flammarion, Dr. Paul Joire, Dr. Joseph Maxwell, Dr. Mangin, Professor Henry Morselli, Baron von Schrenck-Notzing, and others.

Professor Richet has stated in his belief Dr. Ochorowicz is an " exceptionally careful and scientific investigator." Dr. Ochorowicz's experiments were conducted in the realm of " thought photography "— and photographs of emanations issuing from the human body. In these experiments no camera was used; the plate, wrapped in opaque paper, was placed either between the hands of the medium or against the forehead or the " solar plexus " and a definite *thought* was impressed upon the plate at the will of the experimenter. In all these cases, Dr. Ochorowicz supplied and developed his own plates, and they were never under control of the medium except for the few moments during which she placed her hands upon them.

These experiments of Dr. Ochorowicz's were conducted in the dark or in feeble red light; and, the subject being in trance, was requested to project an astral form or hand from her own and place *this* upon the plate, held in the air by the experimenter at some distance from her body. The results of some of these experiments are thus described by Dr. Ochorowicz:—

" I hold a plate at a distance of about one metre from her right hand, which is held in front of her. The red light is turned slightly low; the somnambule sees a shadowy hand detach itself from hers, which is at the

same time also attached to a very long, thin arm, which approaches the plate. The hand is very large, she says, and is a right hand. It places itself over the plate, which I thereupon remove and develop. A large hand is distinctly visible upon it. Finally I hold a plate two and a half metres away from the medium's hand. The somnambule shivers and feels cold in her lower limbs, despite the fact that my laboratory is very warm. She again holds out her right hand, and a *left* hand, attached to a long thin arm, is seen by her to detach itself and place itself over the plate held in my hand. Upon being developed, the impression of a very large left hand was found upon the plate — so large that only a portion of the hand could be seen (the whole of the medium's hand could easily be placed upon the plate). These are very similar to the enormous hands frequently seen at the Palladino séances, and said to be those of John King."

"From the above facts," continues Dr. Ochorowicz, "I think we are justified in arriving at the following tentative conclusions: —

"1. That the hand of the 'double' can be larger than that of the medium.

"2. That a left hand can be projected from a right arm, drawing its force from the entire body of the subject — this being accompanied by a chilly feeling in the extremities and by congestion in the head.

"3. That the arm of the double appears to shrink in size according to its distance from the medium's body.

"4. That it is easier for the fluidic hand to imprint itself upon the photographic plate (negative) in white than in black.

"5. That in the case of the large and shining thumb, it is surrounded by a clear halo of light.

"6. The etheric body of the medium, the 'double,' behaves as though it were an independent spirit." [1]

These human radiations, coming from the body, have been made the subject of minute study by French investigators, notably the Durville brothers and Commandant Darget of Paris — who termed these rays "V-rays." By the aid of photographic plates, these investigators have, apparently, obtained direct proof that fluidic emanations issue from the body, and that they can impress photographic plates. They apparently have no direct connection with the nerves of the physical body. As a result of a long series of experiments, in this connection, Dr. Imoda came to the conclusion that "the radiations of radium, the cathodic radiations of the Crookes' tube and mediumistic radiations, are fundamentally the same."

M. Darget placed a plate wrapped in paper against the forehead of M. Hannion, who proceeded to play a piece from Meyerbeer whose portrait stood before the piano. On the plate was developed the portrait of the composer.

M. Darget placed a wrapped plate to the forehead of a subject, entranced, and, upon the plate being developed, the head of an American eagle was found upon it. The subject had been dreaming of an eagle. (This interesting experiment suggests to us the possibility of using this method for criminological investigations.)

He placed a plate upon his own forehead, and looked at a walking-stick for some minutes in a red light. On the plate was found the image of the stick. This writer in detailing some of his remarkable results says:

"As regards photos of emotions, it is possible to show that the brain emits fluid according to the strength of the

[1] For a fuller account of these experiments, see my *Problems of Psychical Research*, pp. 53–66.

sentiments present. Passion, anger, rage produce rays emitted in a boiling state. . . . When a human being emits a thought, it makes the brain vibrate and illuminates the phosphorus therein contained. These rays are projected outward. When thought is concentrated on a mental form, this form is susceptible of reproduction upon the sensitive film. A revolution in science will soon manifest itself, and the human rays (these newly discovered V-rays) shine forth pure and luminous to the world."

Dr. Baraduc, of Paris, also conducted a number of very interesting experiments in this connection, with specially sensitized plates, and apparently succeeded in directly photographing thoughts by the aid of a camera. In this case, the swirls or vortices of the ether were directly caught upon the plate and photographed. A number of these have been reproduced in the past — illustrating different types of thoughts or emotions emitted by the sensitive subject — usually in hypnotic trance. Similar experiments have been conducted by other continental investigators.

Shortly before the war, Prof. Fukurai, of the University of Tokio, published a large book, giving the results of his experiments in psychic photography. (This is in Japanese, and as yet has not been translated.) So far as we can see, there was no possibility of fraud in connection with these photographs. They were taken in the presence of a number of scientific witnesses — from five to seven, usually, and no professional medium was employed. He first of all experimented upon two ladies, both of whom are now dead. He afterwards experimented more successfully with the wife of a fellow-professor in the University. No camera was employed in any of these experiments; but the plates, wrapped in opaque paper,

were held between the hands of the subject, and several plates, as a rule, were piled one upon another. After the pile had been arranged, the plate upon which the impression was to be made was selected. For example, on one occasion, Prof. Fukurai, after handing a plate to the entranced psychic, said, "I want you to impress upon that plate, by an effort of your will, the words '*Myo Ho*'—meaning 'marvellous processes.'" The subject then stated that she saw the words before her — in the air as it were — and that she was trying to impress the outlines of these words upon the plate, in Japanese characters. A few moments later she said, "They are taken," and handed the plate to the Professor. Immediately upon the plate being developed in the dark-room, it was examined, and the words "*Myo Ho*" were found upon it!

More difficult tests were then undertaken. A pile of a dozen wrapped plates was placed upon the lap of the psychic. She was asked to impress a plate several down the pile — that is, not the top or the bottom plate. She made an effort at will, and in a few minutes exclaimed, "I have impressed the word '*Ten*' (meaning 'Heaven') on the third plate. I will now try to impress my three fingers of the left hand upon this plate. I will impress the word '*Kin*' ('Gold') upon the sixth plate in the pile." Soon she exclaimed that this had been done, and the pile of plates was taken from her. Under development it was found that the word "*Ten*" and the faint outlines of three fingers were impressed upon the third plate, and the word "*Kin*" upon the sixth plate. All the rest were blank. (See Fig. 1.)

Among the most interesting experiments in this field are those which have been undertaken of late by Mrs. Dupont Lee — of Dupont Powder fame — she herself

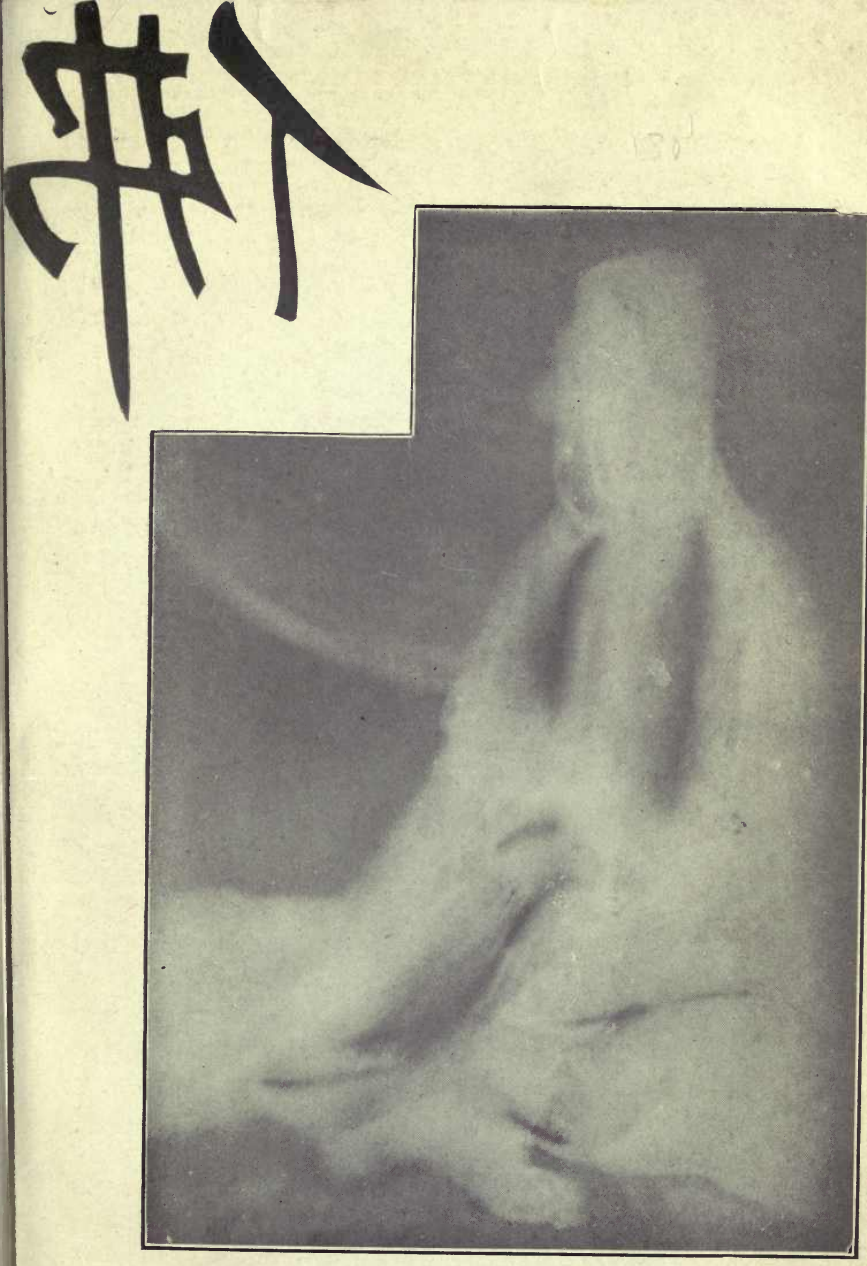


FIG. I
"THOUGHT PHOTOGRAPHS" OBTAINED BY PROF. FUKURAI

FIG. 2

PSYCHIC PHOTOGRAPH

FIG. 3

PSYCHIC PHOTOGRAPH

being the psychic, and no other person being present, on many occasions, during the taking and the development of the pictures. In may cases, a well-known Washington physician was also present; but he too affrms that so far as he could see there was no possibility of trick in connection with those pictures which he saw taken, and upon which the psychic impressions were obtained. It is unfortunate that a well-known professional photographer had a hand in the development or manipulation of a large number of these photographs — and their value is thus discounted or altogether offset, from the scientific point of view. But a large number remain which, Mrs. Dupont Lee asserts, were taken and developed entirely by herself, or in the presence of friends, and a few of these are reproduced here.

Illustration No. 2 is very curious, showing us, apparently, a group of "sylphs" or nature-spirits flying across the field of the camera, toward the head of an elderly man, who has been dead some years but who, in his lifetime, was well-known as a successful physician in Washington. This picture is so curious that it certainly deserves consideration upon any theory. Whether or not these things can be taken seriously depends upon the mind of the investigator; but here at least is the photograph, which needs to be accounted for satisfactorily, whatever it may actually represent.

Illustration No. 3 is also very curious — inasmuch as it represents a large group of people — many of them quite disproportionate, being relatively too tall or too short for others, yet overlapping each other in a singular and interesting manner (and which I have been assured by expert photographers would be extremely difficult to reproduce photographically). It was taken and de-

veloped by Mrs. Dupont Lee herself. In this case, no camera was used at all. The plate was bound to her forehead and left there two hours. When developed, the above was the result!

Illustration No. 4: this figure of a man, holding his hat is the same man who appears in No. 3 as the tall figure, slightly to the right of the centre of the picture. He is the late Mr. Bocock — well known to Mrs. Lee in life. This plate, we are told, was held in the hands of Mrs. Lee and Dr. R., the well-known physician above mentioned, and developed by them at once — with the result that this figure was found upon the plate. It was held in their hands in the dark for about half an hour — of course, no camera being used. The so-called "photograph" looks strikingly like a *drawing;* but, whatever it may be, we give the results as reported; and whatever we may think of them, we cannot bring the charge of conscious fraud in this case, without implicating the two principals themselves — which seems hardly possible under the circumstances.

Illustration No. 5 shows a profile of Dr. R., the balance of the plate being filled with faces, most of which are strikingly biblical in character. They overlap and crowd upon each other in a very odd manner. The girl in the front, to the right, seems to be wearing a mid-Victorian dress; and this it will be seen, falls over the hands and legs of Dr. R., which are visible through the transparency of the dress. For this photograph a camera *was* used; but we understand it was taken and developed by Mrs. Lee herself, as were the others.

Prof. James H. Hyslop, in the *Proceedings of the American Society for Psychical Research,* has published (1914) a long account of some of the earlier experiments

FIG. 4

PSYCHIC PHOTOGRAPH

FIG. 5

PSYCHIC PHOTOGRAPH

of Mrs. Dupont Lee in this connection, and travelled to Washington to conduct personal investigations — and obtained a number of photographs which had then been taken. These were quite different in character from the above, though on some of them the same figure of Mr. Bocock is seen. On one in particular his phantasmal form is seen walking down a road, brilliantly illuminated by the moonlight. Mrs. Lee, as before stated, is not a professional medium, is a lady in private life of good family connections, independently off, and has made psychic photography her pastime for the last five or six years, during which time she states she has made more than ten thousand psychic photographs!

The next series we come to is quite different in character. Mr. E. P. Le Flohic and his wife — through a series of sittings they attended with a local medium — became interested in psychic phenomena; and he was told that he himself possessed mediumistic powers. Made curious by this, he and his wife sat together in the dark for a number of evenings, to see what they could obtain. The method of procedure was as follows. One, two or three cameras were focused on themselves, seated on two chairs at the far end of the room. The room was made completely dark; then the caps removed, and Mr. Le Flohic would find his way back to his chair in the darkness. A period of waiting — varying from fifteen to thirty minutes — then intervened, during which various semi-luminous phenomena presented themselves. When impressed to do so, a string was pulled, which released the "flash"; the cameras recorded what was taken in the room; and then Mr. Le Flohic would grope his way back to the cameras, place the caps over the lenses, remove the plates, develop them and note the result. When

developed, these plates (many of them) showed curious markings, as the accompanying illustrations will show.

Illustration No. 6 shows us Mr. and Mrs. Le Flohic seated in their chairs — the former pulling the string which released the flashlight; and upon the plate are a number of twisted lines of light, largely centred about the body of Mrs. Le Flohic, and seeming to emanate from her.

This is still more marked in Illustration No. 7, where the streaks of light are very pronounced and brilliant.

Illustrations Nos. 8 and 9 also show streaks of light or markings upon the plate, of quite a different character from those above noted. They seem to emanate from some source outside of the plate; and in one case (No. 8), again passing out of the plate, while in No. 9 it seems to shade off into a pointed "tail," which disappears into darkness.

Illustration No. 10 presents many strange features. Mrs. Le Flohic is shown pulling the string releasing the flashlight, but her whole body, as well as that of her husband, is illuminated by a brilliant, fiery glow or "aura" — which seems to emanate from their figures. This is not due, as might be thought at first, to reverse printing, for the reason that the collar appears white, the tie black, etc.— which would naturally be the case; but behind the head, where a shadow would usually form, a brilliant luminous glow is seen, and this seems to emanate more or less from the entire body, in both instances. How this is to be explained, I do not venture to say, and merely publish the illustration, allowing the reader to form his own opinion thereon.

The question arises, of course, how far conscious or unconscious manipulation of the plates might produce these

FIG. 6

PSYCHIC PHOTOGRAPH

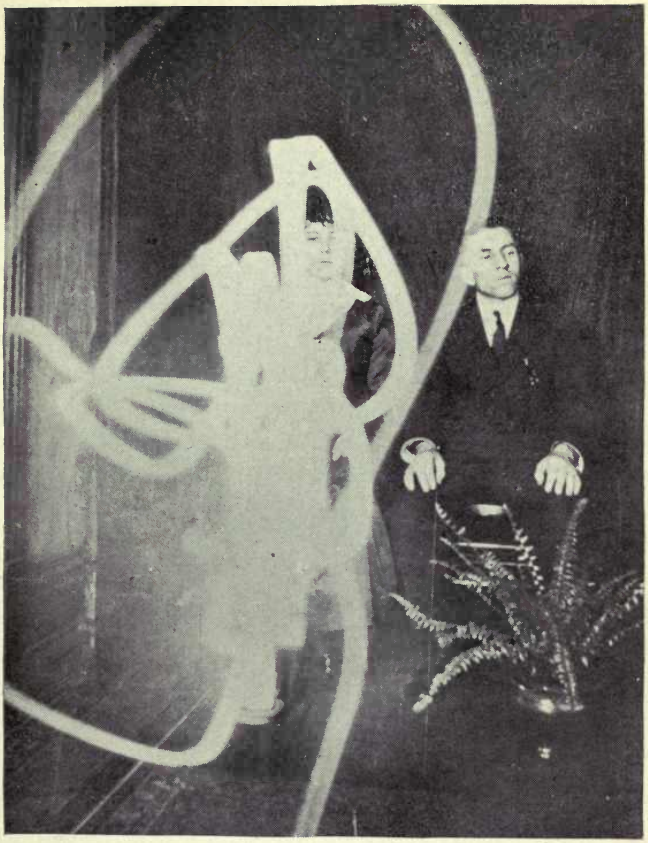


FIG. 7

PSYCHIC PHOTOGRAPH

FIG. 8

PSYCHIC PHOTOGRAPH

FIG. 9

PSYCHIC PHOTOGRAPH

FIG. 10

PSYCHIC PHOTOGRAPH

results? Both Mr. and Mrs. Le Flohic are thoroughly in earnest in their investigations — so much so, in fact, that Mr. Le Flohic resigned his position in the city and went to live alone in the country, by himself, so that he could conduct these investigations calmly and at his leisure. He resigned a good position in order to do so. Most of the pictures were taken on films — and not the usual plates. Two or three cameras were exposed at one time, as a rule.

Some of these markings might certainly have been reproduced, if the attempt had been made to do so, by moving a brilliant light about, in rapid sweeps, in front of the exposed lens of the camera. Prof. Morselli, in his book *Psychology and Spiritism,* reproduced two photographs of this character, on which photographs of table-levitations had been taken; and on these plates the same luminous streaks had been observed — only very much fainter than these — baffling the experimenters, for the time being, as to their origin. It was afterwards proved, however, that they were due to the light of a candle, which had been moved about under the table, while exploring for the mechanism of the table-levitation. In the present case, however, I am positively assured by Mr. Le Flohic that no light of any kind was moved about in the room, or permitted, after the camera had once been exposed.

Whatever the solution of these pictures may ultimately prove to be, they remain for the present a baffling mystery, and are certainly some of the most interesting psychic photographs which have been taken of late.

I now propose to lay before the reader two recent cases of "spirit photography." The former of these has already appeared in part in an English publication, and

I have its author to thank for his kind permission to reproduce it here.

The photograph was taken, in this instance, by the Rev. Chas. L. Tweedale, Vicar of Weston, Yorkshire, England, in his own home, with his own plate and camera. His wife, who is a clairvoyant, saw, first of all, a form standing behind the dining table, and described it to her husband. Rushing into the next room, he procured his camera and photographed the spot which his wife said the phantom's head occupied.

Upon the plate being developed a faint and somewhat curious misty and jagged "head" was found upon it. Writing to me of the experience, the Rev. Tweedale said:

". . . I have pleasure in giving you full information *re* our wonderful experience here which constitutes an absolute proof of the reality of clairvoyance. I enclose:

" 1. The account to the *Gazette*.

" 2. Print from original negative.

" 3. Print from enlarged negative, made from No. 2 print, showing the face on a large scale.

" 4. Rough sketch (key.)

" The figure is perfectly distinct to normal eyesight and ordinary capacity for accurate observation, and, taken in conjunction with the clairvoyance, is convincing proof. The figure is that of a handsome elderly man with flowing locks and a beard. The expression of the face is not marked. No one can examine the negative and prints and discuss the evidence, and then deny the evidential nature of the experience, without being false either to his conscience or his reason, or demonstrating his complete incapacity for observation of any delicate phenomenon.

" Yours faithfully,

" May 5, 1916 CHARLES L. TWEEDALE."

FIG. 11
PHOTOGRAPH OF A "GHOST"

FIG. 12
ENLARGEMENT
OF THE
"HEAD"

(We reproduce here the picture as taken from the original negative and the print from the enlarged negative.) (Figs. 11 and 12.)

The detailed account of the phenomena above referred to is as follows:

It has been my privilege and good fortune recently to have an experience which has scientifically proven the reality of clairvoyance, as will be readily perceived by the following particulars, set forth in the form of an affidavit recently attested in the presence of a Commissioner for Oaths, by myself and the other two witnesses.

In the matter of a remarkable photograph, produced at Weston Vicarage, near Otley, in the county of York.

We, Charles Lakeman Tweedale, of Weston Vicarage, Otley, in the county of York, Clerk in Holy Orders; Margaret Eleanor Tweedale, the wife of Charles Lakeman Tweedale; and Herschel Burnett Tweedale, the son of Charles Lakeman Tweedale, both of Weston Vicarage aforesaid, jointly and severally make oath and say as follows:

1. Firstly. I, the said Margaret Eleanor Tweedale, for myself say that on the 20th December, 1915, about one-thirty in the afternoon, my husband, my son, and myself, were at lunch in the morning room, when suddenly I saw the apparition of a man, with a full head of hair, and a beard, standing on the left-hand side of my son, and in close proximity to the piano in the said room. I immediately cried out to my husband and my son that the figure was so standing. I directed their attention to the figure, but they could not see it. My husband hastily left the room and brought in his camera, and took a photograph of the position where I still saw the semblance of

a man. I produce the exhibit marked A, which is a true copy of the negative taken by my husband, showing the figure of the bearded man.

II. Secondly. I, the said Charles Lakeman Tweedale, for myself say that on the 20th December, 1915, I was present in the morning room of Weston Vicarage along with my wife, and son Herschel, and that my wife drew my attention to a figure, which she saw in the room standing by my son's side, and although I could not distinguish it I immediately brought in my camera and took a photograph of the position where my wife still adhered that she saw the figure. The photograph marked as the exhibit A is a true copy of the resulting negative. I swear that the negative, which I personally developed, was in no way tampered with, nor did the plate leave my possession until it was developed.

III. Thirdly. I, Herschel Burnett Tweedale, for myself say that I was present in the morning room at Weston Vicarage aforesaid, on the 20th December, 1915, about 1:30 p. m., when my mother suddenly drew my father's and my attention to the figure of a man, which she saw standing on my left-hand side. Along with my father I was unable to see the figure which my mother said she saw. My father immediately left the room and brought in his camera, and exposed a plate on the position occupied by the figure as seen by my mother. The exhibit marked A is a true copy of the resulting negative. No other person was present in the room during the time the picture was taken, except our three selves.

CHARLES LAKEMAN TWEEDALE,
MARGARET E. TWEEDALE,
HERSCHEL B. TWEEDALE.

Sworn this 27th day of February, 1916.
before me Joseph Wilson,
A Commissioner to administer oaths in the Supreme Court of Judicature in England.

A print from the negative, signed by the three witnesses and the solicitor, is attached to the affidavit, and is the one referred to as " the exhibit marked A."

My wife described the man as a little man, and said that the top of his head appeared to be about on a level with my son's shoulder. She saw the figure more during the time I was fetching the camera. My wife and son continued sitting at the table during the exposure. The photograph shows my son seated, in addition to the figure of the man.

The plate was developed almost immediately after the exposure was made, and did not go out of my possession meanwhile.

The plate was taken from a new box of quarter-plates, and had not been previously exposed.

No person of similar appearance has ever been photographed by me, or has ever entered Weston Vicarage during the time I have lived in it.

Neither I, my wife, nor son recognize the figure shown in the photo.

The camera is in perfect order and no image of this kind shows up on plates exposed in the same camera shortly before and after this remarkable photograph was taken, conclusively proving that the figure is not formed by a " pinhole."

No picture of a similar figure hangs on the walls, nor do we possess one.

None of us were thinking of such a figure at the time of its apparition.

The gelatine film of the negative is entirely free from finger prints or any traces of melting or frilling and is perfectly homogeneous throughout, and was naturally dried in the air. Nothing was accidentally interposed during the exposure, nor did any of us interpose ourselves or move from our places during that time.

The ground being thus thoroughly cleared we are faced with the fact that my wife clairvoyantly saw the figure of a man, with a good head of hair and a beard, which figure neither I nor my son could see.

On a camera being brought, and a sensitive plate exposed on the spot where the figure was seen by the clairvoyant, a photograph showing a man with abundant hair and a flowing beard was obtained, which photograph was recognized by my wife, the clairvoyant, as being like the man she saw.

The camera is an optical and mechanical apparatus devoid of imagination, which cannot be hallucinated. Thus the reality of clairvoyance is photographically and scientifically proved.

And now for the last and not the least significant fact: the man's head in the photo *completely hides that part of the piano which lies behind it,* conclusively proving that the man had a definite objectivity, although invisible to the normal vision of myself and my son."

CHARLES L. TWEEDALE

This striking case — coming, as it does, from an eminently respectable source, and accompanied by such formal legal documents, must perforce give us pause — for here is a case where no professional medium was

employed. Curiously enough, too, it prepares the way for my second case, which is also orthodox in its inception, having been sent to me by none other than the Rev. J. Godfrey Raupert, who came to America by direct authority from the Pope,— to lecture to Catholics on Spiritualism and allied psychic phenomena. I need hardly say that Dr. Raupert, like most men of his intelligence, when pinned down, admits the *facts* of psychic research — though they express their belief at the same time that the phenomena are due to " evil spirits " who instigate and produce them. The " evil spirit " in this case, however, seems to be (unfortunately) none other than a venerable monk — so that we seem driven into the alternative of believing the monk to have been an " evil spirit " or of accepting the fact of a genuine " spirit photograph " ! Either proposition would be fatal to the cause of true Catholicism — so that we seem led into a hopeless *cul de sac*. This is only accentuated by the fact that the Rev. Dr. Raupert, in writing and sending the photograph to me, stated his belief in its authenticity by saying: " I have as I told you every reason to believe in its genuineness."

However, we have not time to go into the ethics of the case now. Suffice it to say that — a certain monk being said to " haunt " a certain church, one daring investigator determined to put this belief to the very practical test of the camera, with the result shown in the photograph (Fig. 13). It is certainly a striking and suggestive one and whatever theory we may choose to hold as to its interpretation and significance, the fact remains that an honest enquirer here, too, obtained a clearly defined face and form upon his own plate, when he was expecting nothing of the kind, and when no professional medium was employed.

Beyond saying that no fraud was involved, so far as we can judge, we seem unable to go for the moment.

The final question remains: Are these faces, found upon the above plates, the faces of spirits of the departed, or are they psychoplastic forms created in some other way? And if so, how account for them? Indeed, we might as well say — how account for the spirit photograph in any case — since, as soon as we begin to consider the optics and physics of the thing a little more closely, it is not so simple as at first sight appears.

The objection has been raised that, once granted the genuine character of these photographs, we should no longer hesitate to class them as spiritistic — that is, that they present undoubted evidence of spirit return, since definite and recognizable forms have appeared upon the plates. For, if these be not spirits of the departed, what are they?

Our reason for hesitating, before accepting this view of the matter, is that recent researches in "metapsychics" have shown us that, while external entities may exist, apart from the mind and body of the medium, these entities are not necessarily what they purport to be, but are rather experimentally formed or created phantasms, and this has been demonstrated in a variety of ways. Among these proofs, we may cite late experiments in the projection of the astral body, the creation of thought forms, etc., which have thrown an entirely new and unsuspected light upon these hidden powers of man.

These thought-images once created, the further and logical attempt was to photograph them — apparently with more or less success. Images of definite thoughts were obtained upon photographic plates, in response to the will of the subject or experimenter.

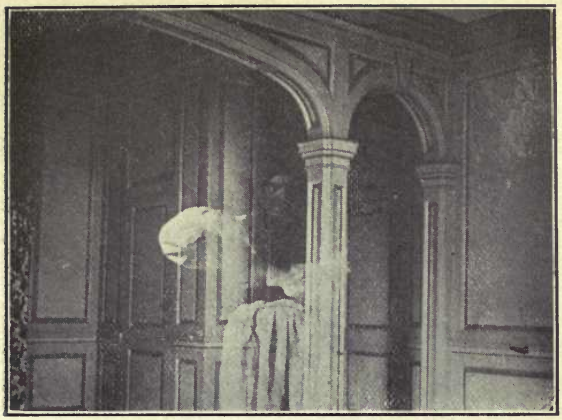


FIG. 13
PHOTOGRAPH OF A "GHOST"

FIG. 14
"VITAL RADIATIONS" ISSUING FROM THE HUMAN BODY AND IMPRESSING (DIRECTLY) A PHOTOGRAPHIC PLATE

Of course, the problem of accounting for thought-photographs still remains! How is it possible or conceivable for thought thus to impress a photographic plate, leaving upon it the image in the mind? Are thoughts more real, more objective things than we have been in the habit of supposing? Are "thoughts things," as the New Thoughters are always contending? These new researches would indeed seem to prove it.

When we "visualize," or construct a mental picture in thought, we form a mental image which is, so far as we know, purely mental, and composed only of "such stuff as dreams are made of." How can such a mental image be projected outwards into space, and actually exist in the material world? How can it affect a photographic plate, or any other instrument which can usually be influenced only by physical forces? This is, indeed, a great and as yet a partially unsolved problem!

The only rational solution consists in believing that thoughts are in a sense more real, more actual, more material things than we have been in the habit of supposing. Thoughts must possess mental energy; this mental energy probably sets in motion certain vital, nervous currents in the brain and nervous system, which in turn affect the surrounding ether and thus create ether vibrations and other disturbances in the environment of the medium or psychic. These vital radiations, as we have seen, have been photographed; and it also seems probable that the mental image can directly affect the ether, setting-up in it certain strains and swirls and modifications which are direct thought photographs. (See Fig. 14.)

Doubtless each human brain is sending out every minute countless etheric vibrations that radiate outward into space. In telepathy these waves operate possibly some-

thing like wireless telegraphy. They impress solid objects. They can be reflected by a mirror — just as when we " see " a solid object in a mirror we don't really see it, but only ether vibrations which have been reflected by the glass,— the real object being a long distance away! It is the same with thought. At times it can be made solid and objective enough to reflect light. Then it can be photographed. Professor Le Bon, in his laboratory, has already shown us that it is possible, by purely physical means, to stabilize electric currents so that they can be photographed. For the time being he " created " matter at the points of electric needles. Possibly thought photographs are much on this same order; both depend upon a slowing-down of the etheric vibrations, to the point when they become solid and tangible — as they are said to do in the case of so-called materializations.

We all know our childhood stories of fairies who become visible and invisible at will. We are now beginning to see how such a thing can be made possible, scientifically. By creating thought-images, there is made or created for the time a visible figure which instantly vanishes if approached or attacked. On the other hand, if the light waves coming from a solid object be interfered with, if they be destroyed in space, as it were, then that object at once becomes invisible. If the " fairy " understood this law, and could thus affect the light waves, destroying them for the time, then invisibility would be at once established.

It is possible we are on the eve of again discovering how to effect this transformation by the occult use of the will!

The story was once related to me of a lady who strongly objected to having her photograph taken. One

day she died. She was laid to rest in her coffin, where she remained two days. On the second day a photograph of her was taken by the local photographer. Next day she was buried. Two days later the photographer came round in a great state of excitement, saying that, although he had carefully developed his plate, not a mark — not a trace of the face — was to be found on it! Where the face should have been was a blank space! Now the possible explanation is that the still-active will of this person was being exercised in some occult manner, to the end that she interfered with the light-rays coming from her face sufficiently to prevent its image being recorded. I do not for a moment advance either the case or the theory as "scientifically established"; I merely give it as an example — illustrating a possibility which may one day be demonstrated.

Whatever the interpretation of the facts, however, the conclusion to be drawn from this mass of evidence is that genuine supernormal photographs have been taken, and that thought-forms have apparently been obtained, as well as so-called "spirit photographs." This branch of psychic investigation is one of the most interesting in the whole field, and I earnestly hope that my readers, and all those interested in occult and psychic studies, will try experiments of this nature for themselves, and note the results.

CHAPTER IX

PROJECTION OF THE "ASTRAL" BODY[1]

A Description of the Method of Projecting the Human "Double" at Will

ONE of the latest achievements of "psychical science"—which is constantly making new and important discoveries — is the voluntary projection of the "astral body" of man — the expulsion of the human "double" or etheric counterpart of the physical body — by methods under control of the human will. Occult science has long since proved that — besides this physical body, which we know — there is also a more subtle and refined envelope — the "spiritual body" of St. Paul — and that this body is capable of being detached, at times, and of being "projected"— leaving the physical body entranced, while the subtle body journeys and makes itself manifest to others at considerable distances. The specific methods to be employed, in order to ensure this, have only lately been disclosed; and it has remained for Dr. Charles Lancelin — a French scientist and occultist of note — to describe the necessary practices in full.

Dr. Lancelin has been well-known in scientific and oc-

[1] Regarding the use of the word "astral," I have not intended to restrict its use, as in Theosophical literature; but have merely employed it as a convenient term, well understood, to signify the astral or etheric or mental or spiritual or dream body, or "double," of man. Theosophists distinguish between these terms — perhaps rightly: psychical researchers, on the other hand, have been content, so far, to prove the objective existence of a "body" corresponding to any of these conceptions. Thus, the term "astral body" is used in the present chapter, only in its most general sense and widest meaning. (See Figs. 15 and 16.)

FIG. 15
"ASTRAL BODY" OF MME. LAMBERT OBTAINED DURING THE EARLY EXPERIMENTS. (NOTE THE IMPERFECT OUTLINE OF THE BODY, AND ITS SWAYING MOTION AS THOUGH BLOWN ABOUT BY THE WIND.)

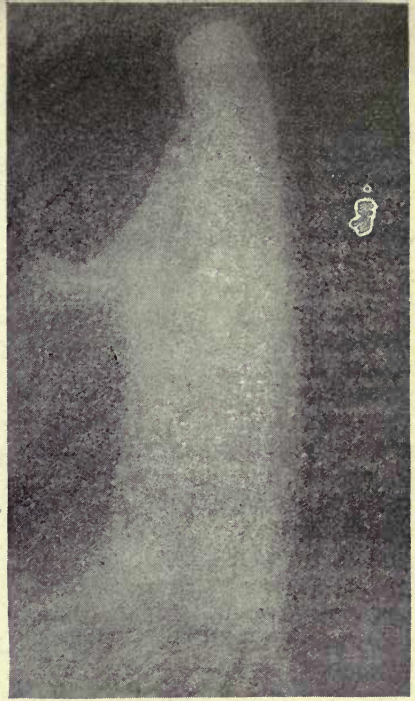


FIG. 16
LATER PHOTOGRAPH OF THE "ASTRAL BODY" OF MME. LAMBERT, OBTAINED AFTER FURTHER EXPERIMENTATION. (NOTE THE CLEARER OUTLINE AND RELATIVE STABILITY OF THE FIGURE.)

cult circles in France for many years; he is the author of a number of works — the most important of which are: *Fraud in the Production of Mediumistic Phenomena, The Beyond and its Problems, My Experiences with the Devil and Devil-Worship, Sorcery and Witchcraft,* and a *Study of a Hyperphysical Subject* — all in French. In his latest work, *Methodes de Dédoublement Personnel: Exteriorization de la Neuricité: Sorties en Astral,* a volume of more than 550 pages, Dr. Lancelin has gone deeply into this subject of self-projection, and given us a detailed scientific account of the actual methods followed, in order to effect this apparent miracle. This is the first time that this occult knowledge has ever been divulged, and it has caused no little stir and sensation in France. Experiments had been tried before, it may be said, by M. Hector Durville, President of the "Magnetic Society" of France and author of a number of books upon psychic subjects; by Dr. Baraduc, well-known for his work upon the nervous system and human vitality; and by the late Colonel Albert de Rochas, of the French Army, who was regarded by many as the foremost scholar of psychic science in his day. All these experimenters achieved success in this field of research; and Dr. Lancelin has not only summarized their researches, but also extended them in the minutest detail — in the remarkable work which he has lately published. It is this which I propose to summarize in the present chapter.

According to M. Lancelin, there is a real "science and art" in this astral duplication, which consists, essentially, in the ability to externalize the neuric (nervous) force, composing the astral body, and the "sensibility." The right or suitable temperament must be chosen for the experiment; and if this is not found, the experiment is

liable to fail, or only to succeed partially. "Temperament" must not be confused with "character," or mental make-up. Temperament is a physiological state produced by the predominance of an element, organ or system in the human body. There are four chief types of temperament — nervous, bilious, lymphatic and sanguine. Of these, the nervous temperament is the best for psychic experiments of all kinds; the bilious is the most receptive; the sanguine is liable to hallucinations, both subjective and objective; while the lymphatic is the least suitable of all, from every point of view. Of course, one's temperament is usually a compound of all of these, which are rarely found in their ideal state; but the predominantly nervous temperament is the one best suited for this test — as for all other psychic experiments.

Now, there is at all times a certain out-flowing of nervous force, or "externalization of neuricity," as it is called, in all individuals, but this becomes very pronounced in certain types of individuals known as "mediums" or "psychics." In them, this force which is thus radiated can be measured by means of specially constructed instruments, known as Biometers, Sthenometers, etc. Several instruments of this kind have been devised by French experimenters. They show that there is a repulsive force generated from one side of the human body, and an attractive force from the other side. In normal human beings these forces should be equal. When they are not, odd things are likely to happen in their immediate environment. Their relative power can be tested by means of these instruments. (See Fig. 17.)

These energies depend upon the state of the health, the emotions, the mind and also upon the will. For the experiment to succeed, as we shall see, the subject must be

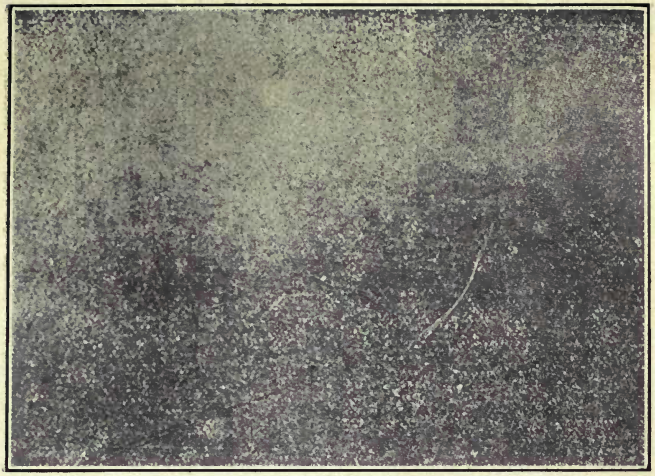


FIG. 17
"VITAL RADIATIONS"

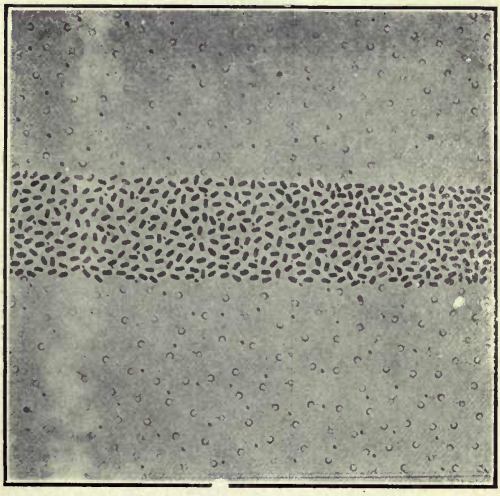


FIG. 18
ATOMIC STRUCTURE OF THE
"ASTRAL BODY"

EXPLANATION:

MOLECULE OF CARDBOARD

MOLECULE OF OXYGEN

MOLECULE OF NITROGEN

MOLECULE OF WATER

MOLECULE OF "ASTRAL" BODY

in good health; the emotions calm; the mind placid; and the will exceedingly strong. However, it is not the conscious will which performs the miracle; but the *subconscious will* — the will which is active in sleep. It is this which is difficult to train, and can only be reached by psychic and occult methods. Once reached and strengthened, however, it is capable of performing all sorts of marvels, while the subject is asleep or entranced.

This subconscious will has its own psychology; it is said to consist of four essential elements — possession, deliberation, determination and action. The last three of these are the so-called "solid" states of will. (The medium Eusapia Palladino was wont to say she could succeed in moving objects at a distance if her will were sufficiently "solid.") Within this mystic citadel, a double action takes place — (1) the will acts within itself, and (2) it controls its environment. Upon the degree of power which this subconscious will possesses depends the success of the experiments.

The first thing to do, then, to ensure the success of our "astral projection," is to *dynamize the will* — to hyperdynamize it, in fact, so that it is over-charged, and capable of bursting out, like champagne, when the cork is removed. There are various methods of doing this. One of the simplest is to repeat to oneself many times just before dropping off to sleep, "I have will — I have energy!" This must be kept up until sleep actually supervenes, and memory is lost. Then one may think of the next day's work clearly, in detail, and make up one's mind not to deviate therefrom, even under great pressure and temptation. This will give the subconscious will a force that nothing else can equal.

The subconscious will thus strengthened, the next step

is to create a "division of self," so as to loosen the astral body from the physical body. The subject, to do this, should go over his entire body in thought — while lying in bed — covering every inch of its surface, and *willing* that the astral body shall be detached from the physical body at that point. Try to feel this body loose inside you. Then focus all your mental energy upon the solar plexus — at the spot where the ribs divide [1] — and, while breathing quietly and deeply, *will* that you go out from your physical body at that point. Project yourself outwards into space. Imagine yourself going out; try to transfer your consciousness to the body without you.

[1] In this, Dr. Lancelin is at variance with many experienced Occultists, who contend that the safest and easiest point of egress is a point low down on the forehead, between the eyes. Some personal experiences and experiments tend to confirm this view. Further, this method is dangerous, unless undertaken under wise guidance. At some future time I hope to extend and amplify this question at considerable length — giving more specific exercises, and instructions.

Try to look out of its eyes, hear with its ears, feel with its body. You will suddenly find yourself enabled to do so; then your first great step will have been taken.

When you have progressed thus far, says M. Lancelin, look around you, in your newly acquired "astral body," and notice the furniture in the room; notice everything in detail. Then try to go out through the door of the room, — down stairs, and out of the front door into the street. Then walk along the street — into the door of your friend's house, to whom you wish to appear — and go upstairs into his or her room. Notice everything as you go. When there, try to make your presence felt or seen. This is the second hardest step, and the one we know the least about as yet, in its technical details.

The person to whom you are to appear must be more or less "clairvoyant" or "psychic." He must be quiet and receptive, in darkness or semi-darkness, and should, if possible, aid you by *drawing* you by an effort of will — so that his duty is not altogether passive, but active also. One of the best states for the perception of the astral body of another person is the hypnotic trance. The French experiments were nearly all made in this condition — though it is not necessary.

Once by the side of the "seer," the astral phantom should endeavour in every way possible to make its presence felt. It may do this by becoming visible, by speaking (becoming audible), or by touching the "seer." The phantom may also be able to rap. If not, it has been found by experience that the astral form may be enabled to prove its presence by impressing photographic plates (by placing its hands upon them), by touching sulphide of calcium screens, or by operating some delicate instrument, such as a Biometer. Its objectivity is thus established.

As to the " trip " between one point and the other, the necessary things for the phantasmal form to develop are — (1) self-conscious will, and (2) sense of direction.

Various factors have been found to influence the results advantageously, or the reverse. We may thus summarize the most important of these: —

Sex. This should preferably be male for the projector, female for the recipient or seer of the phantom.

Humidity. The air should be dry and clear, barometer high.

Atmospheric electricity. If high, this is prejudicial to the experiment.

Temperature. This should be high — say 20° F. below the heat of the body when the experiment is taking place.

Clothing. No restrictions of any kind can be allowed.

Light. Complete darkness is by far the best; a dim twilight in any case is all that may be allowed.

Sitters. If possible, projector and seer should be alone; if any one else is present, they must understand what is happening, and be in sympathy with the experiment.

Silence must be preserved throughout, no noise must disturb the sitter at either end of the "line."

Time. The best time is between 11 P. M. and 3 A. M.— that is, when natural sleep is most likely to supervene.

Position. The most comfortable — in an arm chair, on a couch, or in bed. If lying down, it should be on the *right side.* You must *not* lie upon the front of the body.

The *Mind* must be calm, and the *emotions* placid.

It is well to *eat* very little on the day of the experiment.

There are certain *dangers* attendant upon this experiment — especially if undertaken rashly, and by one unaccustomed to such trials. (1) There are *material* dangers — such as would accompany any dissociation experiments. A psychic expert would understand this. (2) *Intellectual and Moral Dangers.* Those having weak characters, weak wills, or uncontrolled lives are liable to be influenced by outside, evil intelligences, and "open the door" to possible "obsession." Sound advice by a master or adept is advisable here. (3) *Psycho-physical dangers.* These are dangers which happen in the astral world, and react upon the mind and body of the subject. (4) *Hyper-physical dangers,* which leave the door open to dangerous principles.

To avoid these, one should have technical instruction in this matter of self- or astral-projection, and, in any case, care, *sang froid,* fearlessness, moral force and a strong will are essential. If these are lacking, the subject had

best leave the experiment alone. But if he has them, or can develop them, a road is opened to him which is one of the most fascinating in the occult world; he will be enabled to leave his physical body at will, and soar upon the wings of the wind in the astral and ethereal worlds; and he will see things there beyond words to describe; he will behold visions and hear that which "it is not lawful to utter"— for they pass the ordinary comprehension of man. Such is the testimony of M. Lancelin.

CHAPTER X

INSTRUMENTAL COMMUNICATION WITH THE "SPIRIT WORLD"

An Account of a Series of Remarkable Experiments by Two Dutch Physicists, by Which They Claim to Have Established This Fact

INSTRUMENTAL communication with the "spirit world!" That has been the ambition of a certain group of occult and psychical students since the very origin of their investigation. Improbable — nay, impossible — as it sounds, many have continued to believe, in spite of grievous disappointments, that this would one day be accomplished; that the time would come when we should have some sort of telephone by means of which direct communication with the "spirit world" would be rendered possible; or that some sort of instrument would be devised which would render this dream an actual reality. It really seems that this vision is at last becoming an established fact,— and that the day is at hand when unreliable or fraudulent mediums will be dispensed with, and "communication" held *directly* with those who have gone before. This, at least, is the startling claim made by two Dutch physicists whose researches I propose to summarize in this article; and, without actually endorsing their conclusions, it may be said at once that they have adopted a bold and original method of research, and that their experiments will have to be "explained away" in some satisfactory manner, if we are to refrain from accepting

the dramatic conclusions which they believe they have reached.

The experimenters, whose work I summarize, are Dr. J. L. W. P. Matla and Dr. G. J. Zaalberg van Zelst, of The Hague, Holland. They are well-known in spiritistic and occult circles there; and also for their original work in high-frequency currents of electricity, liquid air, and the compression of gases. Scientifically, they were well equipped for the task. More than twenty-two years of labour had preceded their final conclusions, which were given to the world in a voluminous work, in Dutch, entitled *The Mystery of Death.* (It is from this work that the majority of the facts contained in this article are drawn.)

Before outlining their experiments, however, one or two remarks may be made as to the character of the task they undertook, and the general nature of the problem. Without these explanatory details, much of what follows might not be clear to the reader.

What we know as a "man" consists, not in the clothes he wears, nor in his body — flesh and bones; but in the mental being, the "ego," within. This is always invisible to us; so that it may in truth be said that we never *see* a man in this life. We see only his externals. His real "self" is never known by us,— except indirectly. Let this truth be fully grasped at the outset, as it is very essential.

This mental being consists of consciousness and memory; together they constitute what we know as the "personal identity." We say that this consciousness is John Smith, or Henry Wood, or whoever it may be. Even if we do not see his body, but only hear his voice over the telephone, we say the same thing. (There are many

hair-splitting divisions which might be made here as to the real nature and constitution of the self,— but the psychological terms used are only broad and general, so as to make the idea as clear as possible.)

Whenever we come into touch with mental life, then, it is always associated with a living, physical organism. No matter what animal it may be, its mind is always known to us through its manifestations in the physical body. It is the same with man. This being so, how prove that this consciousness continues to exist after the destruction of the physical body?

We can prove this in only one way. We must get in touch with that consciousness — if it still exists — and obtain from it proof of its continued existence. Just as we proved the existence of argon in the atmosphere by isolating it, so we must prove the existence of this surviving consciousness by isolating it; and getting it to prove its "personal identity" to us by much the same means that it did on earth — by telling us facts which only that consciousness knew. This is *proof of personal identity* — proof of some form of survival.

Now, there are two ways in which this can be done — by *mental* manifestations, so-called — automatic writing and speech, visions, "messages," and all the class of mental phenomena known to students of the occult. The other way is by means of *physical* manifestations —by materializations, photographic means, voices, raps, etc., indicating intelligence. Instrumental means — such as the telegraph and telephone — are the latest methods tried, and it is such a process which we will describe in this article. The question, therefore, is this: Were the instruments in question manipulated *directly* by some external intelligence (a spirit), and if so, How? If we ex-

clude all normal methods of moving the instruments in question, some other explanation must be forthcoming; if spirit-identity be proven, we stand face to face with the great possibility of direct instrumental communication with the spiritual world! It is a great — a tremendous — thought! Let us see how far we have progressed along this perilous road.

The first experiments were crude and primitive enough. A small room was constructed,— with a solid concrete floor, so as to shut off earth vibrations so far as possible,— seven feet long, six feet broad and nine feet high. It was connected with the outside passage by means of one door,— all other doors and windows having been carefully sealed with thick, black material. This door into the passage contained a small window, guarded by blinds, and the experimenters took up their position outside, in the passage,— whence they watched the fluctuations of the instruments during the experiments. (That is, they were not *in* the room at the time at all.) Sometimes it was necessary to employ opera-glasses to see the variations in the recording instruments during the course of the sittings. At other times, the shadow of a moving index-pointer was cast upon a screen, upon which a graduated scale had been drawn,— thus permitting an enlarged image of the movement to be seen and registered.

In this room was placed, first of all, a cardboard cylinder about 20 inches high, 10 inches broad, and having a capacity of about 22 litres — that is, about two-fifths the size of the solid human body. This cylinder was covered with sheets of tinfoil — sealing it hermetically. A small hole in the upper edge of the cylinder was made, and a flexible rubber tube was inserted here, connecting the

interior of the cylinder with a "manometer"— a sort of thermometer, placed sideways, and containing one drop of alcohol, which, under normal conditions, occupied a position in the centre of the glass tube (like a spirit-level). If any solid object were introduced into the cylinder, it would of course displace a portion of the contained air, and this drop of alcohol would indicate the amount of air displaced by running along the graduated scale until it stopped at the correct figure. The instrument was tested in various ways and found accurate.

The investigators then retired, and asked the "manforce"— as they called the manifesting "spirit"— not wishing to call it by that name — to enter the cylinder and displace some of the contained air. Immediately the bubble was seen to run along the scale of the manometer, showing that part of the air had been displaced by some solid or semi-solid body. The degree of displacement was noted. At request the alcohol drop was caused to run along the scale, back and forth, a number of times. The fact of coincidence was thus quite excluded.

It was soon found that this first cylinder was too small. Accordingly, other cylinders were constructed — 40, 50, 55 and 60 litres in capacity. From a number of observations, Drs. Matla and van Zelst came to the conclusion that the size of the body occupying the cylinder was approximately 53 litres. The weight of this body was then tested and calculated, and found to be about 69.5 grams — approximately 2.25 oz. These results were checked by the employment of a second cylinder, which was used as a "control." (Fig. 19.)

Experiments were then undertaken to ascertain the precise physical constitution of this curious "body." As

the result of a number of elaborate and laborious experiments, Drs. Matla and van Zelst arrived at the following conclusions: —

That this "body" is capable of contraction and expansion, under the action of the will of the "man-force,"— the expansion being 1.26 mm., or about one-forty-millionth of its own volume; its contraction being much greater, viz., about 8mm., or one-six-and-a-quarter millionth of its volume. Its specific weight is about 12.24 mgs. lighter than hydrogen, and 176.5 times lighter than air. The will acts upon this body mechanically, causing it to expand (rise) or contract (descend) as the action takes place. It is thus still subject to the law of gravitation. There is an X-force which holds the molecules of this body together — as yet unknown. The atoms composing this body are small, widely separated, but heavy. (See Fig. 18.) The internal density of the body is about the same as that of the external air; if the pressure of the air outside the body be increased, that inside the body will increase in exact proportion. If, however, the body rises too high, it disintegrates (like deep sea fishes brought to the surface), and then we see the fearful spectacle of a man going to pieces before our eyes!

These calculations are based upon the earlier experiments which, interesting and ingenious as they were, nevertheless were crude compared with those undertaken at a later stage of the investigation. Partly as the result of "instructions" imparted by the communicating "spirit" (man-force), and partly upon their own initiative, Drs. Matla and van Zelst constructed a very elaborate and ingenious instrument termed by them a "dynamistograph,"— complex in nature, yet sensitive, and apparently capable of being influenced by the communicat-

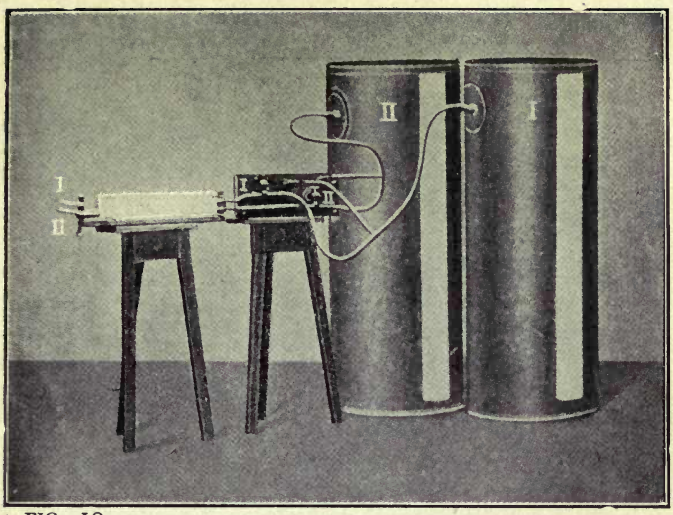


FIG. 19

THE TWO AIRTIGHT CYLINDERS, CONNECTED BY TUBES TO THE TWO SCALES OR "MANOMETERS," WHICH REGISTERED THE AMOUNT OF AIR DISPLACED IN THE CYLINDERS BY ANY "BODY" OCCUPYING EITHER OF THEM

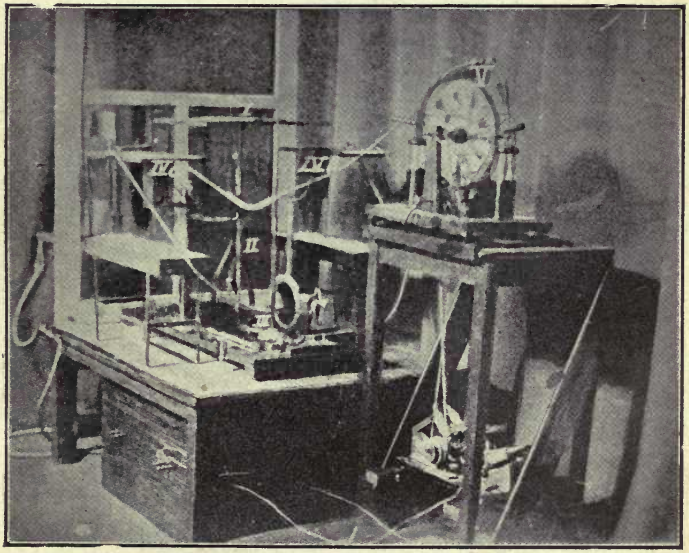


FIG. 20

A MORE DETAILED VIEW OF THE ESSENTIAL PARTS OF THE "DYNAMISTOGRAPH." (SEE TEXT FOR EXPLANATION.)

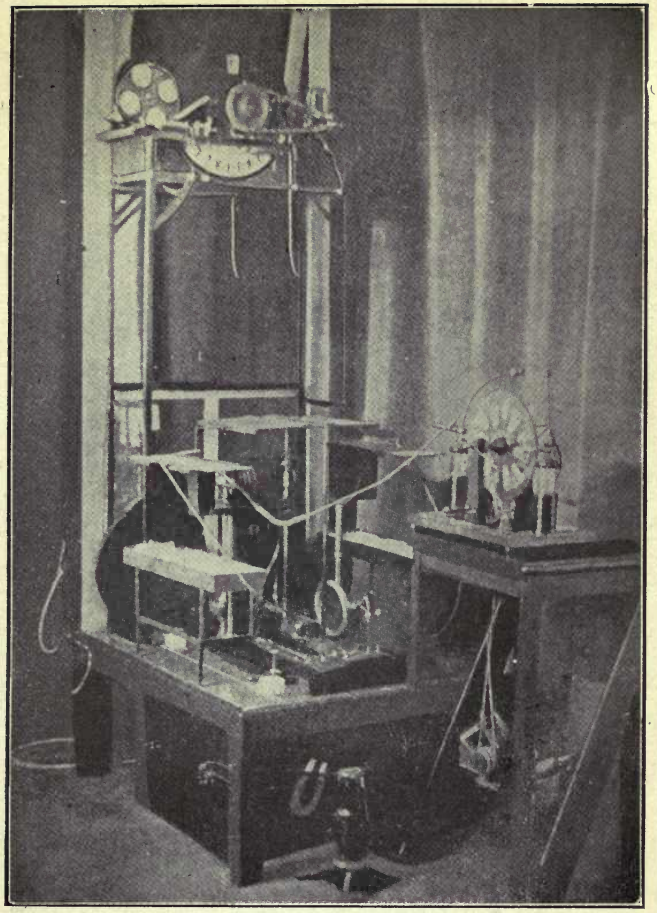


FIG. 21

"THE DYNAMISTOGRAPH." THE MACHINE BY THE OPERATION OF WHICH DOCTORS MATLA AND ZAALBERG VAN ZELST BELIEVE THEY HAVE BEEN ABLE TO WEIGH, MEASURE AND OBTAIN DIRECT COMMUNICATIONS FROM THE SURVIVING SPIRIT OF MAN WITHOUT THE AID OF ANY MEDIUM

ing intelligence through the medium of electricity. A description of this instrument is necessary, as being one of the most elaborate devices ever constructed, in order to talk to the "spirit world" direct.

The "dynamistograph" is an electro-mechanical instrument, consisting of three principal parts: (1) the key; (2) the indicator; and (3) the register, or recording apparatus. (See Figs. 20 and 21.)

The *indicator* consisted of a wheel, upon which were marked 28 equidistant spaces. In these were marked the letters of the alphabet, a period or full-stop, and a blank space. This wheel was driven by an independent motor, so as to perform one-twenty-eighth of a revolution in five seconds — that is, move forward one letter in that time. This letter appeared at a small opening, as its turn came; and at the moment of its appearance — if the "key" were pressed, this letter was printed by means of the *register* or recording apparatus.

This register consisted of a small hammer, to which was affixed a magnet. At the moment of closing the electric current (the result of pressing the "key") the magnet was drawn up, the hammer struck an inked ribbon, beneath which was a letter corresponding to the letter indicated on the large disk. In this way the same letter was instantly recorded on a strip of paper, slowly wound out, like a stock-ticker ribbon.

The *"key"* was a very intricate piece of apparatus, and it was this that the "spirit" or "man-force" was asked to press at the moment the right letter appeared on the large indicator. This key consisted of a sort of lever or beam, to which were attached two rings, capable of revolving freely; a membrance of fine material stretched tightly over them; and a lever, to the opposite end of

which was attached a very fine hair, connected with a delicately adjusted series of screws beneath. If the key were pressed ever so little (that is, if the "spirit" stood or pressed upon the membrane, and its weight were ever so small, it would affect the apparatus, by this delicate series of adjustments and relays, and thus close the contact. Electricity would then pass along the wires and connexions, and the hammer record the letter exposed at the moment the key was pressed.

The electric current was provided by a Wilmshurst machine. The light used in the room during the experiments was acetylene gas, which the experimenters had found the most efficacious. The membrane forming the "key" was 38 cm. broad (about 15 in.). The whole apparatus was placed in a cupboard, kept at a constant temperature and barometric dryness. The experiments or "communications" by means of the dynamistograph covered a period of one year, in which daily messages were received. The experimenters assert that the weight of the "spirit form" gradually decreases, as the years pass — a form 100 years old weighing only about one quarter as much as one ten years old! Slow disintegration is evidently taking place. The molecular intervals in the body are said to be 176 times greater than that of ordinary air. The entire body of this strange being is full of air, and is not separated from the atmosphere by any protective sheath or covering of an impervious nature. The being is thought to pass through those solid objects through which it *can* pass by a species of osmosis — its molecules being small enough and far enough apart to permit this.

It has been said that the energy which holds this body together is a hypothetical X-force (akin to one which ex-

ists in the physical body, and upon the departure of which the body disintegrates and goes to pieces). What is the nature of this X-force? Can it be augmented or increased? If so, would not communication by these means become much clearer and surer? Is it akin to electricity, and if so, what kind of electricity? These are some of the questions our experimenters asked themselves, and to which they advanced more or less tentative answers,—based upon several hundred séances.

In the first place, then, it was found that the weather, atmospheric conditions, played a large part in the character of the manifestations; phenomena were better in spring and summer, and weaker in autumn and winter — which, we must remember, is in Holland largely a wet, rainy season. This suggested some connexion with atmospheric electricity, and the inference is further borne out by the fact that, in high altitudes, and in dry climates, psychic phenomena of all kinds have usually been better and stronger.

Electricity, then, played some part in these manifestations. How large a part, and what kind of electricity? 261 séances were devoted to answering this problem.

Natural induction was tried first of all; then artificial induction; frictional electricity; high and low-frequency currents, etc. Metal plates were charged positively for an hour by a Wilmshurst machine, and negative induction thus obtained in other (copper) plates. After this induction, it was found that the apparatus could be more easily operated. The X-force thus seemed to be strengthened by artificial induction. High frequency currents were then tried, with considerable success. From twenty to twenty-five thousand volts were found efficacious — though the current actually operating the *machine* had

to be weak. The theory of the experimenters was that the X-force was probably electrical in nature, and that if this could be fortified from "this side" mechanically, it would stimulate the phenomena, and at the same time supply the necessary force mediums expend, preventing the "vital drain" upon them which is now so well known to exist. For the purposes of its manifestation, the "spirit" must obtain added energy *somehow,* and the usual method of procedure (apparently) is to abstract this power from the circle of sitters, and chiefly from the "medium," who is in this manner and for this reason exhausted. If a mechanical energy of any character could be found which would add to the natural energy of the manifesting entity, and obviate the necessity of this drain upon the medium, it would indeed be a great forward step in psychical research and a great benefit to mediums all over the world. These experiments are as yet in a relatively embryonic state.

And now a few words as to the theoretical import of all this.

Bulwer Lytton, in his *Haunters and the Haunted* — that greatest of all ghost-stories — said: "In all that I had witnessed, and indeed in all the wonders which the amateurs of mystery in our age record as facts, a material human agency is always required. On the continent, you will still find magicians who assert that they can raise spirits. Assume for a moment that they assert truly, still the living, material form of the magician is present, and he is the material agency by which, from some constitutional peculiarities, certain strange phenomena are represented to our natural senses. . . . In fine, in all such marvels, supposing even that there is no imposture, there must be a human being like ourselves by whom,

or through whom, the effects presented to human beings are produced."

I myself went so far as to suppose that this energy — *common to two worlds,*— which both can manipulate — would be *vitality* — the living energy of the human body, about which we know so little. *(Problems of Psychical Research,* p. 48.) If the experiments that we have just narrated prove true, however, we shall have seriously to reconsider these statements, and ascertain whether manifestations of this character might not be produced without the instrumentality of any human being, but by instrumental means alone. If this proves to be the case, then some form of electricity would seem to be the intermediary between the two worlds. We may then have a wireless direct to the spirit world!

Seriously, however, we seem on the verge of great discoveries in this field, and I for one feel certain that these could be made if only we had a properly equipped *Laboratory* in which to conduct such experiments. What we need, in such a Laboratory, one may safely predict, would be: (1) suitable instruments for recording these phenomena; (2) men to conduct the experiments; and (3) money enough to endow and conduct the Institution. In a rich and progressive country such as this, it is absurd that such a Laboratory should not be founded and maintained; and it is not too much to believe that from it we should soon obtain facts of the greatest significance and of the utmost importance. It is earnestly to be hoped that such a Laboratory may one day be founded!

To return, however: It is quite conceivable that while the spiritual and the material worlds cannot interact one with another in any direct and continuous manner, they might nevertheless do so in some more indirect and round-

about way. We are here, of course, encountering one special aspect of a very old problem — the connection of mind and matter — how the brain, being a material thing, and consciousness, being an immaterial thing, can touch and interact with one another at all. It occurs to me that this would only be possible provided that some etheric, or vital intermediary were present, and that without this, communication would never take place — any more than could electricity travel without a medium. By a series of intermediaries, one slightly more material than the last, we might have a continuous series of connections, from an immaterial to a material sphere. The Gnostics, as we know, held this view — their "Dæmons" corresponding to the Hierarchy or Ten Intelligences of the East. Thus: the Gnostics held that matter and spirit could have no intercourse — they were, as it were, incommensurate. How then, granting this premise, was Creation possible? Their answer was a kind of gradual elimination. God, the *Actus Purus,* created an æon; this æon created a second; and so on until the tenth æon was sufficiently material (as the ten were in continually descending series) to affect matter, and so cause the Creation by giving to matter the spiritual form.

We have an analogy for this in our modern physics. In electricity, *e.g.,* what are known as "relays" beautifully illustrate the principle here outlined. In working over long lines, or where there are a number of instruments in one circuit, the currents are often not strong enough to work the recording instruments directly. In such case there is interposed a "relay" or "repeater." This instrument consists of an electro-magnet round which the line-current flows, and whose delicately- poised armature, when attracted, makes contact for a local circuit, in

which a local battery and the receiving Morse instrument (sounder, writer, etc.) are included. The principle of a relay is, then, that a current too weak to do the work itself may get a strong local current to do its work for it.

If this be true, it is certainly conceivable that spiritual beings (granting that they exist at all, for the sake of argument) might be enabled to manipulate a delicate energy of some sort, which in turn would liberate a stronger energy, and so on down the line until one is liberated capable of being recorded by our delicate physical instruments. If, as now seems certain, the human will is a dynamic energy, and thought can impress the photographic plate, it is certainly but a step from this to existing physical apparatus so delicate that it will register the heat of a candle at a distance of half a mile (Langley's bolometer), or measure the temperature of stars distant from us many millions of miles in space, and quite invisible to the naked eye. The step seems but a short one indeed!

The hope is certainly legitimate, then, that we shall one day stumble upon a means of direct instrumental communication between the two worlds — and that these preliminary experiments of Drs. Matla and van Zelst — while they may not be conclusive in themselves — nevertheless indicate to us the road we must travel, and hold out hope for us that here is at least an avenue of approach worthy of our highest efforts and greatest hopes. For surely, were such a method of communication established, by means of some intermediary or some instrument, it would revolutionize our science, our philosophy, our religion, our ethics, our outlook upon life as a whole in a way nothing else possibly could. And the man who discovers such an energy — common to the two

worlds — and learns how to direct and utilize it for the purpose of communication, will assuredly be hailed as the greatest scientist of all time; one beside whom Newton and Galileo and Darwin and Archimedes will shrink into insignificance, and their discoveries appear small and trivial when compared with this great cosmic truth! The road is open, then, for the ardent and daring scientific adventurer to take his fortune in his hands and fare forth upon the highway, with the knowledge that his efforts may succeed in bringing to light, and demonstrating to us, not only the possibility of direct intracosmic communication, but the very *existence* of a spiritual world — about which there is, nowadays, so much doubt! Such a discovery would indeed revolutionize human thought; recast science; remould philosophy; and prove the "preamble to all Religions."

CHAPTER XI

MATHEMATICAL PROOFS OF A "SPIRIT WORLD"[1]

THERE are probably few countries in the world more inaccessible, and more unknown to the traveller than Transylvania, on the borderland of Rumania and Hungary,— famous as "the home of the vampire," and also as the native land of Bolyai — one of the most famous mathematicians who ever lived, and who founded,— jointly with Lobatchewsky and Gauss,— the so-called "non-Euclidian geometry." He is also noted for his work on "parallels" (parallel lines). Just what his ideas were, which so revolutionized modern thought in these directions, will be explained more fully later on; suffice it to say for the present that this Transylvanian shares with Lobatchewsky, a Russian, and Gauss, a German, one of the most noted places in modern mathematical thought.

These three men differed from one another as widely as men well could; their daily lives were totally different, and they met only in the realms of higher abstract thought. Gauss was a university professor — serene, calm, peaceful, living an uneventful life devoted to his studies; unselfish to the last degree, a scholar and a student. Bolyai was a wild soldier, a duellist, at odds with the world and with himself. It is related of him that

[1] Acknowledgement must be made here to the following books, from which much of the argument that follows has been drawn: Hinton, *The Fourth Dimension;* Redgrove, *A Mathematical Theory of Spirit;* Miles, *Mathematical Law in the Spiritual World;* also to various mathematical and philosophical papers.

he was challenged by thirteen officers of his garrison — a thing not unlikely to happen considering how differently he thought from every one else. He fought them all in succession — making it his only condition that he should be allowed to play on his violin for an interval before meeting each opponent. He disarmed and wounded all his antagonists. He could get along with nobody; his epochmaking discoveries aroused no interest at the time; he passed his life in poverty and dissipation, and died in 1860, forgotten and unmourned.

Lobatchewsky, on the other hand, was a man of varied and wonderful talents. He was born in 1793, but did not gain distinction until 1867, when Houtel, the French mathematician, drew attention to his work. He died at an advanced age, honoured and surrounded by friends. His youth was full of daring escapades, showing the strong vitality which he was known to possess. He did an incredible amount of work and teaching, as well as undertaking laborious official duties, and making important contributions to science. His theory of parallels is perhaps best known. His name is usually associated with Bolyai, as their thought ran along very similar lines, and in many cases overlapped.

Johann Bolyai de Bolyai was born in Klausenburg, Transylvania, December 15, 1802. His father was Wolfgang Bolyai, a professor of the reformed college of Maros Vasarhely, noted for his mathematical abilities. His father relates that young Johann would spring before him "like a devil" when he was teaching mathematics; no sooner had he enunciated a problem than the child would give the solution and command him to go further. As a thirteen-year-old boy, his father sometimes sent him to fill his place when incapacitated from taking his classes.

His pupils listened to him with more attention than to his father, for they found him clearer to understand.

In a letter to Gauss, Wolfgang Bolyai writes:

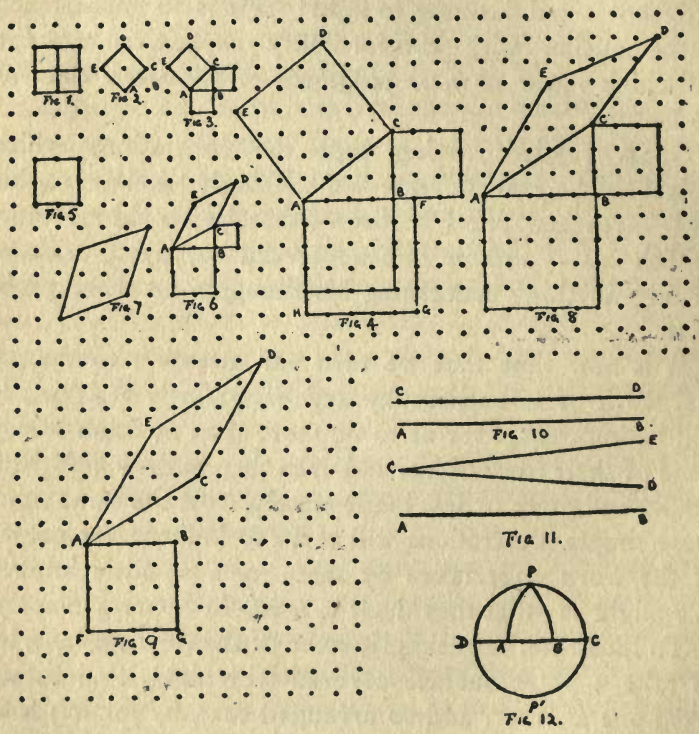
"My son is first lieutenant of engineers, and will soon be captain. He is a fine youth, a good violin player, a skilful fencer, and brave, but has had many duels, and is wild even for a soldier. Yet is he distinguished — light in darkness and darkness in light! He is an impassioned mathematician with extraordinary capacities . . . He will think more of your judgment on his work than of all Europe."

Gauss replied, saying that the conclusions which Bolyai had reached were so strikingly similar to his own,— reached years before,— that he would not now publish his — and in fact never did so, dying without writing anything concerning his thoughts on these problems.

It is now time that we turn our attention to the actual work of Lobatchewsky and particularly Bolyai. It will be impossible for us to do more than mention briefly some of their conclusions, and even then to deal with them simply and more or less inadequately. At the same time, these simple illustrations will serve to indicate the nature of the work undertaken by these men, so little known. We might say that they dealt in meta- or hyper-geometry.

To illustrate, very simply, some of their conclusions, let us take a plane surface covered with dots, equi-distant from one another, and so arranged that, by joining four of them, a square is thereby formed. A number of squares, adjacent to one another can be drawn, by continuing the lines; the sides touch, and four squares meet at a point. If a square be made by joining four points or dots diagonally, this square will "inclose" one point,

which may be said to belong to it. On the other hand, points at the corners of a square do not altogether "belong" to it, because three other squares can always be drawn from this point, and they "share" this point with the original square. Thus, a cornerpoint may be counted always as *one-quarter* belonging to any given square (see Diagram, Fig. 1).



If the square be larger, and the line forming its side run through one or more points, then these points on the side lines belong *half* to this square, and half to the adjacent square,— since half of each one of these points

may be said to be shared equally by the adjoining square. (Fig. 4.)

A "diagonal" square (Fig. 2) is equal in volume to two regular squares, as may be shown in two ways. First, the Forty-seventh Proposition in Euclid tells us that "The square described on the hypothenuse of a right-angled triangle is equal to the sum of the squares described on the other two sides." And it will be seen (Fig. 3) that ABC is a right-angled triangle. Secondly, counting points, we reach the same conclusion. AEDC enclosing one point, and having four at the corners, valued at one-quarter each, would be equal to two whole points. The two small squares both contain four quarter-points each, but neither of them "includes" any *whole* points. Total for the two small squares — two whole points; total for the large square — two whole points. According to this method of reckoning, therefore, their area is equal; and this may be shown to be the case with any figures of this kind.

Now, suppose we wished to know the whereabouts of the points, supposing that a large square containing a number of points be revolved about one point as an axis. We can find this very simply in a square whose side contains five unit-points. (Fig. 4.) Revolving the square ACDE about the point A, and counting the points, we find that it contains, in this position, 24 in the interior, 4 at the corners (counted as one-quarter each), giving 25 in all. The square on AB contains 9 in its interior, 4 at the corners (equal 1) and 4 sides, with 3 on each side, counted as 1½ on each side, because shared equally by two squares, (equal 6). This is a total of 16 points for this square. Counting in the same way, we obtain 9 points for the square on BC; or a total of 25 in all.

Again, this is equal to the sum of points in the square ACDE, so that again the square on the hypothenuse is shown to be equal to the sum of the squares on the other two sides of the right-angled triangle.

Again, taking the figure AFGH, it is shown by actual count to yield 25 points — equal to the square ACDE. But if two squares are equal, we conclude that their sides are equal, so that AF would, if turned about the point A, in time coincide with AC.

These facts should be borne in mind, as they are very important, and, simple as they are, will enable us to understand precisely what follows later.

Now, there are two ways in which the contents or volume of a body is not altered; one is when it is rotated about a point (as in the case of the square just mentioned); and the other is in what is called "shear." It consists in exerting pressure along one diagonal, causing it to be compressed, while allowing expansion in the opposite direction. It is equivalent to sliding, combined with a turning movement of the figure. The figure thus becomes elongated; but while it changes its shape, its internal volume is not altered thereby.

Material bodies resist "shear," which tends to destroy their internal structure. A fluid, on the other hand, will shear as readily as it will rotate. Suppose that we could reduce all bodies to a liquid state, and then make them solid again, with the changed principle added that they would shear instead of rotating. Then we should have a body shear instead of rotating; and while rotation would rend its structure, shear would not. Inasmuch as shear does not alter the volume of a body, a being living in a shear-world would look upon a body sheared as we would upon a body simply rotated. He would think it the

same shape, not simply turned round in space a little.

Now let us see whether this has in any way changed our fundamental geometrical conceptions — whether shear-world geometry would be the same as our Euclid's geometry. We will again use figures, counting the points for the volume.

Fig. 5 illustrates an unsheared square. It contains 1 point inside, 4 at the corners (equal 1), and four at the side (equal 2), or 3 in all. In Fig. 6 we have a square of the same size drawn on AB (underneath the line AB). It also contains 3 points or dots. The square on CB contains no dots, but the 4 at the corners equal *one*. Hence these two squares together equal 5 points. According to Euclid's 47th proposition, the square on AC should also contain 5 points, but if we count the dots in the shear-square on this side, we find that it contains, not 5, but 3 points (2 inside, and 4 at the corners). Here the shear "square" on the hypothenuse has not 5 points, but 3; it is not the *sum* of the squares on the sides but the *difference!* This relation always holds. Fig. 7 illustrates this; if the reader will draw the necessary squares for himself, and count the dots, he will find this to be true. Here, then, is a complete reversal of Euclid's 47th proposition, which would take place in such a shear-world. Yet the *volumes* of these bodies would remain the same, and, to a being living in such a world, no change would have taken place at all!

Fig. 8 gives an example of this, in which this relation can be tested. The side of the ordinary square appears to be turned into the side of the shear-square by simple turning, for the side of the one becomes the side of the other. Thus, in Fig. 9, the side AB becomes the side AC, by simple turning about the point A, and the line AB

appears to be turned into the line AC, and hence be of equal length to it. Yet the line AC is longer than the line AB, as simple measurement will show. So by employing shear instead of rotation, we get now properties for figures — in which the older Euclidian geometry no longer holds good. These were some of the earlier conclusions reached by Lobatchewsky and Bolyai.

We come now to their work on "Parallels," which is better known than that above mentioned, and is so perplexing, dumbfounding and even annoying to the average person — transcending common-sense, as it does — that it is small wonder that few persons — outside professional mathematicians — have cared to delve into it very deeply, or puzzle over the paradoxes presented, which are as puzzling and destined to be as famous, in all probability, as the famous paradoxes of Zeno. Nevertheless, the main problem raised can be very readily comprehended, even by the non-mathematical reader, and will indicate the degree of subtlety obtained by Lobatchewsky and the Transylvanian, Bolyai.

Let us recall Euclid's definition of parallel straight lines: "Parallel straight lines are straight lines . . . which do not meet, however far they are produced in either direction." Again, the 28th Theorem says that "If a straight line cuts two other straight lines and makes . . . the two interior angles on the same side of the line equal to two right angles, the two straight lines will be parallel." This originally stood in this form as the 11th Axiom. Its truth was always assumed, yet no one found the means of actually proving it. At last an Italian, Sacchieri, unable to find a proof, said, "Let us suppose it is *not* true!" He tried to prove that there might be *two* straight lines drawn through a given point,

parallel to a given line, but finding the waters here too deep for him, he later tried to disprove what he had said before!

It was at this point that Lobatchewsky and Bolyai entered the forbidden path. Their temerity beggars belief. Take a line AB, and a point C. We say and feel that we know that through C we can only draw one line (CD) parallel to AB . . . (Fig. 10).

But Bolyai said: "I will draw two!" His argument was as follows: "Let CD be parallel to AB, that is, not meet AB, however far produced, and let lines beyond CD also not meet AB; let there be a certain region between CD and CE, in which no line drawn meets AB. CE and CD produced backwards through C will give a similar region on the other side of C." (Fig. 11.)

As Hinton says: "Nothing so triumphantly, one may almost say so insolently, ignoring sense had ever been written before . . . Men had struggled against the limitations of the body, fought them, despised them, conquered them. But no one had ever thought simply as if the body, the bodily eyes, the organs of vision, all this vast experience of space had never existed. The age-long contest of the soul with the body, the struggle for mastery, had come to a culmination. Bolyai and Lobatchewsky simply thought as if the body were not. The struggle for dominion, the strife and combat of the soul were over; they had mastered, and the Hungarian drew his line."

Later, Beltrami showed that the geometry of Lobatchewsky and Bolyai was the geometry of shortest lines drawn on certain curved surfaces. (Fig. 12.) Thus, let ABCD be the equator of a globe; AP, BP, meridian lines drawn to the pole P. The lines AB, AP,

BP, would seem to be perfectly straight to a person moving on the surface of the sphere, and unconscious of its curvature. Now AP and BP both make right angles with AB. Hence they satisfy the definition of parallels. Yet they meet at P. Hence a being living on a spherical surface, and unconscious of its curvature, would find that parallel lines *would* meet. He would also find the angles in a triangle were greater than two right angles. In the triangle PAB, for instance, the angles A and B are right angles, so that the three angles of the triangle PAB are greater than two right angles!

Regarding "parallels" there is, of course, also the paradox propounded by the famous Arabian mathematician. He said that, if you take lines not *quite* parallel, they will meet if produced. They will meet, say, a mile or a thousand or a billion miles away — but still *meet*. Now, it is inconceivable, he said, that we can give one final tilt to these lines, and that this final tilt will be sufficient to take them from the realm of the finite into that of the infinite — from the point where they will meet *somewhere* (no matter how far away) to the point where they will meet *nowhere*. Yet this has been shown to be possible in other directions. For example: —

"As far back as 1881, Professor Thompson pointed out that a charge of electricity in motion sets up a *drag* in the ether through which it moves — just as the armature of a dynamo sets up a drag in its magnetic field, which makes it increasingly difficult to turn. This drag, or resistance to motion, makes the charge appear to possess inertia, weight or mass, which is a characteristic of matter. Subsequently, Sir Oliver Lodge calculated how much this increase of inertia would be in a body of given mass, and carrying a given electrical charge, at varying

speeds. He found that, at half the speed of light, which travels at the rate of 186,000 miles a second, this apparent increase in mass would be equal to .12 of the body's actual mass, when in a state of rest. At .9 the speed of light, the body would behave as though it were 1.8 times as heavy, while at 99 per cent of the speed of light, its mass would appear to be 3.28 times as great. At 99.5 per cent, this number jumped suddenly to 5; and between 99.5 per cent and the actual speed of light, it jumped from 5 to — infinity!

"From the foregoing, it is obvious that no particle of matter can ever attain a speed greater than that of light, for, though it were only the size of a corpuscle when it started, if it be conceived of as attaining a speed greater than that of light, it must be conceived of, also, as having acquired a mass greater than that of the Universe." Stephen F. Austin, B. A. (*The Principles of Dramatherapy*, p. 119.)

. . . . . .

Let us now go back to mathematics — beginning with very simple and well-known facts, so that every step may be plain even to the non-mathematical reader. We will begin by explaining what is meant by the so-called "incommensurable quantities."

When we multiply a number by itself a certain number of times we are said to raise it to a certain *power* of that number. Thus, 4×4 is called the second power of 4; $4 \times 4 \times 4$ is called the third power of 4, etc. The power we usually signify by a small number at the right-hand top corner of the number, so multiplied: $4.^3$ The small number is called the *Index*. On the other hand, the number which gives rise to a power — which is thus multiplied — is called the *root*.

The sign $\sqrt{}$ is used to denote the root of a number; a small figure written in front of it, what root is abstracted; *e. g.* $^{5}\sqrt{}$ is the fifth root.

Now, some numbers have an exact root; others have not. Thus, the cube root of 27 is 3; the square root of 7569 = 87 exactly, etc. But some numbers have no exact root, even when carried to an indefinite number of decimal points. The root cannot be expressed as a fraction, that is. Such roots as these are called *surds, or irrational quantities.*

When the relationship between two quantities cannot be expressed in exact figures, these quantities are said to be "incommensurable" with one another; they are *incommensurables.* The relation of the diameter to the circumference of a circle is a good example of this. The circumference is a little more than three times the diameter; it is 3 + a number of decimals. For practical purposes, however five decimal points are enough; we usually express this relationship by the Greek letter π which stands for 3.14159. But these decimals could be carried on for ever without ever arriving at an exact answer. There is no end to the calculation; the sum would never be finished. In 1873, Mr. Shanks carried out the computation to over 700 decimal points. Thus we see there is here a known and certain relationship, which cannot be *exactly* expressed. We know it exists; but we cannot express it. (It is because of this fact — because we cannot ever ascertain the exact numerical value of, π, that the circle can never be "squared"; since part of the problem consists in knowing the exact value of π.)

The reason why we cannot exactly represent certain relationships mathematically is because, whereas length

is continuous, number is essentially discontinuous. As Sir Oliver Lodge has expressed it: "Numerical expression is more like a staircase than a slope; it necessarily proceeds by steps; it is discontinuous." (*Easy Mathematics*, p. 187.) But between each of these steps, further subdivisions can theoretically be made, *ad infinitum*. Here we run up against one of the greatest problems in metaphysics — the continuity of time and space. These two problems remained for centuries unsolved; and it was only the brilliant work of Georg Cantor which ultimately brought about their (mathematical) solution.

This question of discontinuity crops up again in our conception of the material world. Until a few years ago, relatively, it was thought that solid matter was continuous; but now it is known that the atoms move in comparatively free space "like specks of dust in the air," and that there is a medium — the ether — between them. But what of the ether? Is it continuous? If so, how does matter exist within it? and if not, is there still a finer ether, between the atoms of the ether we know? Cannot we follow this path indefinitely — as in mathematics?

Similarly, matter itself seems to shade-off into the non-material in a perfectly graduated system. Solid, liquid, gas are the three states of matter known to us. Recent researches have shown us that the atom itself is probably only a point of force — a stress within the ether. It is the expression of energy. But energy is non-material — as we know it. Purely from the standpoint of physical science, then, we are led into an immaterial world — of which the material universe we see is merely the outward expression.

We must now return to our mathematics, however (the

bearing of all this will be apparent later on). Consider, for a moment what is meant by a "negative quantity." It is one that is less than nothing! Strictly speaking, it cannot exist; it is not an actuality. It is less than nothing; and nothing is nothing! Yet we write — 7 with the greatest ease! Symbolically, it represents to us a quantity as much below Zero as that number would be above it, were the sign *plus* before it. It is a mere symbol. The actual number does not exist, save in the mind. It is an imaginary quantity. This leads us naturally to a discussion of the question of "Imaginary quantities."

Quantities having like signs (plus or minus) are always positive; those having unlike signs are negative. We can abstract the root of a positive number, but it is impossible, arithmetically, to obtain the root of a negative quantity. It cannot be done. (See Hall and Knight, *Higher Algebra*, p. 74.) It becomes meaningless, because we cannot obtain the root of something which is less than nothing. Hence, the symbol: $\sqrt{-1}$, which frequently occurs in mathematical investigations, expresses some new quantity which cannot be regarded as either positive or negative. It is neither less than, nor greater than, 1. It is a purely "imaginary quantity,"— usually written *i*. Here then, we have a quantity, which we know to exist, which actually exists in thought, but which cannot be expressed in the physical world. It remains purely ideal or mental. Here, then, we have absolute proof that the mind of man can deal satisfactorily and rationally with ideas which transcend the physical realm; mentally man can employ symbols which on the physical plane are nonsense. Yet these imaginary quantities are real! But if these imaginary quantities are real in the mental world, but unreal here, it seems to prove to us that such a world actually

exists — a world more real and more inclusive than the physical world we know. If imaginary quantities are real in a spiritual world, then such a spiritual world must exist — for otherwise such quantities could not exist. Hence, we arrive at our "mathematical proof of spirit," which may be stated thus: Just as real numbers may be used symbolically to express the various things of the physical world, so, in a similar manner, imaginary quantities may be used symbolically, to express the various things of the metaphysical or spiritual world. We are enabled thereby to pass from the physical to the spiritual realms — for employing mathematical methods for the elucidation of this greatest of all problems. Further implications to be drawn from this theory are also perfectly clear. Thus:

"Real numbers will only make real numbers, juggle with them as we will. We can never create imaginary numbers out of them. In fact, the very existence of imaginary quantities — and the bridge from these quantities to real numbers — was only rendered possible by men's minds. On the other hand, we can pass very readily from an imaginary to a real number — since it can be shown that the fourth power of any imaginary number is a positive real number — showing that imaginary numbers are 'real,' in one sense — that is, existent in some sphere. A real number cannot generate an imaginary quantity; but an imaginary quantity can generate a real number." (Redgrove.)

Now this is a highly significant fact. For it seems to show us that, while spirit is not caused by matter, yet matter may find its origin in the spiritual world. Hence "evolution"— the continual outpouring of the spiritual into the material world as many philosophers have taught.

The relation of spirit to matter is causal, not the reverse. The spiritual world is the "real"— behind, beyond, and more inclusive than the physical. The existence of this spiritual world is, moreover, subject to mathematical demonstration — as I trust I have shown in the foregoing.

"God geometrizes," said Plato. In truth, number seems to lie at the root of all things — material and spiritual.

CHAPTER XII

THE SEXES HEREAFTER: DO THEY CONTINUE TO EXIST?

WHETHER men or women continue to be such in the next life — whether their relations to one another are the same as they are now, or whether these relations are changed — is a question which every thoughtful man puts to himself, doubtless, at one time or another. If we accepted the religion of the Turks, Heaven would be one large harem — but then, women do not play any part in their religion. On the other hand, we have the Christian belief, that "there shall be neither marriage nor giving in marriage" in the next sphere; and if this be interpreted in a certain manner, it would seem to indicate the cessation of the present relationship between the sexes. As we know, there was much dispute, a short time ago, as to the sex of Angels — some contending that they are male, and others that they must be female; while a third sect prefers to believe that they are neither the one nor the other, but rather a nondescript sort of being, which combines and unifies the two sexual qualities in one. If that were true universally, there would be, of course, an end to all relations of the present kind between the sexes in any future state of existence. In this question, every man and woman is necessarily entitled to a hearing — to an opinion.

To some minds it may appear "sacrilegious" to discuss a question of this sort — whether or not beings in the next sphere of life possess sex; but after all, why should we not? If we are going to be one of them some day

ourselves, we naturally want to know what is "coming to us," as well as we can, and what we are going to be! Again, the worthy fathers of the Church discussed many facts no more odd than this — for instance, how many angels can dance upon the point of a needle — if they occupy no space. (And if they occupy space, they must be material, it was argued.) Disputes of this kind have always arisen, and, in this age of free-thinking, it is not to be wondered at that we should ask ourselves this vital question — which so intimately concerns ourselves. Will there be, then, sex in the next life, or shall we be bisexual beings — having the qualities and attributes of both male and female within ourselves?

Only recently, Dr. L. P. Jacks, editor of the *Hibbert Journal* in his presidential address before the Society for Psychical Research, said:

"We will assume then that communications, genuine communications, are taking place; and, dismissing from our minds the notion that they are coming from disembodied spirits or from another world, we will let the communications themselves tell us where they are coming from, and what kind of beings they are who are making them. . . . To begin with, these communicating beings, wherever they are, and whoever they may be, *quite obviously retain the distinction of sex.* They make use of the personal pronoun masculine and feminine; they speak of one another as 'he' and 'she'; they employ the distinction with no discernible difference of meaning from that with which we are all familiar. This suggests at once that the communicating beings stand with ourselves on a common biological ground; and since biological facts, like all other facts, are not isolated, but form part of a context in which the whole order of nature is involved,

we could from this one fact alone build out a whole system to correspond, just as the palæontologist when he discovers the bone of an extinct animal can reconstruct the whole animal to which it belonged. This, I say, we could do; and the only thing that has prevented us doing it hitherto is the notion that everything we are going to discover must bear a 'spiritual' sense, must mean something other than it would mean if it occurred in the known order — that is, may mean anything we choose to make it mean. Dismissing that notion, we find ourselves in the presence of a fact enormously rich in implications. *These beings retain the distinction of sex.*" (*Hibbert Journal* July, 1917, pp. 619-20.)

The first question which arises within the mind, consequently, is this: There being no material or physical bodies in the next life, how can sex be possible? The male and female sexes, as we know, are represented and symbolized — very largely at least — by the corporeal peculiarities of the sexes; and, in addition to the mental differences, these are so distinctive that many cannot think of them as being otherwise than they are — and keep the idea of male and female apart in their minds.

But there are two answers to this! In the first place, there are several schools which contend that, in the next sphere of activity — whatever that may be — we have a sort of astral body or etheric body exactly resembling the physical body in all its internal and external aspects, and if this were true, of course the present status of the sexes would remain. Even St. Paul, as we know, said that we have a material body and a "spiritual body" and where is the actual detail to end, if this be true? If every part of the body has a symbolic, spiritual counterpart — as we are told — then the strictly physical body of man and

woman must be duplicated in *all* its detail in the next life; and in that case, life there would be very much the same as it is here — which a large number of religious and psychic students believe to be the case.

In the second place, there is a way of looking at the facts which does not necessitate this view. According to this theory, the essential polarity between the sexes would still be maintained, in all essentials, but the physical counterparts would necessarily be lacking. To make this clearer:

A woman is not only a female human being, she is also feminine in all her tastes, points of view, and in her attitude to life. She is a woman throughout, mentally and spiritually no less than bodily. The same is true of a man. He is masculine throughout. No man can ever look at the world as a woman does; and no woman can see it in the same light as a man. This is the reason why the sexes are fundamentally opposite, and do not understand each other better than they do. Women think that men ought to see things as they do and *vice versa.* Only when this fundamental distinction between the sexes is recognized, will this be overcome.

Granting this extreme difference, then — this "sexual polarity"— we can see why men and women are attracted to one another — independent of the actual physical magnetism which may be present at the time. They admire one another, because of their mental and spiritual differences. The love-nature of one flows toward the other in a sort of stream; and this is likewise returned. Accompanying this interchange of vital, magnetic currents, the feelings of love penetrate the very heart and soul of the lover and the beloved; and the stronger these vital, magnetic interchanges become, the greater the feelings

of love, the more rapturous the thrills that race through the veins, at the proximity of the loved one. It is the interchange of these life love-currents which does this. Here, on the physical plane, where matter impedes the outflow of the spirit, material contact may be necessary to bring about this rapturous exchange of reciprocal emotion; but once this physical barricade be removed, then all the rapture of the most perfect love may be exchanged, without the tinge of animality which is here associated with it.

Years ago, Swedenborg wrote words of wisdom upon this subject, when he said:—

> I also spake with the angels concerning conjugal love, or that which exists between two conjugal partners who love one another, that it is the innermost of all loves, and such that partner sees partner in mind and spirit,— so that each partner has the other in himself or herself, that is, that the image, nay, the likeness of the husband is in the mind of the wife, and the image and likeness of the wife in the mind of the husband, so that one sees the other in himself, and thus they sexually come together in their inmosts. . . . This was represented by angelic ideas, which cannot be expressed by words. . . .

Dr. W. H. Holcombe, of London, who has written a profound treatise on this subject of the relations of the sexes hereafter, says, in emphasizing his views of the essential "polarity" between the sexes, and the form of its expression:—

> Sex, love and marriage are universal and eternal; and the ideal universe is a universe perfectly married or equilibriated in its male and female elements.
>
> The Lord infuses love or spiritual heat through the feminine form, and wisdom and spiritual light through the masculine form. Heat alone, or light alone, is powerless; combined or married, they produce all things. . . .

Every male form in the universe has a female form, its complement, its eternal and necessary counterpart; and these forms, having specific affinities, are ever striving for union.

The Lord has instituted the marriage of one man and one woman as a means whereby the love of the sex into which we are born shall be changed into the love of one of the sex only, and the marriage of spiritual heat and light, of love and wisdom, be effected in the soul. . . .

An unmarried man receives influx into his love principle from the whole sphere of the female sex, which generates in him the love of the sex. However sweet, tender and elevating this civilized sphere may be, it cannot have the effect, the power of the concentrated love-current of some one woman, absorbing from him his corresponding wisdom-element, and returning it to him — through undiscoverable avenues — vivified and utilized for a noble life. . . .

Marriage is an institution which brings new influences to bear, which causes a direct and reciprocal and powerful spiritual current from one sex to the other, capable of producing incalculable evil or incalculable good. If the parties discharge their duties toward each other with conscientious fidelity, they enjoy immense advantages over those not married. For there is a constant interchange of properties, which tends continually to elevate them and unite them together. They take on each others' mental states. The woman absorbs the interior will of the man and blends it with her own; and the man elevates her understanding into a spiritual light into which his own mind has penetrated by loving. . . . They grow more and more alike interiorly, increasing their spiritual power and perception by the union. The man rises into higher stages of wisdom. the woman into higher states of love; and so, by mutual help and inspiration, they approach ever nearer and nearer the Source, the Fountain of all love and all wisdom.

There are marriages in Heaven, then, we are assured — not formal marriages, as we understand them, perhaps, but their spiritual counterparts. Two souls which have a direct and powerful affinity for one another are conjoined together in life and light; they come together; theirs is a "marriage of souls." But it is more than

that! They also experience all the thrills, the pangs, the emotions of love which we experience here upon the physical plane, by reason of the vital, magnetic currents which flow from one to the other, and which in turn generate the feeling and the emotions associated with the highest love. They are as truly "married" as any one here can be — and as fully. They live together; they love, they are happy!

Are there children in the spiritual world, then, as the result of these marriages? Seers who have studied this question most deeply tell us that there are no children in our sense of the word — for these must be born in the material world, according to its laws — but there are "spiritual prolifications," or increments in love and wisdom, and the delights that flow therefrom, as the result of their love; and that these correspond — upon the spiritual plane — to children in our earth life. Thus the relation of the sexes is maintained, and they become more blended and united to one another, through the power and the bonds of true love — which exists as truly hereafter as it does now!

CHAPTER XIII

PSYCHIC HEALING: SHELL SHOCK

THE "power of the mind over the body" has been a common expression in medical literature for the past fifty years — ever since Dr. Hack-Tuke wrote his elaborate work of that name. And yet, strictly speaking, it is not the *mind* so much as the *emotions* which affect the body, for good or ill. The emotions are the things which cause the havoc — or effect the cure! Anger, fear, worry, will offset the best meal, and frequently cause indigestion — given the best food and surroundings. On the other hand, hope, love, faith, cheer — all the higher and more aspiring emotions will stimulate the bodily functions and arouse them into more active and forceful expression.

Taking the emotions and the mental life — the thoughts — to mean the same thing, however, for the time being, it is certainly true that the mental life *does* affect the body and its functionings very much. In order that the reader may understand the principle upon which mental cures depend, it will be necessary to say a few words regarding the modern conception as to the "structure" of the mind — the mental life — since, upon this, much depends.

The older conception of the mind, then, was that it was a sort of sphere — a thing which could be caught, and which was not at all capable of division or multiplication. The newer idea is that the mind of man is a *complex* thing — a result, a *product.* It resembles — to employ an analogy often used — a *rope,* composed of a number

of smaller "strands." Usually, and under normal, healthy conditions, these "strands" are held together by means of the *will,* and by *attention.* But under certain abnormal and exceptional circumstances, the mind may "go to pieces," *disintegrate,* and then we have a multitude of ills, mental and physical, ending in complete insanity.

Now, in order to keep the mind in a healthy condition, it is only necessary to live a normal mental and physical life — and to keep the mind "objective," as it were, and interested in things of this world. As soon as it becomes too "introspective," as soon as day-dreaming is allowed, and the mind is not constantly and actively exercised, then it tends to "go to pieces," and these harmful results follow. Emotional shocks will also have the same effect.

Now, as soon as the mind has "gone to pieces" in this way (disintegration of the mind, as it is called) then odd physical phenomena begin to manifest also. For as the mind controls the body so various *parts* of the mind control various *parts* of the body. So long as they all work in unison, all goes well; but when they all begin acting for themselves, then disharmony manifests in the physical organism.

One part of the body in such a case, would be controlled by one part of the mind; another by another portion, and they might not act "together" or in unison. If not, then trouble will have begun.

This is what happens in cases of so-called *hysteria.* For many years, the nature of this odd disease was a mystery to the medical fraternity, and its true nature only became manifest when the theory of disintegration of the mind was proved correct. Then the complex and odd phenomena, formerly observed, were seen to be true.

They were not due to any sexual disturbance, as formerly supposed, but to the morbid influences of the mind.

Now, the thing to do, in such cases, is to unite the mind again into a single, healthy complex *whole*. We must "tie it together," as it were, and make it function properly. The methods of doing this are somewhat complicated, but can be mastered with effort.

The first thing to do, perhaps, is to get the body into good physical condition. The cells of the brain are probably congested. The blood feeding these delicate cells and tissues is full of malassimilated food material, and this tends to poison the nerve cells and render their proper functioning impossible. We hear of the tremendous increase of insanity, which is doubtless true, and of the hopeless efforts being made to check it or stamp it out. For example: We hear of people who become insane on account of love or religion, or some other cause which should never have rendered them insane, if normal. Doubtless the love or the religion did have some influence in bringing about this result; but these mental and emotional states *alone* would not have done so, *if* the blood and the brain of that individual had been in a normal, healthy condition. As a matter of fact, however, it was only the "last straw" which broke the camel's back; they were already half sick, and this just determined the *form* the illness would take.

The thing to do, in all such cases, is to purify the blood, and free it from poisons. Partial or complete fasting, profuse water drinking, enemas, and vigorous hydrotherapeutic measures are all of the very greatest utility in cases of this character.[1] Readers of this book may

[1] See my *Death Deferred,* and *The Natural Food of Man,* for practical advice on these questions.

remember how, a quarter of a century ago, the "water curists" were laughed out of court when they advocated prolonged water treatment, in cases of mental derangement. Now-a-days, it is the accepted treatment, and is given to many patients of this character in the leading hospitals all over the world!

The next thing to do is to try and heal the *sick mind.* We will not now speak of actual cases of insanity; but only of milder cases of mental disturbance. The thing to do is to keep the patient happy *and occupied* without taxing the brain by prolonged mental exercise, calculated to bring and keep the blood there for too long a time. One of the greatest mistakes — and a criminal mistake — which most hospitals for the insane make today is that of preventing the inmates from occupying themselves with anything, so as to entertain the mind, and keep themselves busy in thought. It is the very worst thing possible. Any person, even the actually insane, should be kept busy and actively engaged all the time they are awake. It is easy to see why this should be so. Suppose a woman is troubled with hallucinatory voices — a very common form of delusion. The more she listens to these voices, the worse she gets. And the more she is left alone and the less she is given to do, the more "introspective" she will become. Consequently she gets worse instead of better. The thing to do is to keep such patients interested and occupied, make them live "outside their heads," as it were, and if this be done, the mental powers will gradually resume their sway over the body, and the patient will slowly, but surely, return to a normal condition.

Another important factor is to keep the patient in a happy frame of mind all the time. Experiments have

shown that the emotions have an actual effect upon the vital chemistry of the body. Prof. Elmer Gates, of Washington, D. C., made a number of very interesting experiments some years ago, in which he proved that the varying emotions produced different *chemicals* in the blood stream; and these chemicals, if passed into a certain solution, produced certain "precipitates" of different colours. Thus, anger produced a shade of dirty red; envy a dull green; fear a slate grey; love and hope a bright yellowish gold, etc. There was, then, an actual chemical change in the body and its blood, as the result of these varying emotions. The blood was either poisoned or the reverse, by these emotions, and this, of course, reacted upon the whole body.

While our mental life — our stream of thought — is more or less under the direct control of the mind and will, the emotions are all unconscious, and are not under this control. Thus, the phenomenon of *blushing* is controlled by an emotional state, which in turn expresses itself in bodily form by dilating the blood vessels of the face and neck, and a "blush" is the result. This is doubtless done in order to relieve the congestion of blood which results in the head as the result of the emotion induced; but whatever its ulterior cause may be, it is certain that there is an effect which is involuntary, and is not under the control of the mind and will. These "vasomotor reflexes" are in some way unconsciously controlled by the sub-conscious mind; and there is no way of telling how far this influence and power may extend — for good or evil!

For instance, it is on record that a man has read a telegram containing some terrible news, and dropped dead in consequence. This is an extreme case. Going

further down the scale, we have cases where the patient has starved to death in a few days or a week when lost in the jungle without food. Physiologically speaking, it would have been *impossible* for that person to have starved to death in so short a time. Physiologically impossible! Yet it happened. The mental state was responsible. And so on. It would be easy to cite scores of cases, showing that the sub-conscious mind has a tremendous effect upon the body in this way, and that its power either for good or harm is very potent and far-reaching.

To what an extent the emotions influence the life, and the actual physiological mechanism of the body, may be seen from the recent experiments in so-called "psycho-galvanic reflexes." These reflexes have actually been turned into a very useful purpose — to detect crime — the principle resting upon the fact just quoted. It is accomplished in this way:

If a weak electric current is passed through the human body a certain "resistance" is recorded, which is registered by a needle on a dial (galvanometer). If the resistance of the body changes in any way, this is at once shown by the needle, which fluctuates or varies as the resistance of the body varies. This difference of resistance is probably created by the degree of moisture of the hands (where the poles of the battery are attached), etc. This sweat is brought out by the emotion excited. The emotion thus causes a real change in the amount of current passed and this is shown by the needle.

Now, if a series of questions be asked a criminal, some of them containing words which (if innocent) should arouse *no* emotion in him, but (if guilty) *would* create an emotion of fear, etc., then he will react to these questions,

and show the absence or presence of fear through the variations of the electric needle. The emotions may, therefore, be used as a test for criminals, and have actually been so employed, in some cases, in the courts.

SHELL SHOCK

Doubtless one of the greatest uses to which psychic healing has been put of late years, however, is in curing cases of so-called "shell shock"— that baffling malady, of which the great world war has furnished us so many examples. We know that hypnotism and other methods of psychic treatment have benefited or cured many hundreds of these cases; and we further know that, while many cases consist in "hysterical symptoms grafted onto an organic basis," as Dr. Arthur F. Hurst expressed it (*Medical Diseases of the War*, p. 51), there are also many cases of shell shock among soldiers who have never been to the front at all — or seen an exploding shell. (I myself have seen many such.) This being so, we are forced to inquire further as to the origin and nature of this curious malady. When the first cases returned from the front, and were studied at the base hospitals in France and England, they were not at all understood. Even expert opinion seemed to be divided into two schools or classes — both of which we now know to be wrong.

The first theory was to the effect that the subject of shell shock was merely feigning illness; that he was cowardly, hysterical, malingering — in short, a slacker, who was attempting to postpone the evil day of his return to the front by pretending an illness which he did not actually have. When we take into consideration the lack of apparent injury, and the contradictory and bizarre nature of many of the symptoms, we can perhaps hardly blame

the earlier investigators for their conclusions. We now know, however, that they were far from the truth. The unfortunate invalid is indeed a sick man — a very sick man — and is by no means feigning his disability. To be told to "buck up," under such circumstances, is little less than cruelty. The man suffering from shell shock is as legitimate a candidate for the hospital as one suffering from a broken leg or a deep, exposed wound.

The second theory, held by the opposite school, was that the injury was indeed real, but that the bodily and mental symptoms noted were due to internal injuries to the brain and nervous system. Delicate, minute tears and ruptures of the brain tissues were thought to exist. Cure, therefore, would consist in curing them, or allowing nature to cure them; and to this end rest, diet, and electric or other treatments were prescribed.

We now know that this second theory is also erroneous. During the present war there have doubtless been many instances of shell shock due to nervous and spinal lesions, rupture of the inner blood-vessels, and similar injuries. The vast majority of cases, however, are not due to such causes, but are purely *psychic* in origin.

This at first sight appears contradictory, and even absurd. When a shell bursts in the immediate vicinity of a soldier, he is knocked unconscious; and when he revives, perhaps hours later, to find himself mentally blank, without memory of the event, unable to perform the slightest mental feat, crippled, paralysed, bent double, maimed, unable to sit or to stand erect — to say that such conditions are psychic, or due to the mind, may seem ridiculous. Experience has shown it to be true, nevertheless.

Continued observation and experiments have enabled

physicians to understand with great exactitude how this all comes about; and knowing how it comes about, to cure it also. The great majority of shell-shock cases are now cured. Indeed, many of them are not serious; that is one of the great and blessed discoveries which has come to light as the result of the present war.

In order to understand all this, and, further, how shell shock can be cured, it will be necessary, first of all, to describe the nature and manifestations of this curious and distressing malady.

In addition to the well-known physical symptoms — contracture, cramps, paralysis, and so forth — there are also subjective disturbances, which are apt to go undiscovered in a cursory examination of the patient, but are frequently more serious than the objective ones. They are experienced by thousands of patients who to the casual observer may present no more signs of abnormality than a slight tremor, a stammer, or a depressed or excited expression. Among these afflictions are loss of memory, insomnia, terrifying dreams, pains, emotional instability, diminution of self-confidence and self-control, attacks of unconsciousness or of changed consciousness, sometimes accompanied by convulsive movements resembling those characteristic of epileptic fits, incapacity to understand any but the simplest matters, obsessive thoughts, usually of the gloomiest and most painful kind, and in some cases even hallucinations and incipient delusions.

Such patients may show no outward indications of the terrible realities within and at first they were thought to be pretending illness. Fortunately, we have learned better, and no soldiers in any future war will suffer from the

errors committed in this direction during the early months of the war from which we have just emerged.

In a recent paper read before the Philadelphia Neurological Society, and printed in the *Medical Record*, Dr. E. Murray Auer, who for some time was attached to the Twenty-Second General Hospital of the British Expeditionary Force, drew attention to many cases of this character. Speaking of the after-effects of shell shock, and comparing them with such cases as those of men buried by mine explosions and afterward rescued, he stated that in his opinion these accidents or shocks often leave more or less permanent effects upon the men who undergo them. It may be said, however, that the greater percentage of cases are now cured, under the latest methods of treatment.

In practically all cases which were observed by Dr. Auer, the patient had received no appreciable injury, the effect being purely mental. One such instance was that of a boy nineteen years old, who had been for three days under a sustained and heavy shell-fire. At the end of that time he was threatened by his sergeant with court-martial for sleeping while on sentry-duty. This led to an examination, and the sending of the boy to the hospital. He was in a stupor for ten days. The same was true of another soldier who had seen his chum blown to pieces.

During the period of coma, which in some cases lasted more than a week, the soldiers gave the impression that they again were living through the experiences which had brought on the stupor. This was evidenced by their terrified expression. They crouched, started, and stared wildly when spoken to. One such man rose from his

bed in the middle of the night and recited in a one-sided conversation his experience of a charge, and of being buried by a mine explosion. Then he relapsed into his state of coma.

Another result of shock is a continued shaking of the entire body, accompanied by various pains and severe headaches. In some cases this shaking has been observed to last several days, and even weeks, although in most instances its duration is only a few hours. One patient had twice been buried in a mine explosion, had been through an attack and under heavy bombardment in a trench, and finally was hit by a piece of rock, which, while not injuring him, knocked him down. In this case the tremor of the head was marked, and lasted for some time.

Temporary loss of memory is a common thing with men who have been through some extremely trying period or have suffered a sudden shock. The recovery of the faculty is generally as sudden as its loss.

One soldier, after being near a shell which exploded, could remember nothing that happened to him until he came to himself, walking along a road some time later. Another man in the hospital thought himself in the trenches and became violent, moving his cupboard about as if it were a machine-gun, and pointing it at his enemies. When he suddenly returned to a normal state, he could remember nothing of his experience.

One of the most common, and at the same time most pitiful, of the many mental phenomena of the war is the inability to sleep soundly, and the recurrence of so-called "trench dreams." It is not uncommon to see soldiers start from their beds in the middle of the night, crying out and weeping, their bodies bathed in perspiration, as

they dream of being chased by Germans with bayonets, or of being buried under debris by a mine explosion, or of losing the trench in a fog and being unable to get back.

The fear that is found is not the kind that the layman might expect. The soldier does not, as a rule, fear injury to himself. He is afraid of doing something wrong, of an emergency in which he may fail and lose the confidence of his comrades. His fear is the fear of being a coward.

In one instance, the patient was afraid to go to sleep, for fear he would not wake. One man who had no fear of being wounded had a wild desire to get away from the din of battle, and seemed really afraid of the noise.

Blindness and deafness are frequently found, but one of the most unusual phenomena, in this connection, is the presence of photophobia — the fear of looking. Many men complain that they cannot see. In such instances, when their eyes are opened for them, they can see without difficulty.

One instance of this came as the result of a trench dream, in which the soldier again lived through his burial by a mine explosion four weeks before. When he awoke he complained that he could not see, and imagined that his sight had been lost as the result of the explosion. When his eyelids were raised, however, he could see as well as before.

The reader may think that all this is a long way from the subject of shell shock, but as a matter of fact it is not so. These very symptoms — dreams and all — in fact enable us to understand the innermost nature of the disease. They have afforded a key to the mystery, and have enabled our doctors to effect thousands of cures

which would never have been made along the old lines of pure pathology and *materia medica.*

Both the mental and physical symptoms of many such "shock" cases are really mental, or rather emotional, at basis. The outward manifestations are expressions of injuries and lesions, not of the body, but of the psychic life. To understand this, it is necessary to recount, very briefly, a few of the more important findings of abnormal psychology and psychiatry.

Plato's main argument for the immortality of the soul was that it was indivisible and therefore indestructible. Modern psychology, however, has badly shattered this conception of Plato's. It has shown us that the human mind, far from being a unit, a thing, is rather a product, a resultant, a compound, made up of innumerable layers or strata; and that as before said it more nearly resembles a rope, composed of innumerable strands, than a sphere, as was formerly supposed.

These strands can be bound or held together by our will, our attention, by all those integrating factors of our education which compose our modern civilization. On the other hand, under certain conditions, they may tend to separate, to break away from the original sheaf, and to form independent units. This may be due to a variety of causes — disease, injury, and so forth; but the most common cause, and the most potent, is doubtless some form of emotional shock.

Professor Flournoy, in his *Spiritism and Psychology,* says:

As a crystal splits under the blow of a hammer when struck according to certain definite lines of cleavage, in the same way the human personality, under the shock of excessive emotions, is sometimes broken along the lines of least resistance, or the great

structural lines of its temperament. A cleavage is produced between the opposite selves.

Portions of the self become separated, as it were, and around and about these split-off units gather and accrete thoughts, emotions, and fears, more or less in common with them. Each little group is technically known as a "complex"; and if a complex is unhealthy, and grows abnormally fast, we have trouble. As a tumour in the body can press upon some organ, and derange its functioning, so, in much the same way, this unhealthy complex — this mental tumour — can press upon the mind from beneath, as it were, causing it to become diseased and to function abnormally. And as in the first case the only radical method of cure is to remove the tumour by a surgical operation, so in the latter instance the method of treatment consists in discovering, exploring, and removing the complex — the abnormal mental growth. This is done by certain methods of mental or psychical treatment.

It has now been definitely established that if we try to put anything out of the mind, we only succeed in putting it into the mind. If we *repress,* and do not *express,* trouble is sure to follow. In our civilized and to a great extent artificial and hypercritical age, repression is the rule; and it seems probable that most of the nervousness, neurasthenia, hysteria, and premature "nervous breakdowns," of which we hear so much, are due to this cause. Repression of the thoughts and the emotions is destructive to mental and physical health. They should be expressed — faced, thought out, felt out, and given vent, in one form or another.

Many of these thoughts and emotions never rise to consciousness at all. We never know that we have them.

They remain in the subconscious, or unconscious, mind. And there they ferment, as it were. Among these emotions, *fear* is predominant. All of us are constantly in a state of fear, worry, and anxiety — fear of bad health, of poverty, of failure, of accident, of a thousand and one misfortunes which, in the majority of cases, never come to pass.

This repressed fear is extremely destructive. A man may not show it by word of act; he may be totally ignorant of the fact that he has it; but it is there, nevertheless, and an analysis of the subconscious mind will reveal its presence.

In view of these facts, then, let us seek to explain the genesis of shell shock.

The following is quoted from the valuable treatise of Smith and Pear:

> The suppression of fear and other strong emotions is not demanded only of men in the trenches. It is constantly expected in ordinary society. But the experience of the war has brought two facts prominently before us. First, before this epoch of trench warfare, very few people have been called upon to suppress fear continually for a very long period of time. Secondly, men feel fear in different ways and in very various degrees.
>
> The first fact accounts for the collapse, under the long-continued strain of trench warfare, of men who have repeatedly shown themselves to be brave and trustworthy. They may have intense emotions, obviously not of fear alone, for a long time without displaying any signs of them. But suppression of emotion is a very exhausting process. As Bacon says, "We know diseases of stoppings and suffocations are the most dangerous in the body; it is not much otherwise in the mind."
>
> Other emotional states, however, besides fear, arise and require suppression. The tendency to feel sympathetic pain or distress at harrowing sights or sounds, disgust or nausea at the happenings in the trenches, the "jumpy" tension in face of unknown dangers such as mines — all these, like fear, are or have been

biologically useful under natural conditions, and, like it, are deeply and innately rooted in man. But the unnatural conditions of modern warfare make it necessary that they shall be held in check for extraordinarily long periods of time.

Now let us see if we cannot trace the actual causes which, residing in the structure of man, moral and physical, lead ultimately to shell shock.

Under the unnatural methods of modern warfare, long periods of tension, of waiting, are required of the men in the trenches, under fire, expecting an attack, never knowing at what moment, and how, the enemy is about to strike. The primitive vent to these feelings — fight, attack — is forbidden the soldier. He must wait in a trench for hours, days, and even weeks at a time, without even seeing the enemy, yet always knowing that the enemy is there. He is in the midst of extraordinary and harrowing sights, sounds, smells, and scenes. He is constantly repressing his fears, his emotions, all his natural feelings. Day and night, for weeks together, he gets insufficient sleep and rest, and perhaps an insufficient supply of food and water.

A man's anger cannot be intensely directed, night and day, against a trench full of unseen men in the same way that it can be provoked by an attack upon him by an individual. And frequently the assaults made upon him are wholly impersonal, undiscriminating, and unpredictable, as in the case of heavy shelling. The one natural way is forbidden him in which he might give vent to his pent-up emotion — by rushing out and charging the enemy. He is thus attacked from within and without. The noise of the bursting shells, the premonitory sounds of approaching missiles during exciting periods of waiting, and the sight of those injured in his vicinity when he

cannot help them — all these things assail him while at the same time he may be fighting desperately with himself.

Finally, he may collapse when a shell bursts near him, though he need not necessarily have been injured by actual contact with particles of the bursting missile, by earth thrown up by its impact, or by gases emanating from its explosion. He may or may not be rendered unconscious at the time. He is removed from the trenches unconscious, or in a dazed or delirious condition, with twitchings, tremblings, or absence of muscular power.

It will be seen that upon this view of the facts the bursting shell is but the final straw which broke the camel's back. The predisposing causes which had been running along in the individual, gathering power with their acceleration and accretion, like a mighty river, have finally burst the dam; and prostration — utter and complete, mental, moral, and physical, and more or less durable — is the result.

To the reader unacquainted with the progress of modern psychology, it may at first sight appear incredible that the physical symptoms noted can be due to this simple cause. Mental and moral effects — yes; but hardly the physical! Let us see.

An idea, a thought, an image in the mind, can almost instantly make a man as strong as a lion or as weak as a kitten, according to the nature of the stimulus. Men have been known to drop dead from reading a telegram. Fear has killed many a man — and many a woman! If modern psychology has proved anything, it has proved what is commonly known as the influence of the mind over the body. It has also shown us, of late years, that hysteria, psychasthenia, neurasthenia, and the like, are

all due to subconscious fears and emotions, repressed or unperceived; and that the way to cure these states is to uncover the unconscious, discover the cause, and remove it. When this has been done, the patient is well.

Dr. Cannon has recently shown us, in his valuable book, *Bodily Changes in Pain, Hunger, Fear, and Rage,* how great these influences are, and to what an extraordinary extent the emotions affect the body. One might almost say that there is no limit to their influence — for evil, and possibly for good also.

The symptoms of shell shock have already been described. Many of its victims, when they come to and realize their condition, think that they have become insane. Many doctors thought so, too, at the beginning of the war; but now we know better. We have learned that the majority of such cases are curable.

It is at this point that modern psychology steps in; and it is here that some of the best work in the war has been done. The diagnosis and cure of such cases is a remarkable achievement; but it has been successfully accomplished in many thousands of instances. As I emphasized in my *Psychical Phenomena and the War:* —

> A gigantic psychological experiment is being undertaken in Europe. As never before certain psychological and psychical phenomena present themselves for investigation and solution; and these should assuredly be studied with as much care and exactitude as the wounds, injuries, and pathological disturbances due to bodily injury are being studied by physicians and surgeons now at the front. For, in the present conflict, surgery of the soul is no less a reality than surgery of the body; and such an opportunity for gathering valuable psychological and psychical data may not again present itself for many generations.

Fortunately, this opportunity has been seized, at least

in part; and our modern cure of shell shock is the result of this painstaking and minute investigation.

We know now that in order to remove the troublesome complexes which are disturbing the patient's mind, it is necessary to uncover them. When once they are uncovered, and when the patient can see for himself what is troubling him — can see the facts as they really are — he is already partially — in some cases totally — cured. It is therefore the object of the practitioner to uncover the offending complex, to explain to the patient the cause of his suffering; and then to begin a rigid system of psychological re-education, by which the patient's mind is made over in much the same way that his body is made over by surgical treatment and prolonged nursing.

One of the great curative agents which has been utilized in this war to great practical advantage is hypnotism. The value of hypnosis has now been fully demonstrated by practical experimentation; and it has been shown to be of tremendous practical importance as a means for curing the mentally sick.

Psychoanalysis, also, has been of inestimable value, as a means of exploring the subconscious mind and discovering the basic trouble; while psychological re-education has been found to be the best possible method of cure — all other agencies, such as diet, exercise, electricity, hydrotherapy, and so forth — proving but useful adjuncts to this central and supremely important method. It is hardly necessary to say that rest and sleep are of the utmost importance in such cases, as in all others involving a disturbance of the central nervous system and of the mind.

Describing the treatment in these shell-shock cases, a

physician at one of the London army hospitals stated recently:

> The patient is seated in a chair, and is brought by the operator into a slight degree of hypnosis in the ordinary way. He is told to clear his mind of all other thoughts and to concentrate on the single subject of his cure. If, as often happens, his vision is affected, he is told quietly and firmly by the operator that the defect has been cured, and that once again he can see clearly. In some cases a single séance is enough; in others, the treatment may have to be repeated several times. In practically all cases, however, great improvement, if not a complete cure, has eventually resulted.

It should be noted, however, that simple hypnosis has now been supplemented, in the majority of cases, by other methods. Psychoanalysis has revealed the underlying factors at work, and psychological re-education has given us the rational basis of cure. Further, we now know that the susceptibility to shell shock differs greatly in differing individuals; and that a lower degree of susceptibility is due not to tougher bodies or steadier nerves, but to emotional states and disturbances, latent in the sufferer, and perhaps going back for years.

It was long ago pointed out that civilized men seemed to withstand shell-fire better than natives of semi-civilized countries; but the cause was not understood. We can now see why it should be so. We can also understand the rationale of most of the so-called miraculous cures — of which there have been many. All this is readily intelligible in the light of the newer psychology.

It is unnecessary here to enter into the technique of the processes involved in psychoanalysis and psychological re-education. Scores of competent physicians and psychologists are now administering to the mental health of

our soldiers, and treating cases of shell shock as the patients return from the front.

One practical side of this question should be brought out, however, and emphasized very strongly — the necessity of impressing the "shocked" soldier, when he regains his consciousness, and finds himself physically and mentally disabled, that *he is not insane, and in no danger of becoming so.* If this fact is not constantly impressed upon him, and the true nature of his case pointed out to him — that he is merely a sick man, calling for treatment, like any other — he is liable to become mentally affected. Many cases are on record in which this unfortunate state of affairs has come about through ignorance on the part of the patient's attendants and relatives.

Reasoning from false premises, the man suffering from shell shock arrives at false conclusions; but it should be pointed out and insisted upon that his reasoning is perfectly logical and sound; only his premises are false. Show this to him, and his own reasoning faculties will lead him to correct and logical conclusions.

The important practical points to bear in mind are, therefore, these:

That the soldier should understand the nature of shell shock, to some extent, before entering battle, so that its symptoms and manifestations may be more or less familar to him.

He should be made to realize that he is not insane, not mad, or anything like it, when he recovers consciousness in the hospital; that his troubles are all purely functional in character, and therefore *curable;* that they are dependent upon his prior emotional stresses, and that the shock itself is, as has already been said, merely the last straw which broke the camel's back.

He should be sympathetically treated, and re-educated, from the psychological point of view, immediately upon his return to consciousness; and special care should be taken to remove from his mind all doubts, fears, and worries. Sympathy, understanding, and reassurance may be said to be the three graces required of the attendant in cases of shell shock.

One word more. Shell shock — or "war strain," which is virtually the same thing — has been shown to involve no essentially new disorders. Every one of the symptoms was known beforehand in civil life. If by any stretch of the imagination we could speak of a specific variety of disease called shell shock, it would be new only in its unusually great number of ingredients; and the most gratifying truth of all is that even this hydra-headed monster, if caught young, can be destroyed.

Shell shock, therefore, is a curable illness; and in the vast majority of cases, if properly treated, can be cured readily and effectually. We should at least find great consolation in that fact; and we may well marvel at the penetrative insight and scientific skill which have rendered such treatment and such cures possible.

CHAPTER XIV

ON "OBSESSION"

THE word "obsession" has a very different meaning for the psychiatrist and for the spiritualist. For the former, it means any persistent, dominating thought which invades and conquers the mind of the subject to such an extent that he is no longer able to withstand it; it subjugates and masters him, and perhaps colours his whole life. To the spiritualist, on the other hand, the word implies the usurpation of the subject's body and brain by a foreign intelligence — a "spirit"— which has temporarily displaced the subject's own spirit, and entered into the unfortunate individual, there to take up its possession, until driven out,— like the demons in the swine, in the New Testament narrative. (See Fig. 22.)

Which of these interpretations is correct? There can be no doubt whatever that, in the vast majority of cases, the former is correct: The only question is, Are there *any* cases which this explanation does not cover? Are there any cases of genuine "spirit obsession," in the spiritualist's meaning of the term? The average student of abnormal psychology would unhesitatingly reply in the negative; for him there is no truth in the claims of the spiritualist — such cases representing merely the wanderings of an unbalanced mind, coloured by tradition and belief, attributing to foreign entities psychological phenomena which, in truth, reside in the individual's own subconscious mind. To the extent to which the patient believes in the truth of his "obsessing spirit" is he un-

balanced — insane! Such would be the attitude of the average psychiatrist.

And yet the facts sometimes give us pause! These "obsessing entities" sometimes give us startling proof of their own objective existence; they tell us facts which the subject himself did not know, but which are afterwards verified. They give us signs of personal identity, of having a character, a life, a personality of their own, quite different from the subject himself, but which bear all the ear-marks of belonging to some one else altogether. There is much actual evidence that, in some cases, at least,— genuine "obsession" of the spiritualist's variety *is* a fact; and this evidence so impressed a thinker of Professor William James's care and erudition, that he was compelled to write, regarding it: —

"The refusal of modern 'enlightenment' to treat 'possession' as a hypothesis to be spoken of as even possible, in spite of the massive human tradition based on concrete experience in its favour, has always seemed to me a curious example of the power of fashion in things scientific. That the demon-theory (not necessarily a devil-theory) will have its innings again is to my mind absolutely certain. One has to be 'scientific' indeed, to be blind and ignorant enough to suspect no such possibility." (*Proceedings* S. P. R., Vol. XXIII., p. 118.)

And more recently, Professor J. H. Hyslop, in his *Life After Death* (pp. 305-6) says: —

"I have asserted that the explanation of this case is obsession, spirit or demoniac obsession, as it was called in the New Testament. *Before accepting such a doctrine, I fought against it for ten years after I was convinced that survival after death was proved.* But the several cases referred to above forced upon me the considera-

tion of the question, and the present instance only confirms overwhelmingly the hypothesis suggested by other experiences."

The " case " referred to is the following, thus summed up by Dr. Hyslop: —

" . . . Here is a case of dissociation caused by a parent's brutal act that results in a form of multiple personality which the physicians regard as incurable and certain to terminate in the insane asylum and death. It was variously diagnosed as paranoia and dementia precox, but under the patience and care of a clergyman was cured, and the girl made a perfectly healthy person, capable of carrying on a large poultry business, and serving as vice-president of a poultry association in the county where she lived, presiding over its meetings with intelligence and coolness. Then when she was cured, experiments with a psychic appear to show that it was a case of spirit obsession, with the identity of the parties affecting her proved. Mediumship begins its development as a means of preventing the recurrence of the evil obsession. This mediumship proceeds along with a normal and healthy life."

And speaking of the consequencs of such a belief, this author further says: —

" The chief interest in such cases is their revolutionary effect in the field of medicine. It is probable that thousands of cases diagnosed as paranoia would yield to this sort of investigation and treatment. It is high time for the medical world to wake up and learn something." (P. 308.)

Some very striking cases of this character — in which the obsessing entities gave remarkable evidence of their own independent existence — are to be found in Mr. J. Godfrey Raupert's books: *The Dangers of Spiritual-*

FIG. 22

"OBSESSED!"

ism, Modern Spiritism, and *The Supreme Problem;* as well as in Dr. Peebles' *Spirit Obsessions: The Demonism of the Ages.* A unique discussion of the subject is to be found in Dr. C. H. Carson's pamphlet on "Obsession"; while some very striking cases, presenting all the external evidences of the historic phenomena, have come under my own observation. Dr. Carl Wickland has an Institution, in Los Angeles, Cal., in which are cured scores of "obsessed" patients every year,— by treating them along regular spiritualistic lines; while a number of our modern writers and investigators are coming to the conclusion that genuine spiritual "obsession" is indeed a fact.

In the "Course of Instruction in Psychic Development" (Lesson 32) are to be found a number of valuable suggestions as to methods for prevention and treatment of Obsession. One of the most useful of these, doubtless, consists in inducing the patient to live 'outside his head'— that is, never to be introspective, and to live in the practical, objective things of life, without ever turning the attention inwards, in order to listen to "voices," or to attend to what is going on inside the head. Another very important factor is to persuade the patient to disregard and disbelieve what the "voices" may tell him. Once he grasps the fact that only evil can result from paying attention to,— or following the directions of,— these voices, he is on the high road to recovery. In addition to all this, properly trained mediums can often assist greatly in ridding the subject of the obsessing influence, by methods well understood by experienced spiritualists or advanced psychic students.

It is evident, from what has been said, therefore, that spiritual "obsession" is at least a possibility which mod-

ern science can no longer disregard; while there are many striking facts in its support. This being so, its study becomes imperative — not only from the academic viewpoint, but also because of the fact that hundreds and perhaps thousands of individuals are at the present moment suffering in this manner, and their relief demands some immediate investigation and cure. Once grant the theoretical possibility of actual obsession, and a whole vast field of research and investigation is opened up before us, which demands all the care, skill and patience which modern enlightenment and psychological understanding can furnish.

The whole theory becomes more intelligible to us if we once grant that our brains are but *instruments*, utilized for the time being by our own life and consciousness, and that we merely *manipulate* this organism of ours, through the exercise of some sort of *telurgy* (psychic energy), which we employ to govern and control the nervous mechanism of the brain and body. On such a theory, we are all obsessing entities!— for we thus take "possession" of our own brains and bodies — and foreign obsession would be no more difficult to understand than how spirit affects matter at all. It would be simply another aspect of the fundamental problem. Viewed in this light, foreign obsession or possession becomes far more understandable, and there would no longer be any valid *á priori* objection to its possibility — the objection being only valid if we regard consciousness from the materialistic point of view — as being a product of the functioning or activity of the brain.

. . . . . .

The following treatise on obsession is a translation of an obscure French pamphlet on the subject, and contains

much sound advice, which will be most appreciated by those who have had some personal experience in this field. It is the product of "automatic writing," and claims to treat the subject of obsession from the "spirit's" point-of-view. That is, we have here a work by a "spirit," on the subject of spirit possession; and, from any standpoint, can hardly fail to be of interest. While, then, I must not be understood as endorsing all that is here said, I present it as a valuable psychological document — and, in view of the possibility of genuine obsession, it should, I think, be taken seriously. The advice it contains is at least sound and wholesome. With this disclaimer, therefore, I present it to the reader as originally published. We might call it —

A TREATISE ON OBSESSION

(Translated from the French)

The following treatise on obsession, which we[1] are about to offer to you, will serve to show you its different degrees and its consequences. First, let us analyse its beginning — *Thought.*

A certain particular and unceasing thought will strike the brain of a person: he admits it without knowing what it means and without even understanding it; he accustoms his mind to this: he does not criticize or judge it, and he does not even analyse it. *This failure to do so, this fault, is the open door to all obsession.* The want of analysis draws to you malevolent spirits of the past, who desire again to assimilate themselves with your mind, and, profiting by your ignorance, they find a means of avenging themselves. They take you back to the very cradle,

[1] *We, i.e.,* the communicating "spirits" or entities.

for in the state of infancy one is weak and still without judgment; they make you their toy, their prey; in a word they become part of you through the very inspiration which you take as being your very own. Thus, your judgment cannot guide you, for it is deformed through the wrong that you have done in the past, and through the intuition of this same evil with which this spirit is saturated, and with which they continue to saturate you.

But then *you?* What about the thought we had of repairing our past by reincarnating once more? Is that not a safeguard for us? No! especially if our mind is not sufficiently fortified through the search for good.

Your re-birth finds you weak in your power of *willing;* you are accordingly *not* free because you are still enchained to the past through evil, and your spirit is influenced once more to yield and to fall, and it is here we find the very first beginning of obsession.

The beings that are riveted to you through a common wrong in the past, or yet again, through personal vengeance, have created for you an obstacle, or obstacles, for you may not have wronged a single being! You are born today to be used by them later. They remain on the other side with knowledge of the invisible forces and powers. You are to them a little child, an easy prey for them to devour, and, in consequence, easy to obsess, to possess, to subjugate, to fascinate; in a word you are born into this world to a life of battle.

Obsession is a useful thing. It teaches one the road that one should follow. Good will conduct you to joys, which in the course of time will become eternal. Evil will lead you to suffering, which will remind you that you ought not to turn away from the road which was shown to you.

Today, if you are in agony and suffering, learn, my brothers and sisters, to *analyse yourselves better;* you can only better yourselves and your conditions by observing yourselves.

When you have around you antagonistic spirits, it is better to help and to love them; and in doing such an act of charity and love, you prove to them that patience and perseverance are real and living qualities.

What causes Obsession? You have been told many times. *It is the want of analysis of your thoughts, and the want of observing your acts.* It is the ease with which you receive, without seeking to discern, the utterances which are contrary to Divine Will.

You carry out what you have heard or perceived without conceiving for a moment that these thoughts are not your own. The assimilation being complete, you have in a sense paralysed your spirit; one or the other of those around you have annulled your thought; you act as it were involuntarily,— under compulsion,— moved by an invisible force. *What have you done with your spirit?* You have simply abandoned it to impressions and impulses which it may receive; your spirit has now lost its free will; it will act henceforth mechanically.

We can recognize an "Obsessed One" by his or her aberrations; his continual inveterate habits, or his continual return to what he has done; in a word, by the repetition of his ideas. He will become fearful, sometimes shamefully timid; he never knows whether he has done right or wrong. His state of hesitation will make him an object of ridicule without ceasing. You will see him gay; soon he will be sad; his movements those of an automatist, he will be mechanical in all he does. He will love society intensely for one minute and then he will

hate it. Everything he has to do will seem painful to him; he will be embarrassed; deprived of his good sense; absurdities will be true to him; he will become exaggerated in his acts; he will lose all caution and judgment; and in a moment you will recognize him through his foolish exaggeration as being a demented creature.

Why do we see so many disorders in one being? Because this being has lost his uprightness and integrity in thought and action. The result for him is mental aberration.

Unfortunately, obsession is often the cause of great difficulties.

No one on earth can understand these difficulties, for the world is ignorant of many things.

We cannot hope either to learn or know, so long as we do not study ourselves. To have a presentiment of a thing, we must see the danger; the study of self will show it to you, but study is very necessary.

I will not say, for fear of awakening the susceptibilities of my readers, that upon many points they act like beasts,— which are unconscious of what they become,— because a beast is a beast. It possesses no responsibility. It is not the same for you; you have a destiny which is laid out for you; it is that of evolving and evolving without ceasing; learning and knowing.

Such is the program for the spiritual life.

What are you doing on this earth? Oh! Nothing! for the little you do is mechanical and unconscious. Nevertheless, you are submitted to a law which rules the Universe, and this law regulates other laws inferior to it. There we enter into the world of matter. Let us begin with the law that directs and guides us. Do you know it? No! Nevertheless, everything around you re-

volves and journeys on; all things evolve and strive to follow the current. Are you choosing to remain in the rear?

No, indeed! Let us learn and study. Let us take man for a beginning; he studies principally all that is useful to him in the material world,— although he knows that it is not eternal in this world, he knows also that he must leave it one day in order to rest — *Where?* He does not know! Why does he not know and why does he not ask? Because exactly here begins for him the barriers laid across by his brothers, for they want him to remain ignorant.

Let us learn, then, the method of overcoming what we call a barrier of ignorance, by understanding that all things must be retrieved, must be amended.

What are you doing each day to raise yourself? You eat, you strengthen and comfort your body, without occupying your mental or spiritual life, which is also hungry, by finding suitable nourishment for its fluidic element.

What can you give your spirit for nourishment? Prayer and study!

What study?

The knowledge of yourself! What is it? What is it called upon to become, and what ought it to do? Each of us is able to observe that, in the environment of human beings, there is always a *this* or a *that,* which calls a thing into being. These things are prepared by the Spirits,— even by those who wish to obsess you. They know your tastes, and will even create what is contrary to themselves in order to satisfy you. You will curse, you will storm within yourself; but, at first silently, then openly, you will premeditate cruelties in your heart against those who

restrain you, without ever dreaming how you were inspired by them to do so. They will ripen these thoughts, and they will make them take birth again,— suggesting that they are the ones which overwhelm you.

Your soul will hate, you heart will be a disgrace to bow down to.

Now, you will guard and carefully nourish these thoughts, and in order for you to stoop to them by carrying out their purpose, they will cause the necessary circumstances to be born for that purpose. Your soul has not acted of itself, but, indeed, it has been influenced by other beings. Its wrong has been in accepting these thoughts without analysing them. By its own fault, your soul will grow enslaved; they will become its masters. You will act like a veritable coward. You will think every day, but you will never know whether it be *you* who is thinking, or your obsessor,— for he will have taken complete lodgement.

Nevertheless, we ought to tell you that a strange spirit cannot *completely* take possession of you,— for he has refused incarnation, and he cannot.

Oh! You say, we ought to know and recognize ourselves and know the difference between our thoughts and theirs?

No! My friends, they have made you do good, and do evil. Good, so they will be fed by your thoughts; they will have falsified them without you ever being aware of it. It would not have been the same even if you had done only good. Evil, for its own sake.

It is your turn now to know what causes others to recognize obsession, with all its abominable cruelty. For you also have been in the past an obsessor yourself!

Cases of obsession are light or firmly rooted in pro-

portion to the time, and to the importance of the obsession. If you have for 20, 30 or 40 years yielded to this spirit which has been able to penetrate you, you are its object completely; you act through it, and in a word you act under impulses, which, to you, are strange.

What have you done? I ask you, what have you done with your thoughts? "I don't know," you say.

Listen — I will tell you, my friends. You have let them sleep an indefinite time. The proof for you is here; you will bear the pain in all its greatness; for the world, you will be a maniac; for science even you are defective. In a word, you are a living automaton in the body; but your spirit will be dead for the material life; it will no longer have healthy reason. What have you done? I have told you before. You have absolutely never analysed your thoughts,— such has been your case and your fault. Why have you accepted this so easily?

Why?

But according to you, you have done no wrong.

Ah! Well, my friends, you have been almost deaf to good thoughts,— since they have ceased to penetrate your inspirations. The Spirit of good never obsesses. It gives thoughts of good deeds which can save you once, twice, thrice,— and then they will fly by you, they will leave you to your obstinacy.

That is what your soul has done. It has not been strong enough to defend itself from passing evil; and in this life you have deformed your judgment. The proof is that you suffer and will suffer; but your spirit will awaken more strong than it ever was, for suffering will have drawn out of you this feebleness, and suffering will have formed your judgment.

It is not the same when the spirit enters into its first

obsession, for in the case of simple obsession, the differences in the effervescence of thoughts which have struck your brain can be modified. You say, "Why?" Because the thoughts which have been pounded into your brain are there in a latent condition, and they wait for a propitious moment to be fertilized. Here is the grain to be germinated.

Also, with a refinement of malevolence, which they take care to nourish, they cultivate these germs. But if they have this power over you, it is because your spirit is imperfect, and easily accepts all imperfect thoughts. They revive in you failings so that they can sink deeper into your being than ever before. They will profit by the very first occasion possible to make you think you have executed voluntarily an action which was prepared beforehand by them in your brain. They are very patient, and when matters arrive at this point, then they are your masters. There, the battle rages violently in your soul. Sometimes it is almost rent asunder as when it feels dragged along in spite of itself, towards a suicidal climax, and there is the time when the conscience is awakened!

I said, "In spite of itself." Nevertheless, the soul itself has greatly contributed thereto. Why does it feed itself with thoughts contrary to divine law? It still had the power to discern evil from good; all was not stifled and smothered in it; it was born in a material world, and it possessed all the spiritual force which it had gained in the life of spirit. Its necessary resolves for reparation were new and were imperative to be carried out. For the evil which handles beings is simply the reflection of their past lives.

Healthy thoughts, true thoughts, right thoughts, can

alone guarantee you this return; but alas! reparation is hell, and in spite of all you cannot pass from evil to good without occasional stumbles. It is in these disastrous downfalls and continuous uprisings that the soul grows stronger. Regret wraps closely round it, and remorse makes it realize the reality of its shortcomings. Your soul is again fed and nourished by these thoughts; it realizes its littleness, indeed its baseness. Remorse gives birth to regret and grief, and surely the sorrowful regret of a brother on earth makes a powerful appeal in space. It unconsciously reaches and draws to itself beings who have power to sustain him. This call — powerful but unconscious — gives force to your soul. It will be sustained by this support, but yet being feeble it will fall again; it may become the prey of obsessors.

What harmful elements there are in the human being! These elements are composed of all the vices which we have let develop within us. Pride,— the most dangerous principle of all, — draws to you the most horrible spirits. Why is one proud? Let us see what you are. You are downfallen beings, in a condition of reparation. Have you any right to set your haughtiness up above your brothers who, like you, are in a state of reparation? You will draw to yourself their hatred. They will be dangerous to you one day, for you are the kind to attract to you haughty spirits. They will close your eyes to your own shortcomings, and will open them to see too clearly those of your brethren. If evil has reached the climax so long desired by these spirits, they will again mirror the thought of Superiority upon your mind, and from now on the aberration will follow its course. This continued thought entering your brain will develop until it fascinates you. Absurdities will now

show themselves in word and in action. What will you be now as a member of society? You will be a demented being, progressing towards complete insanity. Your thought of pride will no longer have any limits; ambition will seize you, and you will henceforth be a poor obsessed creature, no longer master over yourself. When obsession has arrived at this stage, there is nothing left of personal suffering, humiliation and shame of self, to bring you back to yourself. Pride is the fault which furnishes spirits with the very means of overwhelming you. They have found in it the *point de repere* in which to develop in you a device which flatters you and sets you up on high. And once in their clutches, they make you a king or queen, and mental aberration is now in its fulness.

But alas, though this fault is the cardinal sin, one must add others:

Sensuality, beastliness, lead you, poor creature, to disaster, and destroy in you both the moral and physical being. It is no longer *you* who act, it is the poor spirits from the other side, which are going to give rise in you once more to the vices of the past, with rejoicing at the thought of utterly destroying in you all traces of morality.

It is the same with hate as with pride. All faults are exaggerated by this kind of obsession. When the obsessor has permeated you with a vice, or whatever it may be, he does not desire you to be isolated or to absorb it in silence; he wishes to satiate his hatred and make you an accomplice in his wickedness, attaching himself more grossly to you, so that the example of your disorder may communicate to your brothers the vices with which he is saturated. He knows quite well that he will have to atone for all this, but in this manner he will have satiated

himself with hate towards all humanity, even towards God himself. He does not take into account the fact that he himself is obsessed, in his spirit state, by a spirit even more horrible than himself.

But if one has already done wrong, how is one to avoid it in future? My friends, the knowledge and practice of the laws of God can alone preserve you. Do good, and avoid evil.

The aggravation of obsession increases from day to day; more and more, just in proportion to the degree in which the self, or will, has abandoned itself to the inspirations which have been given it,— foreign as they are to the soul. Not suddenly, however, since it does them consciously. If his spirit is truly perverted, he will feel drawn of himself to the point of unconsciousness, through the careless ease with which he defends an importunate thought.

Arrived at this point, he truly suffers, his soul is oppressed; the trial is in its maturity. What is the unfoldment of all this? The yielding of the unfortunate one. He does it oftener than not. He is like a little child before a sin; he will play with it, as with a dangerous weapon; he will laugh at his aberrations; he will be full of courage; he will see no danger; he will play with the appearances of foolishness, believing himself very wise.

A moment ago we spoke of hate and pride; but all imperfections, my brothers, carry with them their responsibilities, and your obsessions develop themselves in you with a cruelty that none of you on earth can dream of, for you do not know the importance and consequences of the failure in obeying the law; and in consequence you do not conceive of the extended penalty. You do not

know that they will cause sufferings without number, for the development of your failings and actions are in each life; and you have to destroy one by one the faults of pride, hate, etc., before regaining the life of light and reason. I have said, "*all* faults lead to obsession." I have spoken of two principles, pride and hate. I will speak now of a third, sensuality.

What is this sensuality? It is a need which is unconsciously born in the child. I said, unconsciously; for it finds activity under an impulse which is as it were strange, the touches of sex shown in little children. It knows nothing of life, but it has once known a preceding life. Hateful, malicious spirits, wishing to satisfy their hatred, use all means to satisfy themselves; a horizon opens before them. They know that one day the children will see and hear them, and receive impressions; for they know the fluidic force of thought. . . .

You ask: What is this spiritual force which influences little children, and the obsessed? This fluid is thought, good or bad, which moves as you do, in the direction of good or ill. Yes, but it does not possess the same elements of penetration, for it is ignorant, or better still, it is forgotten; and that is desired by God, for every one on earth has possession of his free-will. But the very bad spirits enveloped by spirits more bad than themselves inspire them to work on their companions, indicating the means of so doing, helping them to conquer the difficulties of matter which can only be penetrated by companions having knowledge of the fluidic force of thought.

When a soul is thus surrounded, it yields to the horrible; it yields to bestiality, to the development of this vice, and then there is danger for reason and health.

When the case of obsession has arrived at the point of

cruelty, so as to drive the poor being to the state of destroying himself, it would be wise to employ a clairvoyant, who could warn the family of any imminent danger, or who will say that such a danger might in truth happen. The obsessed being follows all impulses, whether good or bad, wise or foolish — in a word, he no longer belongs to himself. He will throw himself into the water, or under a train, with the most perfect calmness and assurance; he obeys what is told him, as though it came from his own mind. He goes to the water, the river, the fire, anywhere, where the impulse directs him. Thus, he has lost all reason, all prudence. He no longer belongs to himself; charitable souls should save him from danger showing him clearly what he is ignorant of; namely, *the force of the invisible.*

In order to recognize it, we must know it. *Learn to respect and love yourself. Learn to know the force of the invisible;* to know the responsibilities incumbent upon you, owing to your preceding lives, and believe that this present life will be quickly past, and that you have the weight and responsibility of all your acts and thoughts.

Do you know yourself? *Analyse yourself!* When you make this effort, and take righteousness and truth for your guide, you will lessen your sufferings in this life — sufferings which nevertheless have taught you the way to love and make perfect your own self.

CHAPTER XV

THE TALKING HORSES OF ELBERFELD [1]

SOME of the most remarkable and significant experiments ever conducted with animals are those which were carried out some years ago in Germany, with various horses, and serve to throw a flood of light upon the whole much-disputed question of animal psychology. Prof. Claparède, in fact, a well-known Swiss psychologist of excellent standing — has declared that these experiments constitute "the most sensational event which has ever appeared in the field of animal psychology — perhaps, indeed, in the whole realm of psychology."

Prof. Ernst Haeckel, after an investigation of the facts in the case, wrote to Mr. Krall, the owner of the horses in question:

"Your careful and critical researches show in a convincing manner the existence of reason in the animals — which for me has never been a subject for doubt."

While this may be very true on general principles — while many would be willing to admit that the mind of man and that of the horse differ in degree, not in kind; still, there is a vast difference between admitting this, as a theoretical possibility, and in admitting that horses can learn to add, subtract, multiply and divide; to abstract square and cube roots; to spell names, and even learn to speak in a foreign language! These are facts diffi-

[1] The investigations described in this article were all made before the outbreak of the European war — though the detailed reports were only rendered later. Hence the references to French and Italian scientists, etc., visiting German cities. The interest in the facts is still legitimate — even though they were German horses!

cult to believe — yet they have been vouched for by a number of eminent savants who have witnessed the facts, who have travelled many hundreds of miles to see the famous horses, and who, after seeing them, have come away perfectly convinced of the reality of the manifestations. Among those who testified to the reality of the facts were Dr. Edinger, the eminent neurologist of Frankfort; Dr. H. Kræmer and Dr. H. E. Zeigler, of Stuttgart; Dr. Paul Sarasin, of Bâle; Prof. Ostwald, of Berlin; Prof. A. Beredka, of the Pasteur Institute, Paris; Prof. E. Claparède, of the University of Geneva; Prof. Schoeller and Dr. Gehrke, of Berlin; Prof. Goldstein, of Darmstadt; Dr. William Mackenzie, of Geneva; Dr. R. Assagioli, of Florence; Dr. Hartkopf, of Coln; Dr. Freudenburg, of Brussels; Dr. Ferrari, of the University of Bologna — and many others. All these gentlemen, after the most careful and scientific examination of the facts, came away convinced of their reality, and openly stated their belief in various quarters.

In brief, the history of this remarkable case is as follows: In 1890, William von Osten, a retired merchant, being convinced that horses had more intelligence than ordinarily attributed to them, began to train his horse "Hans." The results were striking, though not enough to make him famous — the horse dying a few years later. He bought another horse, however, also named Hans, and trained this horse to a remarkable degree of astuteness. The papers took up the case, and three Committees, one after the other, investigated — all of them testifying, in turn, to the reality of the facts. Von Osten died in 1909, at the age of 61, and his horses passed into the possession of Mr. Krall — also a rich and retired merchant, having a good reputation in his

community. He is the promoter of the new Society for Zoological experiments, and a man of scientific attainments. He not only continued the education of Hans, but procured two more horses, "Muhamed" and "Zarif," which he also trained in a remarkably short time to perform even more wonderful feats than Hans. Since then, he has taught several other horses, including one totally blind horse — to perform elaborate calculations — the period of training only lasting a few weeks. Indeed, at the end of ten or twelve days, the animal had learned to perform simple feats of addition and subtraction, while at the end of six months he was extracting square and cube roots! The method of training the animals was the following:

From one and one-half to two hours each day are taken for the lessons. The animal is stood in front of a large blackboard, on which the letters, figures, etc., are written. These are pointed to by means of a short rod. A flat board is placed in front of the horse, on which he stands with his two front hoofs, and on this board the answers are rapped-out by means of blows of the hoof. The figures from 1 to 9 are first learned; then the combinations of two figures. These latter are struck with the left foot, the right being reserved for units. In this manner a long response can be given in a very short space of time. On the 14th of November, 13 days after the first lesson, Muhamed correctly executed a series of simple additions, 1 + 3, 2 + 5, etc., and even subtractions, 8 — 3, etc. (This is more rapid than the average child learns to figure!)

On the 18th of November, four days later, he passed to multiplication and division; and seven days later to frac-

tions and the addition of fractions. In December he learned French and replied also to arithmetical questions, given either in French or German. By the following May, five months later, Muhamed could abstract square roots, cube roots and execute little sums such as the following:

$$\frac{(3 \times 4) + \sqrt{36}}{3} + \frac{\sqrt{36} \times \sqrt{64}}{4}$$

In February, 1909, he commenced spelling. This spelling is performed by means of a conventional alphabet, where each letter is represented by a number between 11 and 66. The horse spells by rapping with his hoof the corresponding number of letters desired. This procedure permitted Zarif, at the end of four months, to spell out words which were pronounced in his presence, and which he had never seen written. When such a word is pronounced in his presence, he pricks his ears, and then begins spelling out the word, usually phonetically, trying to devise letters to suit the sound of the name. Thus, when Prof. Claparède gave his name, the horse spelled out Klapard — a very good imitation of the true pronunciation, if said rapidly.

Another thing which shows that the horses spell phonetically is that they often omit the vowels in words. In some of these cases, it almost appeared that the horse left out the missing letters purposely, in order to save time; for, when the animal was asked to re-spell the word, he did so, putting in the vowels in their proper places!

Before proceeding to the further marvels performed with these horses, let me break off, just here, to reply to

the criticism which is sure to be made, by certain omniscient critics; and that is that the whole performance is doubtless the result of clever fraud; the animals are taught to perform a few simple tricks — like the animals we see upon the public stage — and, if they stop rapping on the given cue, etc., that is all which is required in order to explain the whole case! A few such simple methods are the following:

It might be possible to train the horse to reply by a certain number of beats with its hoof when a certain word was pronounced — a spoken code. Or the horse might be trained to rap until it detected some slight movement on the part of his master — a signal code. Or the horse might be taught to rap-out certain numbers, when his master stood a certain distance from him — a distance code, etc. These and other explanations will doubtless be forthcoming by the professional "explainers" of mediumistic phenomena, and it may be as well to "nip them in the bud."

Needless to say, the scientific men who investigated the case were alive to all these possibilities, and amply guarded against them. In the first place, there is no logical ground for suspecting Mr. Krall, who would have nothing to gain by deceit. In the second place, in nearly all the experiments, Mr. Krall absented himself, leaving his horses entirely in the hands of the scientific committee, who had everything their own way, and who certainly had no code with the horse! With conscious trickery of any sort eliminated, the next theory was that the investigators unconsciously gave the indications themselves — but this explanation also was soon overcome. Blinkers were put on the horse, and the investigators stood so that it could not see them. Again, the experi-

ment was tried of placing the horse in a perfectly dark room, in which it could see nothing — with equal success. On several occasions, also, the questions were asked by means of a telephone — the receiver being attached to the horse's ear — the only persons present being those who did not know what was asked, and who merely wrote down what the horse rapped out, without any knowledge as to whether or not it was correct. Finally, the experiments succeeded with a perfectly blind horse. This eliminated all idea of unconscious signals. In most cases, the success was complete, and fully established the reality of the reasoning power of the animals.

Once convinced that no such simple explanation could cover the facts, their study became a question of great psychological interest. It was because of this that committee after committee visited Elberfeld — the home of the horses — and studied them at length. The amount of material which has appeared concerning these horses in the German papers has been very great, and fully indicates the great impression which they have made on the minds of scientists throughout Europe.

To return, however, to our enumeration of the facts.

One day Mr. Krall noticed that the horses were rapping, outside the lesson, and thought he would take down these raps, and see whether they would form connected sentences. To his great surprise he found that, while these were almost unintelligible, still they represented attempts at spelling, and greatly resembled the trials children make in first learning to spell.

On one occasion, Mr. Krall asked Zarif whether he would like some carrots. The horse replied *funf* — "five." Soon after this he spelled out a phonetic sentence, which read, "John, give me some oats!" On an-

other occasion, when Zarif was idle at the lesson, Muhamed was asked "Why is not Zarif nice and good?" to which he responded, "Because he is lazy!"

Such statements appear almost incredible, and would be *quite* so, were it not for the fact that these incidents have been vouched for by the many illustrious names before mentioned. For example Dr. Mackenzie writes:

"In the absence of Mr. Krall, we proposed the following problem, which we wrote upon a slate:

$$\sqrt{18769}$$

"We then placed this slate in front of Muhamed, and withdrew, leaving him alone. We observed him by means of small peepholes, and the horse gave the correct answer (137) in a few moments. This was also done during Prof. Claparède's second sitting with the horse. There is no doubt as to the facts."

The following is Dr. Claparède's account of the first demonstration given before the commission:

The demonstration took place in a sort of carriage house adjoining the lecture hall. Each horse was placed in a small stall facing a blackboard. We were seated behind the horses a little to the right and Krall was allowed to perform the exercises without any interruption whatever.

The demonstration commenced with a lesson by Amasis, one of the newer horses, who was at that time "in addition" as the children say at school. It was his fifth week of study.

There were placed before him three wooden pegs plus three pegs, a card bearing the sign plus separating the two groups of three. At the right of the ar-

rangement there was a card bearing a larger number 6. Mr. Krall counted aloud six times while the horse stamped his right foot with the counting.

Then the exercise was repeated on the blackboard. In place of the pegs bars were used (III + III = 6) and after that the figures 3 + 3 = 6. Each time Krall counted with the horse, who had evidently been through the exercise before for he showed no hesitation whatever.

Multiplication was next taken up; twice three. Krall explained, exactly as he would have to a class of children at school, that each of the series of three might be considered as a group, and that twice this group made six. It seemed as if the horse began to comprehend more and more for he pricked up his ears and seemed agitated.

It was then announced that the horse was to be taught decimals. Krall placed before him at the right of nine small red pegs, a blue peg larger than the others. Curiously enough, the pupil suddenly became quiet and gave the greatest attention. Krall explained to him without touching anything, that in order to express decimals he should stamp, not with the right foot, as for units, but with the left. The horse understood immediately and executed the order correctly. He was taught to count eleven and twelve, and to recognize these numbers in French as well as in German.

Amasis was in the second stage of the training, that of learning the control of movements adapted to expression. The first stage, Krall explained, was merely to tame the animal, to make him familiar with his master and to gain his attention mainly through the devices of caresses and carrots. The second stage was the most

difficult. Amasis was very attentive, but could not seem to control his movements and appeared conscious of the fact. The investigators present agreed that if the horse had any conception of number, it was developed at this stage and took the form of movement images. Zarif, who was next called for the demonstration, showed the results of longer training.

Mr. Krall showed us that his pupil understood French. He wrote on the board in phonetic spelling, fät sero (make zero). The horse immediately made with his head the sign of negation which signifies zero in his language. Then: komptë dis (count ten), and the horse stamped once with the left foot; correct.

Having written 34 on the board, Krall asked Zarif to read the number both ways; 34, 43 replied the horse. Then: multiply the two figures; 12 was the next answer; correct. Finally he asked the horse to square the larger of the two figures. This time Zarif made a mistake and replied 15 instead of 16.

Zwei und zwanzig (twenty-two) was then written on the board. Krall wrote, adire zu elf (add eleven to it); reply correct, 33. Add to that 31; reply correct, 53. Add 23 to the original figure; this time reply incorrect; 44 instead of 45. Told to correct, Zarif gave the reverse of 45, 54, and told to correct again, gave 45.

(Zarif is temperamentally somewhat different from the other horses and his strong point is not arithmetic. He had trouble with square root, says Dr. Claparède, and seemed conscious of his shortcomings.)

$\sqrt{25} + \sqrt{49} =$ was written on the board. The horses replied 24. Krall told him that it was not correct. He repeated 24. Again he was told that the answer was wrong. He showed signs of great embarrassment. He

lowered his head like a guilty schoolboy. Krall called his attention to all the people who were present and pointed out that professor — myself — who was taking down all his mistakes in a note book.

Then the horse began spontaneously to stamp. Krall noted on the blackboard the figures given, 14, 26, 23, 54, 13, 13, 32. Consulting the conventional alphabet, the corresponding word was found to be " schlprrd." What could that mean?

Krall declared that he did not understand. But it was not difficult to perceive an analogy between these letters and my name — Claparède — taking into account the principles of phonetic spelling which the horses had been taught to follow.

Mr. Krall assured me, however, that it was impossible for Zarif to have been able to spell my name for he did not know it. But on the afternoon of that same day, he told me that he remembered pronouncing my name on the morning before my arrival, to a third person before Zarif.

While there is no possible way of proving this fact, it impressed me as being extremely possible that the horse had attempted, quite spontaneously, to pronounce my name, wishing to indicate that it was I who, by taking notes, had embarrassed him.

To terminate this demonstration, which lasted about twenty minutes, Zarif went back to his problem in the multiplication of square roots and this time gave the correct reply, 35.

Mr. Krall declares that he does not go beyond the explanation of simple problems. He allows the horses to work out the more complex ones themselves without indicating the correct answers, so that the solving of problems is actual computation and not merely a matter of memory

and keen association. Krall says that he does not know by what methods the horses are able to extract roots beyond 144, the highest square which he has taught them.

The horse Muhamed is the mathematical genius of the troupe, says Dr. Claparède: —

He was much more active, much more wide awake, than Zarif. He might well be compared to those exceptionally bright children who are continually interrupted in their studies by caprices, by desire to play, to make jokes, to do just the opposite of what they are told to do. At times it seemed as if he gave the wrong answer, just for the fun of it, to vex his master.

After having politely presented the horse to me, Krall commenced immediately exercises in the extraction of roots, which is Muhamed's specialty. He wrote on the board: $\sqrt{36} \times \sqrt{49} =$ Muhamed replied at first with 52; then, being told that it was incorrect, he gave the correct answer, 42. Krall then wrote the sign $+$ instead of $\times$, and asked the horse to add the two roots. He replied immediately with the correct answer, 13.

Dr. Claparède went to this demonstration, as all other members of the commission did with the remembrance of the Von Osten demonstration, convinced that the horses responded in this case as they did in Von Osten's, to some slight bodily movements, of which, perhaps, the trainer was quite unaware, but which gave the signal. This supposition was entirely shattered by the fact that for a great number of the exercises Krall left the room, a fact which greatly impressed the members of the commission.

For instance, Krall placed the following problem on the board:

$$\sqrt{1{,}296} - \sqrt{81} \times \sqrt{144} - \sqrt{49} =$$

and went out of the room. Muhamed gave one glance at the board, and replied instantly, 115, which is wrong. Mr. Krall called to him from without to try again. He then stamped 25, then 125, the correct answer being 135.

When an answer is wrong, Mr. Krall does not insist, but changes the problem. I selected some squares from a list of which Muhamed was to extract the root. He did so correctly. Then we went back to the problem which was still written on the board, and without any hesitation Muhamed gave the correct answer, 135.

To show that the horse actually could calculate, problems were proposed by members of the audience. Mr. Krall wrote them on the board without saying a word and left the room.

The cube root: $\sqrt[3]{5832}$ was proposed by one of the ladies present, written on the board for the horse and the answer, 18, given correctly in a few seconds. $\sqrt{15376}$ and $\sqrt[4]{456976}$ were likewise given correctly — 124 and 26 in about ten seconds. Mr. Krall and the attendant groom had left the hall immediately after the exercise was written on the board in each case.

The exercises in spelling were especially interesting. The horses had been taught to spell with the aid of a simplified spelling table, where each letter or diphthong is represented by a number between 11 and 66, thus:

	1	2	3
10	e	n	r
20	a	h	l
30	i	d	g

The association between letters and numbers once

formed, the spelling of words on the blackboard was merely a matter of memory.

Mr. Krall attempted to teach the horses the German orthography, but finally had to leave them to their own devices, which were very ingenious. They spelled " essen," to eat, " sn," and " gehen," to go, "gn."

Here are some of the ways in which Muhamed and Zarif attempted to spell the German word for horse, " pfferd," pronounced to them several times.

Muhamed: Bfert, bfrt, färd, fert, frt, faert, fpferd, frrt, ppverd, pferd, pfer.

Zarif: Bferd, fferwt, pfrde, fdaerp.

Dr. Claparède found the spelling demonstrations significant. He says:

Muhamed spelled my name Klapard, after it was pronounced to him.

" Something is lacking," observed Mr. Krall, and the horse immediately answered with the letter e.

A newspaper editor who was present had brought to the séance a young stranger whom he presented to Mr. Krall, and asked that Muhamed spell his name, Tauski, which of course, he had never heard before. The name was repeated to him twice. The horse spelled out " Tausj."

" There's a letter missing, isn't there? " asked Krall.

" C," stamped the horse.

" No," said Krall, " it's k. Which letter is it? "

" Fourth " stamped the horse, this reply being correct for in his alphabet the diphthong " au " counts for a single letter.

" And what letter comes after k? "

" I," replied the horse immediately.

For the name of M. Tauski, Zarif spelled Teauski,

after it had been pronounced for him three times. This test was especially satisfactory. Krall was a considerable distance from the horse, who, while stamping, kept his head turned to the wall opposite the one where Krall was standing. The certainty with which Zarif acted, the regularity with which he went from one letter to the next without any hesitation and without looking around to Krall at all, impressed me very much.

For my part, I cannot possibly imagine what trick could be employed in these remarkable feats. While many of them were performed under conditions such that no opinion could be given, still, in certain cases, replies were given under circumstances which seemed to me absolutely to exclude the hypothesis that signals were given to the horses.

The demonstrations, which lasted several days, varied greatly with the varying moods of the horses, Muhamed being especially refractory.

The Saturday morning séance was for the most part very bad. Muhamed replied badly, and seemed greatly distracted. But there was one act which impressed me especially in this demonstration.

A lady having asked that the animal spell her name, Elise, Muhamed obeyed, but after stamping each letter he stopped and looked at Krall as if to ask if it were correct. I noticed that while the horse was spelling he stood with head half bent, without seeming to look at anything, and it was only after he had stamped out the last letter that he raised his head and turned to Krall. The word as first spelled was " elja," which the horse corrected when it was repeated to him, giving the German form for Elise, " Eljsa."

Among several remarkable mathematical operations, the following are worthy of mention. I chose the numbers myself.

The root of $\sqrt[4]{614,656}$. Correct reply in a few seconds: 28. The horse was then alone in the room. All the spectators had also gone outside.

The root of: $\sqrt[4]{4,879,681}$. Reply after 30 seconds: 117. Wrong. The horse corrected it himself to 144, but finally gave up rather despairingly.

Zarif seemed less temperamental than Muhamed, who occasionally responded with correct answers after receiving a good crack of the whip.

Zarif, among other exercises, gave one exhibition which I noted as excellent. Krall having placed before him various cards, bearing numbers of different colours (7, 1, 6, 5, 4, 3), asked him to add the blue figures (6 and 4). Zarif gave the correct answer immediately, likewise to similar questions involving combinations of coloured figures. Krall was at least forty feet away from him, and said nothing except to give the commands.

He had difficulty at this séance in spelling my name, which was called out to him from behind the door. He managed it this way: "chlabrt."

The corrections which he gave in response to Krall's commands were most satisfactory.

"What letter comes after b?" called Mr. Krall.

"A."

"And after the r?"

"A."

"Ch is not right. What should it be?"

"K."

"And where should this k be?"

One stamp indicated the correct answer.

The horses could actually carry on a conversation, according to Dr. Claparède's report. For example: —

Several questions were put to Zarif.

"Was wünschst du?" (What do you wish?)

The reply was: "Müdseinjg." Müd sein ich — I am tired.

"Wie heist du?" added Mr. Krall, always behind the door. (What is your name?)

"Zarif."

"What other letter could you use instead of f?"

"V." Correct, for in German, v is pronounced f.

"Qui est Zarif?" (Who is Zarif?)

Reply: "Iig." (Ich.)

Having assured themselves on this point, the question of the possible *interpretation* of the facts presented itself. Several scientific men who attended the sittings were in favour of a telepathic hypothesis — that is, they believed that the answer to the question was subconsciously worked-out by those present, and conveyed to the horse, by means of telepathy, who then rapped it out, as an "automatism." But then this theory seems to be disproved by several circumstances — the fact that the horses gave answers to questions which were unknown to any person present; etc. Further, if telepathy be the true explanation, there seems no reason why the horse should not give *any* response given him in this manner — whereas, as a matter of fact, he does not. Thus, Zarif, who has never learned cube-roots, refuses to answer when a sum of this character is presented to him, while Muhamed replies with ease. This certainly shows us that their ability to answer depends altogether upon the ability of the horse to figure out the sums proposed to him, and not upon any information

supplied him by the sitters, unconsciously or otherwise.

The great question remains: How does the horse figure out the problems presented to him? Does he do this consciously — by very much the same means that a human being obtains the same results? or is it by some more instinctive process, by means of which he is enabled to arrive at the result without himself actually knowing how he obtains it?

While the majority of savants who have studied the horses appear to lean towards the former solution; it seems probable that the latter is the correct explanation; and that the horse does not consciously and intelligently extract the cube-root, in the same way that a human being would. With him it is more instinctive, more subconscious. His operations resemble, in many ways, the performances of "mathematical prodigies"— who have startled the world from time to time, and whose mental operations have never been fully explained. Here, as we know, while they may be totally unable to execute complicated mathematical problems in their normal condition, they have been enabled to work them out in their peculiar trance-like state far more rapidly than expert mathematicians — who have, moreover, pencil and paper to aid them! Very little children have had this gift, which has generally disappeared in later life. The mind must be trained, to a certain extent, in nearly all these cases, it is true; the "soil" must be prepared; but the fact remains that, normally, the mathematical genius is totally incapable of performing the feats he does actually perform in his trance condition.

Probably it is much the same in the case of the horses before us. That vast store-house of the subconscious

mind of which so much has been written and of which we know so little! is apparently capable of performing feats incapable of being equalled by the conscious mind; and this mind is shared by the animals as well as by man. It is in the deeps of this mind that the calculations take place; the answers are the products of *its* reasonings — "bubbles" which break upon its surface from the depths below. Wonderful vistas open up before us, when once this fact is appreciated. Not only the nature and extent of the subconscious mind is called into question, but the very fundamental unity of life seems to receive a new impetus and a new proof, by reason of these facts. As William James once expressed it, the leaves of the trees whisper and talk to one another; and the trees themselves seem to be separate and independent enough; but their roots are planted in a common soil, and they frequently touch and interlace in a region hidden from mortal eye. It may be the same with man. Beneath the apparent separateness there may be a fundamental unity, a life and mind which binds all together into one great whole. The "thinking horses of Elberfeld" seem to have done much to give this idea a solid foundation, and afford it a firm support.

But, whatever the interpretation of the facts, they at least are undoubted, and are interesing and remarkable enough, on any theory.

CHAPTER XVI

HAVE PLANTS SOULS?

MODERN scientific research has placed another stumbling block in the way of our acceptance of "survival" in any form, by showing us that all life is *graded* — that the animal and plant worlds melt into one another, with no clearly defined lines of demarcation. It is indeed often difficult to tell where the one ends and the other begins. This being so, the question may properly be raised: If man is entitled to immortality, why not the animals also? and if the animals, why not the insects, plants, metals, minerals — in fact every form of existence — since all have been shown to be inter-related and similar to a remarkable degree? This fact has struck one of our modern thinkers so forcibly, indeed, that he himself has said:

"For my own part, then, so far as logic goes, I am willing that every leaf that ever grew in this world's forests and rustled in the breeze should become immortal. It is purely a question of fact: are the leaves so, or not?" (*Human Immortality*, by William James, pp. 43–44.)

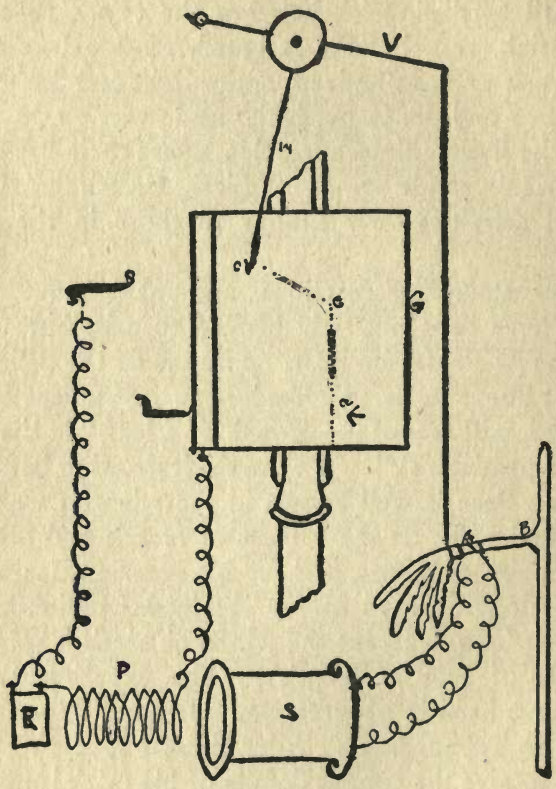
The problem is a very proper one, once we grant the similarity between plants and animals. The fact, however, may be doubted. Recent researches undertaken by Prof. Chunder Bose, M. A., D. Sc., of the University of Calcutta, however, seem to have settled this question in the affirmative; and have shown us that plants in very truth live and react in much the same manner as the simpler forms of life, as we know it in animal organisms.

This being so, the question calls for solution, and it may be interesting to give here a résumé of the more important facts, seeming to show that plants do, in fact, possess a form of life-energy so closely akin to that of animals that it is hard to distinguish between the two. Plants eat, sleep, drink, rest, become fatigued, react to stimuli, become drunk or anæsthetized, notice light and darkness — in fact live and die in much the same way as do all the rest of the living things upon this globe; their life history is apparently made up of physical, electrical and vito-chemical activities very similar to those in the higher animals.

These astounding reactions, and many more of like nature, have been not only proved to exist but actually measured by Professor Bose, by means of the delicate instrument about to be described — an instrument so delicate that it will record the growth of a leaf " in the single beat of a pendulum! " We can see it growing before us! Professor Bose is well known in the scientific world for his original work on the fatigue of metals and other so-called inanimate bodies, and for his experiments upon the shortest electric waves so far obtained (millionths of a centimeter long, whereas the Marconi wireless waves are hundreds of feet in length). The experiments upon plants have been in progress for a number of years past and are so extraordinary, as he himself says, that unless he were to give the precise details of his work it might be considered incredible by the sceptic.

A brief description of the instrument by which these results were obtained will prove essential for a correct understanding of the facts themselves. Several types of instruments were devised and used by Professor Bose — the later and more delicate ones being perfections or de-

velopments of the earlier instruments. I will describe the first one, however, as being the simplest and most readily understood, before touching upon its final improvements.



(PLANT RECORDER.)

The leaf of the plant to be experimented upon (the Mimosa was selected for the majority of these experiments as being the most suitable) still attached to its stalk,

was connected on the one hand to the arm of the recording apparatus, V, and, just below this, two wires were wound round the stem of the plant, these being connected with the " secondary " of an induction coil. The strength of the stimulating current was carefully calculated, and so regulated that it could be applied at regular intervals (by a clockwork arrangement) so as to eliminate all possibility of human error. Attached to the long arm of the pendulum, V, was a pointer, W, which was so adjusted as to mark upon a smoked plate-glass, G, making a fine line in much the same manner as all " graphic " tracings are produced.

It was soon found, however, that this instrument was not delicate enough to arrive at any definite results. The friction offered by the scratch of the needle point on the smoked surface offset, very largely, the response of the plant —" a weight so small as four-hundredths of a gram is enough to arrest the pulsation of the leaflets." Still more sensitive apparatus was therefore necessary, and to obtain this sensitivity Professor Bose invented his " resonant recorder "— a marvel of mechanical skill.

It is founded upon the well-known principle of resonance. If one strikes a note on a piano, a corresponding note on another piano will vibrate, if they are tuned in unison. If we play a note on a violin a similar note will be emitted by another instrument, on which a similar string will vibrate in unison. It is the principle of " sympathetic vibration." This was utilized by Prof. Bose in his improved instrument.

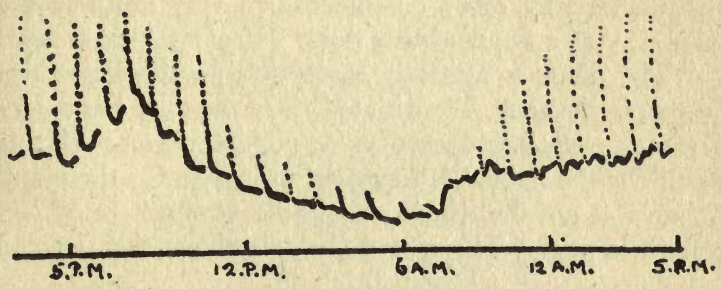
In this new apparatus a delicate reed was made to vibrate at a definite rate. Pulsations in the leaf affected the uniformity of these vibrations. Exactly attuned to this vibrating reed was the reedlike writer, whose arm reached

to the smoked slate and traced upon it the plant-record. But, it will be observed, this recording arm now no longer traced an outline in an unbroken line; it vibrated in unison with the reed; hence the record was in *dots*. This overcame much of the natural resistance of the tracing; and it will be seen that, in this delicate device, there was no actual physical connection between leaf and record. The dots made on the smoked plate were regulated to one-one-hundredth part of a second. By shortening the time interval between dots a time interval as short as the thousandth part of the duration of a single beat of the heart can be recorded.

The next thing to do was to ascertain some method of stimulation which would not cause a mechanical disturbance of the plant. Very weak electric currents were found to have this effect — as in the case of animals. The Mimosa plant, upon which the majority of these experiments were made, was found to be about ten times as sensitive as the human body. If an electric stimulus be applied to the plant at perfectly regular intervals it will respond in much the same way as a human being will — it will react, go through a period of rest or recovery and again respond to the next stimulus, and so on until "fatigued." The method of its response is as follows:

The leaf-stalk of the plant, A, being stimulated, will pass on this excitation to the responding "pulvinus," B, which reacts something like a nerve-cell, causing a fall of the leaf. After a definite period the leaf recovers from this shock and responds to the next stimulus. The leaf is re-erected. Of course the period of this response is infinitely small, and the variations in the leaf are infinitely small; that is why an electric current and so delicate an instrument as this are needed to record the effects.

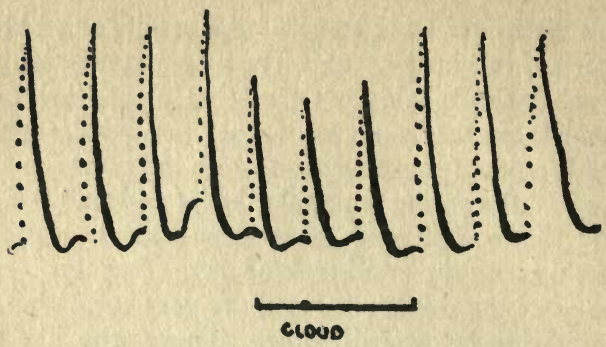
Now let us see what some of the results are, obtained by means of this instrument. We may first mention *sleep*. Although it is probably not true that plants "sleep" in the same sense that animals do, they nevertheless show a lessened response to stimulation which indicates something akin to it. According to popular belief and tradition flowers and plants of all kinds go to sleep with the setting sun and get up with the first break of day. But this is not at all the case; the results obtained are very surprising here, as the tracing below will show. Those who like to lie



abed late in the morning and "turn night into day" may console themselves with the fact that they are in good company; the moral plant-world keeps them company! For we see that, so far from popular tradition being true, the plant does not go to sleep until after midnight and does not wake up again until ten or eleven the next morning. This is a very unexpected result; and, while it can be accounted for, the fact nevertheless remains.

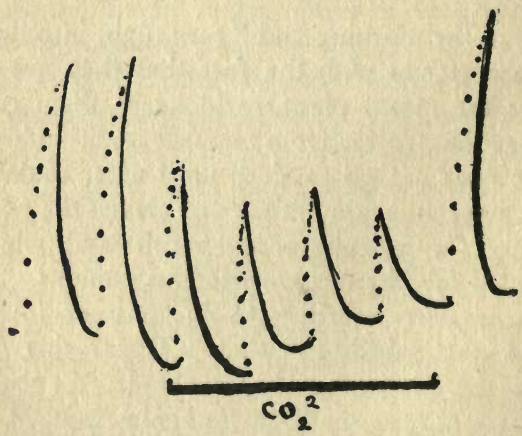
Plants are very sensitive to darkness or to excessive light, and react quickly to either. The tracing (p. 256) will show the effect of a passing cloud. As soon as the cloud passes normal sensibility is again restored.

The living plant is very sensitive to the variations of air, food and drugs. It can get drunk or become



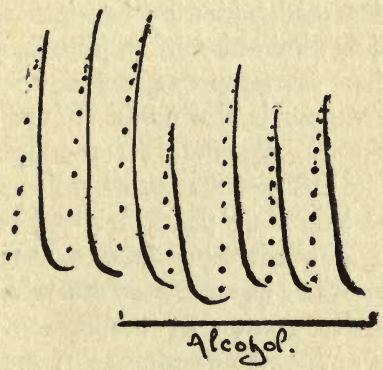
anæsthetized by ether or chloroform very much in the same way as a human being does. Professor Bose says:

"The plant is intensely susceptible to the impurities present in the air. The vitiated air of the town has a very depressing effect. According to popular science what is death for the animal is supposed to be life for the plant, for does it not flourish in the deadly atmosphere of carbonic acid gas? The record (below) shows that, instead



of flourishing, the plant gets suffocated just like a human

being. Note the gasp of relief when fresh air is introduced. Only in the presence of sunlight is the effect modified by photosynthesis. In contrast to the effect of carbonic acid, ozone renders the plant highly excitable. Sulphuretted hydrogen, even in small quantities, is fatal to the plant. Chloroform acts as a strong narcotic, inducing a rapid abolition of excitability. The ludicrously unsteady gait of the response of the plant under alcohol (below) could be effectively exploited in a temperance lecture.



"It is a very interesting and suggestive fact that I have been able to restore the conducting power quickly by subjecting a paralysed portion to a measured and moderate dose of electric shock. . . . It has been shown that the various conditions which accelerate, retard or block the impulse in the animal also enhance, retard or block the impulse in the plant in a manner which is identical. I have, moreover, from my investigations on the plant nerve, been led to the discovery of certain hitherto unknown characteristics of the animal nerve. The investigation of the simplest type of plant nerve is expected to cast a flood of light on the obscure phenomenon of nervous

impulse in general and the causes operative in bringing about the degeneration of the normal function of the nerve. . . .

When, for convenience of experiment, we cut off a leaflet, its spontaneous movements, like those of the heart, come to a stop. But if we now subject the isolated leaflet by means of a fine tube to an added internal hydrostatic pressure, its pulsations are renewed, and continue uninterrupted for a long time. It is found again that the pulsation frequently is increased under the action of warmth and lessened under cold — increased frequency being attended by diminution of amplitude, and *vice versa*. Under ether there is a temporary arrest, revival being possible when the vapour is blown off. More fatal is the effect of chloroform. The most extraordinary parallelism, however, lies in the fact that those poisons which arrest the beat of the heart in a particular way arrest the plant pulsation also in a corresponding manner — the arrest produced being either as systole or diastole, depending on the characteristic reaction of the poison. Taking advantage of the antagonistic reactions of specific poisons, I have been able to revive a poisoned leaflet by the application of another counteracting poison. . . .

" What we call automatic movement is simply the overflow of previously stored-up and unspent energy. When this accumulated energy is exhausted, if there is none to replace it, then there is also an end of spontaneous movements. But a fresh acceleration from outside renews these pulsations. . . .

" A time comes when, after an answer to a supreme shock, there is a sudden end of the plant's power to give any further response. This supreme shock is the shock of death. Even in this crisis, there is no immediate

change in the placid appearance of the plant. Drooping and withering are events which occur long after death itself. How does the plant, then, give this last answer? In man, at the critical moment, a spasm passes through the whole body, and similarly in the plant I find that a great contractile spasm takes place. This is accompanied by an electrical spasm also. In the script of the death-recorder the line, that up to this point was being drawn, becomes suddenly reversed and then ends. This is the last answer of the plant.

"These, our mute companions, silently growing beside our door, have now told us the tale of their life-tremulousness and their death-spasm in script that is as inarticulate as they. May it not be said that this, their story, has a pathos of its own beyond any that we have conceived?" ("Lecture before the Royal Institution of Great Britain," May 29, 1914.)

The *rate* of this reaction of the plant to the electric stimulus occupied Professor Bose for a long period of time, and occasioned some of his very best work. For a long time, it was thought by many scientific men (and is still believed by the public) that the nervous currents were *electrical,* or closely akin to electricity; but it is now thought that they are *chemical* in character — a wave of communication passing along the nerve-tract when a "current" is passed. This conclusion is based very largely upon the reaction-times of human beings and large animals. Thus electricity, travelling at the rate of light, 186,000 miles a second, would travel to and fro, from a nerve-cell to the surface of the body with incredible rapidity; but we know that, as a matter-of-fact, an appreciable time is involved in all such reactions. Nervous impulses travel at the rate of only a few feet a second!

They cannot therefore be electrical. The same is true of the plant. Professor Bose, in measuring the rate of nervous transmission (which he was careful to distinguish from purely "mechanical" transmission) in the plant, showed that there is a current to and from a centre, and also a period of "latency," before the response to the stimulus is given. This latent period was found to be about one-tenth of a second. The whole period of time, between stimulus and response, was 1.6 seconds. (This for a distance of 30 millimeters of travel.) In this case, then, the velocity was about 20 millimeters per second. Temperature was found to accelerate the rate of this transmission, up to a certain point (as in man) while poisons delayed it. Various other factors which are known to affect the higher animals, in their reactions, were also found to affect the plant in a very similar manner.

Perhaps the most marvellous achievement of Professor Bose, however, is his instantaneous record of the *growth* of a plant. As he himself says "the rate of growth is so exceedingly slow that even the proverbial pace of the snail is two thousand times quicker. It would take an average plant 200 years to cover the short distance of a mile. This extreme slowness is a serious drawback in the investigation of growth." Indeed, one would think so! And yet, by means of his high-magnification "crescograph," the absolute rate of growth of a plant can be registered in a period of time "as short as in the single beat of a pendulum!" The various magnifications available are a thousand or ten thousand times. For demonstration purposes, a magnification of one million times has been shown! "The infinitesimal growth thus becomes magnified so as to appear rushing forward as if in a race.

The actual rate of growth and its variations under the action of drugs, of food materials, of various electrical and other forms of stimuli, are thus recorded in the course of a few minutes. The great importance of this method of investigation in agriculture is sufficiently obvious."

This is the great work being done by Professor Bose. And, once again, it will be seen, the purely "theoretical" side of science is shown to have an actual, practical bearing upon every-day life. Let those who are inclined to scoff at impractical, "theoretical" knowledge remember this and remember also that the last thing we learn about any science is what it is all about! For two thousand years, men worked over conic sections without knowing or believing that they would ever be more than a purely intellectual pastime; yet now the engineer employs them in the most practical manner. All science — all knowledge — is good; no matter how apparently "remote" from daily life. Even these remarkable experiments of Prof. Bose on plant reactions show this.

CHAPTER XVII

THE PSYCHOLOGY OF "ALICE IN WONDERLAND" AND "THROUGH THE LOOKING-GLASS"

THE wonderful insight of Lewis Carroll and the scientific accuracy of his study of dream life from the point of view of modern psychology has rarely been mentioned or even thought of. We are accustomed to think of *Alice in Wonderland* and *Alice Through the Looking-Glass* as being written solely to entertain children — as stories filled with humour and wit but very little seriousness. And yet — strange as it may appear — these books, if analysed, will be found to contain a mine of valuable psychological material of the greatest interest, and it is strange that practically no psychologist has taken it upon himself to study these stories from that point of view. The following brief analysis of some of the main points of interest may therefore prove suggestive, as tending to throw new light on these juvenile "classics."

To begin with, then, it will be seen at a glance that Lewis Carroll utilized, as the fundamental *data* for these dreams, the material with which a child's mind would be stocked — thereby conforming to the orthodox conception that "one cannot dream anything one has not experienced, known or sensed." Cards, chessmen, the kitten, sheep, flowers, a dormouse, a caterpillar, the lion, the unicorn and the mockturtle (these last two probably believed in as realities by most children), the little shop, etc., all figure prominently. If we were to make a list of the various objects, scenes, and so forth,

contained in the first chapter of *Alice*, we should have: A meadow, a hedge, a rabbit-hole, a straight tunnel, a long shaft, a heap of sticks and leaves, a long passage, a long low hall, doors all round the hall, a small passage, a beautiful garden, a hot day, etc.— all such things, in short, as present the customary "stage setting," structural arrangement, etc., of the ordinary dream. As usual, also, Alice herself is the central and most important personage — the heroine — who observes and enacts all the principal events, and around whom all the chief characters revolve.

In addition to this dream material, Lewis Carroll also introduced a number of imaginary characters and objects — extensions of nursery rhymes and superstitions — which every child would naturally know. Thus, Humpty Dumpty, the Mad Hatter, the March Hare, Tweedledum and Tweedledee (with their "nice new rattle") are all examples of this. Such well-known stories as "the lion and the unicorn fighting for the crown," the knave of hearts stealing the tarts, and various similar rhymes and verses, are also turned to account. The influence of school life — "lessons" — is also very manifest. All through both books, the characters are constantly setting one another sums to figure out, problems and riddles to solve, questions to answer, etc., all of which we might expect to find in a child's mind, in which lessons occupy so prominent a place.

The manner in which the scenes change and glide one into another is also very characteristic of the dream world. Thus, the little shop is transformed into the boat on the river, and the knitting needles in Alice's hands into oars, only to be retransposed into needles again later, at the time the river insensibly changes

back again to the little dark shop. The egg changes, as she approaches it, to Humpty Dumpty. The heads of the red and the white queens vanish from her lap without her knowing it — they are just "gone." The rushes which Alice picked in the stream began to fade and vanish in her hands as soon as she had picked them —" these, being dream-rushes, melted away almost like snow, as they lay in heaps at her feet, but Alice hardly noticed this, there were so many other curious things to think about." Even the looking-glass thinned and admitted her passage — when she tried to push her way through it. In this way she entered the looking-glass world.

Nearly everything in the whole book is, of course, endowed with life and speech — they are made human — are "personalized." Savages attributed intelligence to the powers of Nature, and children do much the same thing. The animals, the cards, the chessmen, birds, beasts, insects, all are endowed with human speech and carry on long conversations. Even the flowers talk. This is very common in dreams, and, as we know, very many fairy-stories are founded upon this central theme. Even Time is personified: "If you knew Time as well as I do, you wouldn't talk about wasting *it*. It's *him*." Similarly, the leg of mutton is introduced to Alice, and gets up and bows.

These, however, are but the more obvious and commonplace factors which must have been more or less apparent to every interested reader of the adventures of Alice. Besides these, there are a number of other factors which may well be noted, and which lead us further afield, raising, as they do, philosophical and psychologi-

cal questions of the greatest interest and importance. Let us take, for instance, the following passage.

When Alice was in the little dark shop, she noticed that —

the shop seemed full of all manner of curious things — but the oddest part of it all was, that whenever she looked hard at any shelf, . . . that particular shelf was always quite empty; though the others round it were crowded as full as they could hold.

"Things flow about so here," she said at last, in a plaintive tone, after she had spent a minute or so in vainly pursuing a large bright thing, that looked sometimes like a doll and sometimes like a work-box, and was always on the shelf next above the one she was looking at. "And this one is the most provoking of all, but I'll tell you what," she added, as a sudden thought struck her, "I'll follow it up to the very top shelf of all. It'll puzzle it to go through the ceiling, I expect!"

But even this plan failed; the thing went through the ceiling as quietly as possible, as if it were quite used to it!

This "seeing a thing out of the corner of the eye" is a very common experience; the little specks of light which form before the closed eyelids when dropping off to sleep, and which always vanish or change their places when looked at squarely, are good examples of this. Then, too, many "apparitions" are seen in this manner; yet as soon as looked at fully, they disappear — sometimes to come again elsewhere. The item of vanishing through the ceiling is of interest in view of the fact that, at spiritualistic séances, objects are occasionally said to vanish in this mysterious fashion, sometimes indeed even the medium himself (*Proceedings*, S. P. R., vol. iv., p. 483). Thus a psychological cause is suggested for many of these records, rather than a physical miracle.

On various occasions, reference is made to Alice falling, floating, flying or running with incredible speed through the air. These are all but examples of the common falling or flying dreams, to which we are all more or less subject. They are among the seven common dreams which practically every one is said to experience at one time or another in his life. Usually, the subject arrives at the bottom of his fall unhurt — as Alice did, when she fell gently upon the pile of sticks — or he fails to reach the bottom at all. The old superstition that a person will die if he reaches the ground in a fall of this kind is the purest superstition. There are many cases on record in which the subject has reached the bottom, and received more or less of a jolt thereby. In one case, at least, the subject saw himself dashed to bits; but somehow managed to pick himself up, and stick the pieces together again! (Hutchinson, *Dreams and Their Meanings.*) The example which is given of Alice running through the air at a terrific pace, with the red queen, and finding herself in the same place at the end, is but an example of the common dream in which we find ourselves unable to get away from some injurious person or thing which is pursuing us. Try as we will, we *cannot* make progress! These falling and flying dreams have been made the subject of lengthy discussion.

Another interesting point touched upon by Lewis Carroll in *Alice* is the matter of mirror-writing — *spiegelschrift* — which is found so often in automatic or "spirit" messages. Here the tendency is often very pronounced — this question being the topic of a lengthy discussion by Mr. F. W. H. Myers, in an article upon the subject of automatic writing in Vol. III of the

Proceedings of the Society for Psychical Research. He there pointed out that many persons, when they try to write with their left hands, often produce mirror-writing at first; that left-handed persons often write, at times, in this manner — until consciously corrected; and that, in certain odd diseases — ataxia and the like — *spiegelschrift* is occasionally produced. All of which led Mr. Myers to the belief that the right hemisphere is chiefly involved in the production of this writing (instead of the left, which right-handed persons usually employ) and that the functioning of this hemisphere is chiefly accountable for mirror-writing. There being many psychological analogies between the abstracted state often necessary for obtaining automatic writing and the dream state, the connection is too evident to need more than a mere mention. Here, again, however, Lewis Carroll unwittingly opened up a question of the greatest psychological importance.

I have reserved for final discussion the most interesting problem of all, raised by a careful study of "*Alice*" — since it raises for our consideration one of the greatest metaphysical questions ever propounded — and there is reason to believe that Lewis Carroll raised it knowingly. It refers to the possibly dream-like character of our existence, here on earth; and rarely has the problem been more tersely put. Here is the passage in which Carroll stated the case, with rare penetration and skill —

"It's only the red king snoring," said Tweedledee.

"Come and look at him," the brothers cried, and they each took one of Alice's hands, and led her up to where the king was sleeping. . . .

"He's dreaming now," said Tweedledee; "and what do you think he is dreaming about?"

Alice said: "Nobody can guess that."

"Why, about you," Tweedledee exclaimed, clapping his hands triumphantly. "And if he left off dreaming about you, where do you suppose you'd be?"

"Where I am now, of course," said Alice.

"Not you," Tweedledee retorted contemptuously. "You'd be nowhere. Why, you're only a sort of thing in his dream."

"If that there king was to wake," added Tweedledum, "you'd go out — bang — just like a candle."

"I shouldn't," Alice exclaimed indignantly. "Besides, if I'm only a sort of thing in his dream, what are *you,* I should like to know?"

"Ditto," said Tweedledum. "Ditto, ditto," said Tweedledee.

He shouted so loud that Alice couldn't help saying, "Hush, you'll be waking him, I'm afraid, if you make so much noise."

"Well, it's no use *your* talking about waking him," said Tweedledum, "when you're only one of the things in his dream. You know very well you're not real."

"I *am* real," said Alice, and began to cry.

"You won't make yourself a bit realler by crying," Tweedledee remarked; "there's nothing to cry about."

"If I wasn't real," Alice said, half-laughing through her tears, it all seemed so ridiculous, "I shouldn't be able to cry."

"I hope you don't suppose those are real tears?" Tweedledum interrupted in a tone of great contempt.

"I know they're talking nonsense," Alice thought to herself. . . .

Veiled in this simple language, Lewis Carroll, who was, as we know, a scholar and student, stated one of the most profound and insoluble paradoxes in philosophy — and incidentally, no doubt, poked fun at the apparently paradoxical conclusion — from the viewpoint of "common-sense." For the point raised is no less than the world-old problem: How do we know that life is not all a dream — that we are but thoughts in some gigantic mind — and that we shall one day wake up and find ourselves obliterated — if we be allowed

this Irish bull — or (to employ the analogy used by Plato) find that this life may be a dream, and the true life, the life of living, waking realities, is the life of the spirit, to which we wake only after death?

The analogy employed by Plato, to illustrate this point, is well known, but may stand restatement in concise form. In his Seventh Book of the *Republic,* a description is given of a cave in which are prisoners, fettered from earliest childhood, so that they cannot move, and look only straight before them. Behind and above them is a fire, blazing at a distance, and between the fire and the prisoners are men passing along with various kinds of vessels, statues, figures of animals, etc., casting their shadows on the wall of the cave. The prisoners have no knowledge save of the shadows, which to them are the reality. In our application of this the objects we perceive in the physical universe may be like these shadows, and the things to which they correspond are in reality composed of mind.

Every one, at one time or another in his life, has probably experienced this wonder, this thought: Is life, then, all a dream? And if not, how prove that fact? It is assuredly most difficult, and subject to much hair-splitting sophistry. The problem is fairly stated by Lewis Carroll in the passage quoted.

W. K. Clifford saw this difficulty very clearly, and he, too, asked himself the question: What hinders us from saying that life is all a dream? His philosophical argument ran about as follows: —

How does a dream differ from waking life? In a fairly coherent dream, everything seems quite real, and it is true that many people know in a dream that they are dreaming. If a dream is sufficiently vivid and coherent,

all physical inferences are just as valid in it as they are in waking life. In a hazy or imperfect dream, it is true, things melt one into another, unexpectedly and unaccountably; we fly, remove mountains, and stop runaway horses with a finger. But there is nothing in the mere nature of a dream to hinder it from being an exact copy of waking experience. If I find a stone heavy in one part of my dream, and infer that it is heavy at some subsequent part, the inference will be verified if the dream is coherent enough; I shall go to the stone, lift it up, and find it as heavy as before. And the same thing is true of all inferences from phenomena. For physical purposes, a dream is just as good as real life; the only difference, usually, is in vividness and coherence.

But if the phenomena we dream of are just as good and real to us then as the real phenomena we see and feel when we are awake, what right have we to say that the material universe has any more existence apart from our minds than the things we see and feel in our dreams? The answer which Berkeley gave to that question was: No right at all. The physical universe which I see and feel, and infer, is just my dream and nothing else; that which you see is your dream; only it so happens that all our dreams agree in many respects. This doctrine of Berkeley's has now been so far confirmed by the physiology of the senses that it is no longer a metaphysical speculation, but a scientifically established fact.

When I see a man in my dream, then, he seems to possess a physical body just as much as when I am awake; if only the dream be coherent enough — no physical test can establish the fact that it *is* a dream. In dream, as in waking, I seem to see the same thing. In both cases I assume the existence of more than I can

see and feel — namely, the consciousness of the other man. "But," says Clifford, "here is the great difference and the only difference — in a dream this assumption is wrong, in waking life it is right." The man I see in my dream is a mere machine, a bundle of phenomena with no underlying reality; there is no consciousness involved except my consciousness, no feeling in the case except my feelings. The man I see in my waking life is more than a bundle of phenomena; his body and his actions are phenomena, but these phenomena are merely the symbols and representatives in my mind of a reality which is outside my mind, namely, the consciousness of the man himself, which is represented by the working of his brain, and the simpler quasi-mental facts, not woven into his consciousness, which are represented by the working of the rest of his body. "What makes life not a dream is the existence of those facts which we arrive at by the process of inference; the consciousness of man and the higher animals, the sub-consciousness of lower organisms, and the quasi-mental facts which go along with the motions of inanimate matter."

If we wanted to split hairs, we might at this point raise the question: How do we know that the mental figures seen in dreams are not real — do not have self-consciousness — just as much as the living beings we know in this life? It must be admitted that the negative of this cannot be proved, since the negative of any argument cannot be proved. We can only go by assumption — and commonsense. The consensus of opinion says that it is not true. That is why Alice says, "I know they're talking nonsense," though she couldn't prove it successfully to herself. That is why she was right, in a sense, in regarding this logic as unphilosophical. The

fact that she could see, think, and feel was proof positive that she was not "a sort of thing" in anybody's dream. Hence the inner meaning of that great saying of Descrates, *Cogito, ergo sum.* That is the root of all philosophy — of all sane thought. We must begin somewhere. Descartes said that this was the beginning of all thought; the hope of all future argument. So Alice did not melt away, like the dream lilies she gathered in her hands, but lived on, in her dream; and finally woke up at the end into real life again.

. . . . . .

Viewed psychologically, therefore, it can be seen that *Alice* presents matter of the greatest scientific interest, as well as remaining the most charming child's story of all time.

PART III. RECENT RESEARCHES IN CRYSTAL VISION AND CRYSTAL GAZING

CHAPTER XVIII

RECENT RESEARCHES IN CRYSTAL VISION AND CRYSTAL GAZING

By Hereward Carrington, Ph.D., and
W. H. Bates, M.D.

A number of able and interesting articles have appeared in the *Proceedings* of the S. P. R., from time to time in the past, discussing both the historical and psychological aspects of crystal gazing — and furnishing many valuable — indeed classical — experiments. The present paper is an attempt to study these visions from a somewhat different point-of-view than any so far assumed; we have endeavoured to study the actual *physiological changes* taking place within the eye during the production or perception of these visions; and this, we believe, is a side of the question hitherto neglected by both medical men and by "psychical researchers." It is, indeed, a most intricate and difficult one; but it is certainly true that the physiology of hallucinations is a subject as important as it is ill-understood; and we can only hope that the present paper may add some grain to our knowledge of these obscure facts, and stimulate others to experiment along similar or somewhat divergent lines.

It is not without some misgivings that we approach a subject which has been so ably handled in the past by Mr. Myers, Mr. Lang, "Miss X," Mrs. Verrall, and others. Their researches, indeed, cover a far wider field than can be attempted in this paper; for, in addition to

the mass of material presented, apparently supernormal information was obtained, and this our researches can hardly be said to supply. It is true, also, that "Miss X" made some valuable physical and optical experiments, in connection with her visions; but, at the conclusion of her article on crystal gazing, in the *Proceedings* (Vol. V, p. 520) she says that her paper "did not profess to be in any sense an inquiry into its physiological explanation, or psychical significance." It is precisely these questions which we have studied in the present paper; and while, of course, such changes as could be observed, during the visions, must necessarily be limited to the eye — and the gross changes at that — still a suggestion is here made which may lead to further work and investigation along this line.

The *history* of crystal gazing has already been covered in a very full and lucid manner by "Miss X.," in her article before referred to *(Proceedings*, Vol. V, pp. 486-504); and also in the following books and references, among others: *Crystal Gazing,* by N. W. Thomas (with an Introduction by Andrew Lang); *Crystal Gazing and Clairvoyance,* by John Melville; *The Curious Lore of Precious Stones,* by George F. Kunz, D. Sc.; and *The Magic of Jewels and Charms,* by the same author; *The Enigmas of Psychical Research,* by James H. Hyslop (Chapter 3); *The Book of Talismans, Amulets and Zodiacal Gems,* by William Thomas and Kate Pavitt; *The Making of Religion,* by Andrew Lang; *The Golden Bough,* by Fraser (Vol. I); *The Crystal and the Seer,* by Sepharial; *Practical Psychomancy and Crystal Gazing,* by W. W. Atkinson; *Essays in Psychical Research,* by "Miss X."—(Chapter 3)—this last being an amplification of an article of hers previously appearing in

Borderland. The interested reader will find ample material in these books, and the references they contain, to supply him with a full history of the subject, as well as the numerous mediaeval and modern " quack " views regarding the uses and powers of the crystal ball. The writings of Kunz, particularly, are filled with useful scientific material bearing upon the physical and chemical properties of crystals,— as well as upon their mysteries and uses. The historical summaries by Thomas and Miss X. are all that could be desired; while the older, " magical " aspects and ceremonies connected with the practice are well epitomized in Melville's book, before referred to.

Perhaps a brief mention of these earlier views may not be out of place here,— before passing on to the scientific point-of-view involved in the later psychological conceptions. According to these views, then, the crystal itself was supposed to possess magical properties and virtues of its own; it was the centre of a species of " *magnetism,*" " the connecting link between the crystal and the spiritual world is magnetism, attracted to and accumulated in or round the crystal by the iron infused throughout its constitution, and the greater the increase of the moon the greater subsequently is the supply and accumulation of the Lunar Magnetism in the crystal." Accordingly, Astrology played a large part in successful crystal readings; special times both of the month and of the day were set apart, under certain Zodiacal influences; and there were special " spirits " invoked — according to the time of day or of the month, as the case might be. " Vessago " was said to be the special genius of the crystal, and was formerly invoked whenever the crystal was read for special and particular purposes. A regular

magical ceremony was also undertaken,— in which the table, the seer, and the ball itself were consecrated to the occasion. Sacred names of the Deity and of friendly spirits were inscribed upon the cloth supporting the ball, and the whole process much resembled a séance devoted to ceremonial magic.

Regarding the doctrine that a certain property of *magnetism* resided in the crystal itself,— this is of greater interest and importance, inasmuch as many still believe in this, and inasmuch as it bears a curious resemblance to certain odd facts connected with " psychometry," the influence of objects presented to mediums, etc. It was held, then, that the great desideratum, in the manufacture of magic mirrors, was to retain the accumulated " magnetism " upon their surface, " and it is the difficulty of achieving this which renders the production of genuine mirrors so costly." Concentration of the eyes, and of the gaze, upon the crystal was essential, for the reason that it established a magnetic *rapport* between the ball and the cerebellum of the gazer, which was said to be the " reservoir " of this vital magnetism. Fasting was thought to increase the amount of this magnetism in the human body. Those who were endowed by nature with quantities of this magnetism could be distinguished by the fact that their eyes were set widely apart. Holding the ball in the hand before gazing was said to add to its magnetic properties. " When gazing, it becomes charged with the magnetism exuding from the eyes of the gazer." After this occurs, visions begin to form. Sunrise, mid-day and sunset were said to be the best times for crystal gazing; ten P. M. to two A. M. the worst. The motive of the gazer should be pure, " since space is filled with good and evil spirits," and the gazer would

surely "attract to himself those like unto the thought within himself," at the time. White clouds were said to indicate good or affirmative answers, black clouds the reverse. Violet, green and blue clouds were regarded as excellent omens. Red, orange and yellow, on the other hand, were held to be indicative of danger and trouble. Ascending clouds gave affirmative replies; descending clouds, negative ones. Whatever appeared on the left hand side of the crystal was actual or real; what appeared on the right hand side was symbolical. Moonlight was said to benefit the crystal; sunlight, on the contrary, was injurious. Extremes of heat and cold were likewise harmful. Clouds or shadows moving toward the gazer's right hand indicated the presence of spiritual beings; those moving toward the left hand indicated that "the séance is ended for the present time." (Melville.) From which it will be apparent that crystal gazing was regarded, in those days, as a serious business and a sacred ceremony, rather than as a sport, which is too often the case at the present day.

The majority of educated persons, now-a-days, would not believe that spiritual beings actually inhabit the ball, during a crystal-gazing séance; but rather that the seer has cultivated a certain degree of clairvoyant or visualizing power, enabling him to perceive, as in the ball, certain forms or images which are in reality within his own mind. Perhaps it is necessary to emphasize this point more strongly, as the distinction is not as fully appreciated as it should be, by those who are inclined to believe there is "something in crystal-gazing." The figures or images do not exist *in* the ball, but in the mind of the seer who perceives them — even when they are "veridical" or truth-telling.

This is, of course, so obvious to the psychical researcher as to need no comment; and all psychologists would agree upon this point; but there is a school of "occultists" which contends that the figures seen are real or objective — that they are actually *created* by the mind of the seer, and projected into the ball, where they act out their given rôle or part. In this case, they are held to be examples of "thought-forms" created in space,— much in the same manner as other "thought-forms" are; and that they have actual objective existence for the time being.

It seems hardly necessary to combat such a belief in this age; we need only say that — whatever proof there may be for the existence of "thought-forms" in other instances — there is no reason to suppose, and no evidence to prove, that the images seen in the crystal are in themselves objective. All the tests which are supposed to prove the objective reality of the images (such as magnification, reflection, etc.) may be shown to be equally valid, were the images subjective,— as we shall presently show. Further, in certain experiments, the results,— when the subject did not know what they were supposed to be, and hence "suggestion" was eliminated,— were other than they would have been, had the image been really "there." (*Proceedings* S. P. R., Vol. X, p. 108: *Borderland,* January, 1894.) Again, hallucinatory objects conjured up in the ball, by an effort of *will,* gave complementary after-images,— as real images would have done,— though in this case they were demonstrably hallucinatory. (*Loc. cit.* VIII., p. 484; X, p. 147.) Finally, it will be shown later on in this paper that the images are undoubtedly subjective for the simple reason that we have proved that, in the majority of in-

stances, at least, *the seer was not looking at or into the ball at all* during the production of the vision, but into space — some inches distant from the ball, either on the near or far side of it, as the case might be. The eyes, that is, were focussed *not* upon the ball, but upon empty space at the moment of the vision — though the seer was quite ignorant of this fact, and under the impression that he was looking right into or at the ball all the time!

A second point must here be considered. "If the images are all hallucinatory," some critic may say, "why bother with them at all? Surely, in that case, they are not worthy of study, from the point-of-view of the psychical researcher!"

The answer to this objection is two-fold. In the first place, they are of great interest from the purely psychological and physiological points-of-view — *as* hallucinations quite apart from their veridical character altogether. In the second place, the supernormal character of many of these visions has often been adequately proved — telepathic, clairvoyant and prophetic visions of the character having been recorded in the past, in the *Proceedings* and elsewhere, and form part and parcel of the general problem before us. It must always be remembered, in such cases, that the supernormal character of the communication depends *not* upon the miraculous manner of the delivery of the message, but upon the content of the message itself. It does not matter whether the sensitive pushes the ouija board or moves the dowsing-rod by unconscious muscular action; he doubtless does so. The problem before us is: How did he know when to exert this pressure, and cause the board or the rod to move, in precisely the right manner, so as to convey informa-

tion unknown to himself or to others? As "Miss X." has clearly stated the problem in her *Essays in Psychical Research* (p. 163):

"It does not matter how the rod is turned. The dowser probably does it himself without knowing it. But how did he subconsciously get the information which led to the turning of the rod? . . . The point is not, *How does the picture get into the crystal?* which is easily answered. The seer puts it there. It is, as his critics say, hoping to be unkind, but succeeding only in being veracious, merely his fancy. The point is, *How did it get into his head?*"

Dr. Hyslop, in his paper on "Some Experiments in Crystal-Vision" (*Proceedings* S. P. R. Vol. XII, pp. 259-276), states that in the subject experimented upon (Mrs. D——) "sometimes the vision appears on the surface of the crystal and sometimes at the centre of it." This experience coincides with that of numerous other crystal-gazers. Randolph, in his *Seership* (p. 74), states that the images seen by him in the crystal were often "about the size of a silver dime" (sixpenny piece). On the other hand, in a case reported to us (Miss d'Orsay) the subject saw images practically life-size upon a white sheet, which she hung up in her room, and even cattle and horses "as large as life"! The images seemed to be actually upon the sheet. This, however, is very rare, and closely akin to the hallucinations of delirum and similar states. A friend of Mr. Andrew Lang stated that, on one occasion, he saw a face in the ball, and, on turning the glass, saw the face in profile. (*Journal,* S. P. R., Vol. VIII, p. 222.) Mrs. A. W. Verrall, in writing of her crystal visions, says: "The difference between a picture in the crystal and a mental pic-

ture is quite marked but difficult to describe; it will perhaps enable me to show what I mean if I say that the recalled image of what I have seen in the crystal differs as much from the actual image as the mental image of a person differs from the actual person. . . . It has occasionally happened that I have been able to see more on a closer investigation than on the first glance, but if I try to interpose a magnifying glass between my eye and the crystal the picture instantly goes and only the recollection remains. . . . Movement occurs not infrequently in the picture and so does change. I use the word *movement* when I see in the crystal a picture within which occurs an alteration, and the word *change* when the whole picture undergoes alteration and is succeeded by another. . . . I find it very difficult to say what *size* the pictures appear to me to be, as I have nothing to compare them with. They seem to me, however, not to be bounded by the size of the crystal, and they vary in the impression produced. But though the things certainly appear to me sometimes to be 'large' and sometimes 'small' I am quite unable to determine how such an impression is produced. . ." (*Proceedings*, Vol. VIII pp. 473-78.) Mr. Myers states that "of the four crystal seers whose cases I give at length, two good visualizers believe that they *do* see complementary colours of phantasmal images, while the third good visualizer, Mrs. Verrall, with Miss A., who is a bad visualizer, can see no such colours" (pp. 479-80).

"Miss X's" experiments, recorded in *Proceedings* Vol. VIII, p. 484-92, are classical, and the most detailed and painstaking with which we are familiar, devoted to the study of the optical and physical laws underlying these visions, as well as their psychological significance.

To summarize very briefly: "Miss X." found that: If she looked into the bowl or hollow of a spoon, the image seemed distorted as it would, had the image been objective or real; that images seen reflected in a mirror were seen to be properly reversed; that a magnifying glass magnified the vision; that a piece of Iceland spar refracted the image, producing two images,— as it would, were the image objective; that complementary colours were usually seen; that the pictures seemed usually to fit into the crystal,— that is, to be the size of the ball; that the images lasted several minutes,— as many as eight on one occasion,— without disappearing; that the images sometimes came suddenly, and were sometimes built up by degrees. "Miss X" traces the origin of many of her visions, in a scientific and ingenious manner.

In the case of Miss A., on the other hand, (*op. cit.* pp. 498-515), we learn that she tried the magnifying glass on several occasions, and that "the results are just the same as without it; only the glass being on the top I suppose I see in it instead of in the crystal. . . . I cannot tell when people ask me whether the figures which I see are big or small; for I see as if I were in some way close to them; so I cannot define their size. . . If I move my eyes from the crystal, or if I close my eyes, the picture disappears. If I move the crystal about I seem to shake the picture out of it. When the picture is once lost I can seldom see it again. Once or twice I have succeeded in doing so, but there have always been other pictures between. . . ."

Mr. Stephen F. Austin, B.A., in his interesting book *Dramatherapy,* writes, regarding crystal visions:

"For instance, so far as the subject is concerned, it

(the crystal vision) will obey all the laws of optics. An opera glass will approach or distance the image according to the end through which it is viewed, while the glasses themselves must be variously adjusted for the near-sighted and the far-sighted to enable both to see it. A magnifying glass, moreover, will enlarge the hallucination, and a refracting prism will double it — the amount of displacement corresponding always to the prism's index of refraction. Furthermore, the proximity of a magnet has been observed to have the effect of displacing, or of dispersing, the illusory object, although it has not yet been determined whether this phenomenon is due to some suggestive influence exercised by the operator upon the subject, or to actual torsion exerted by the magnet upon the image itself. . . ." (See Binet and Féré: *Animal Magnetism.*)

Björnström even says (in his *Hypnotism*) : —

" Although an optical illusion seems to be fixed only in the brain of the one who sees it, yet it seems as though the hallucinator possesses a certain power of giving the image some kind of physical fixation in reality; "— that is, of objectifying it. Into this we cannot enter at present, however.

Parish, in his *Hallucinations and Illusions,* merely summarizes the above-mentioned material, without adding anything original either in the optical, physiological or psychological fields. Prince tells us *(The Dissociation of a Personality,* p. 79) that " when Miss Beauchamp looks into a glass globe she does not see the details of her vision as small objects reflected in the glass, but, after a moment or two the globe and her surroundings

disappear from her consciousness, and she sees before her a scene in which she herself is present as a spectator." This seems to indicate the presence of a more or less dream-like state or condition, unknown to her — upon the existence of which Parish so strenuously insisted. Dr. Paul Joire, in his *Psychical and Supernormal Phenomena,* (p. 157) says that:

"The pictures (seen in crystals) are sometimes of a uniform tone, similar to a photograph; at other times they are coloured and present the natural tints. Some pictures are fixed and motionless, like a painting; others are constantly changing, and show the persons animated, as in a cinematograph. The first pictures are often simple — a portrait, bust, plant, animal or house. Then they become most complicated — a complete moving scene, as in a theatre; a room, a street, a public thoroughfare filled with various people, who walk about, come in and go out, just as in real life. . . ."

Maxwell, in his *Metapsychical Phenomena,* (p. 185) tells us that "the gaze should not be directed on the surface of the crystal, but *in* the crystal itself. The knack of gazing inside the crystal is speedily acquired." (We believe that Dr. Maxwell means by this that the eyes should not be focussed too consciously *on* the ball, but allowed to relax and become "subjective," as it were, as the hand and arm do in automatic writing; and that when this is accomplished, by means of the effort to see into the interior of the ball, the required state of the eyes is thereby induced. This would agree with our conclusions,— if this is what is meant.)

Myers, in his *Human Personality,* has summed up or quoted at length the most important researches and conclusions up to the time of the publication of his book

(1903); and his words may fittingly be quoted by way of concluding our epitome of what important experiments we have been able to find, regarding crystal-gazing.

He says (p. 229):

"Ocular vision is the perception of material objects, in accordance with optical laws, from a definite point in space. Our review of hallucinations has already removed two of these limitations. If I see a hallucinatory figure — and figures seen in *dreams* come under this category — I see something which is not a material object, and I see it in a manner not *determined* by optical laws. A dream figure may indeed seem to *conform* to optical laws; but that will be the result of self-suggestion, or of organized memories, and will vary according to the dreamer's visualizing power. While a portrait painter may see a face in dream which he can paint from memory when he wakes, the ordinary man's dream-percept will be vague, shifting, and unrememberable.

"Similarly, if I see a subjective hallucinatory figure 'out in the room,' its aspect is not determined by optical laws (it may even seem to stand *behind* the observer, or otherwise *outside* his visual field), but it will more or less *conform* by my mere self-suggestion, if by nothing else — to optical laws; and, moreover, it will still seem to be seen from a fixed point in space,— namely, from the stationary observer's eyes or brain."

All this, of course, applies also to crystal visions. It should be noted however that Mr. H. Dennis Taylor, in two articles contributed to the *Annals of Psychical Science,* (Nos. 52 and 53) asserts that "expectation" and "*suggestion*" will *not* account for the facts,— and brings forward a number of striking and interesting statements in support of his belief. ("The Physiological

Limits of Visual Hallucination.") This, however, is not the place to question the validity of generally accepted conclusions,— especially in view of the fact that we ourselves shall have occasion, in this paper, to question certain generally accepted facts regarding the theory of vision! (The reader may also be referred to a short article of interest, in the same magazine, by Dr. G. Lindsay Johnson, on "The Projection of Psychic Visualized Impressions," which deals with suggested after-images, seen by the subject, upon sheets of white paper *half an hour* or more after the original (hallucinatory) image had been removed! Many similar cases are to be found in the literature of hypnotism.) [1]

Crystal gazing experiments are subject to, and go through, the same stages of investigation as all other branches of psychical phenomena. We may roughly divide them into three steps or stages: (1) the statistical or "legal" aspect of the subject, so to say, in which an attempt is made to show that these phenomena occur more often than chance would account for, or under conditions which insure their objective reality and verity, and apparently their unusual source, as opposed to mere superstition and belief; (2) the study of the phenomena themselves, from the point-of-view of the supernormal, in an endeavour to establish them as genuine supernormal facts, and to study the laws under which they operate; (3) the study of the psychological, physiological, physical, electrical, chemical, etc., conditions under which the phenomena occur, and an

[1] Dr. Bates has demonstrated that an after-image is never perfect in size, form or colour; further, that an after-image is never formed unless there has been strain to see. The nature of this strain is shown further on in this paper.

endeavour to correlate these phenomena with others better understood, and to ascertain, by means of analogy, or otherwise, the points of contact between these manifestations and others occurring in our world around us, and subject to scientific scrutiny. We may add that, up to the present, the efforts of psychical researchers have necessarily been directed mainly toward the *first* of these objectives; and only relatively lately has the second one been approached; while the third is, as yet, a field all but untouched. Yet it is surely here that the greatest and most solid and scientific gains should and must be made, in order to facilitate or render possible our understanding of these phenomena; and it is partly because of this fact that we feel strongly that a properly equipped and endowed *laboratory,* devoted to the systematic study of psychic phenomena, is one of the prime needs of our time, and that great forward progress cannot be made, at least in certain fields of research, until this has actually been established. However, a beginning must be made somewhere, and it is the object of the present paper to study the phenomena of crystal-gazing from the third of these standpoints, assuming that their genuine nature be granted, and that their psychological value also be granted as a subject for serious debate.

Hallucinations, such as those seen in the crystal, must be distinguished from *illusions,* which are only partial hallucinations.[1] Gurney's famous definition of a hallucination as " a percept which lacks, but which can only by distinct reflection be recognized as lacking, the objective basis which it suggests " (*Proceedings,* S. P. R. Vol.

[1] An illusion is a real object misinterpreted, as when a white coat is mistaken for a figure; a full-blown "hallucination" is a fully-externalized mental picture, having no basis in reality, as when a figure is seen in an empty room.

III, p. 154) should be remembered here. Brierre de Boismont, in his work on hallucinations, thus defines it: "We define a hallucination as the perception of the sensible signs of the idea; and illusion as the false appreciation of real sensations" (p. 28). This is not very clear, with regard to the former phenomenon. Parish, in his work on *Hallucinations and Illusions,* offers no clear definition of his own, but quotes Ball, in saying that "Hallucination is perception without an object," and William James in saying that "a hallucination is a sense perception like any other, only there happens to be no object there; that is the whole difference." (*Principles of Psychology,* Vol. II, p. 115.) The subject of hallucinations has been fully discussed by Gurney in his article on "Hallucinations" in *Proceedings,* Vol. III, in *Phantasms of the Living;* by Myers, in *Human Personality,* and in the "Census of Hallucinations, in *Proceedings* S. P. R., Vol. X.

The whole subject of the nature and origin of hallucinations has been extensively discussed; but while much has been said upon the subject, not many positive conclusions have actually been reached. We can merely say, in this connection, that the theory of the centrifugal origin of many hallucinations (which both Myers and Gurney so ably defended) has never, to our minds, been adequately met — far less disposed of; while it is the one most capable of explaining, in a satisfactory manner, many veridical hallucinations and kindred supernormal states. The arguments of Parish and others have always seemed to the writers unconvincing. The theory, according to our view, stands upon its own merits, and is quite as defensible as any other theory so far advanced.

According to this view, the mental picture, or hallucina-

tion, originates in the mind (or higher brain-centres, according to whether we prefer to use psychological or physiological language), and is projected "downwards," as it were, to the affected sensory-centre, inducing in *it* the sensation of sight (or of hearing, etc., as the case may be). The probable actual mechanism of the psycho-physiological process involved in such a phenomenon has been set forth at length by Gurney and Myers, in their paper entitled "A Theory of Apparitions," in *Proceedings* S. P. R., Vol. II., 168-70 (and popularly presented in H. Carrington's *True Ghost Stories* pp. 32-35). Certain it is that the centrally initiated theory of hallucinations accounts in a satisfactory manner for crystal visions, while it appeals to us more in conformity with the facts set forth in this paper than any other theory so far advanced.

The study of crystal visions which follows does not deal so much with their supernormal character (which is, indeed, dubious enough) as with the psycho-physiology of the visions themselves — with the mental and ocular and nervous and muscular changes which accompany the occurrence of the hallucinatory pictures. In order to understand our experiments aright, however, it will be necessary, first of all, to give a rapid résumé of the theory of vision ordinarily held, and also of the view held by Dr. Bates, contradicting this view in many respects, and then to see how our experiments fall into place, and also tend to confirm the latter theory. Accordingly, we shall first of all state the ordinary theory of vision and of accommodation of the eye; and we cannot do better, perhaps, for the sake of simplicity and clearness, than to quote the decription given by George Black, M. D., in his work on *Eyesight*. He says: —

"To understand anything of the physiology of vision, it is necessary to have a general idea of the way in which images of objects are formed by refracting surfaces. Light emitted from luminous bodies, or reflected from the surface of nonluminous bodies, moves in straight lines, and the smallest conceivable line of light is called a *ray*. Rays of light, then, are merely supposititious lines used by opticians to enable them to bring the effects of an intangible force within the range of mathematical calculations, and to study its exact and unalterable laws.

"A ray of light is always in a straight line while it remains in the same medium, or passes through another medium of the same density; but when it passes to a medium of different density, as from air to water or glass, its direction is at once changed. . . The rays of light are bent, or *refracted*. . . Refraction of light is the change of direction which its rays undergo in passing from one medium through another of different density. . . .

"A bundle of divergent rays, or *pencil* of light, proceeds from every point on the surface of a visible object, and each one of these pencils may be brought to a focus by a convex lens. The combination of all the focii of all the points on the surface of the object will optically reproduce the object, or form an image of it. . . . In this way the picture is formed in the camera, which in its simplest form, consists of a box with its inner surface blackened, a hole in the front in which a convex lens is placed, and a white surface on the back to receive the image that the lens forms of an object towards which it may be directed. In the eye, the sides of the box are represented by the sclerotic, the blackened inner surface by the pigment of the choroid, the opening by the pupil,

the convex lens by the cornea and crystalline lens and the surface to receive the images by the retina" (pp. 31-35).

So far all is plain sailing. But the rays of light coming from different objects are different. Those coming from a distance of more than twenty feet are practically parallel. Those coming from nearer objects are more or less divergent in proportion to the distance of these objects from the eye. If the eye were absolutely rigid, and could not adapt, or, as we say, *accommodate* itself to this state of affairs, we should see only distant objects, for rays coming from points nearer than twenty feet would be focussed behind the retina instead of upon it.

In practically every book which has been published upon this subject it is stated that accommodation is effected by a change in the shape of the crystalline lens,—which becomes more or less convex, as the case requires, thereby bringing the light-rays nearer or focussing them further away, as the case may be. Thus, Dr. Gibbons, in his elaborate work on *The Eye: its Refraction and Diseases,* Vol. I, p. 86, says:

"Accommodation is the change in the refraction of the eye, due to an increased convexity, and hence an increase in the strength of the crystalline lens, due to the action of the ciliary muscle." Dr. Roosa, in his *Defective Eyesight,* (p. 31) states that: "The ciliary muscle acting upon the crystalline lens is the agent of accommodation." Black says (pp. 41-42): "The ciliary muscle does for the eye what the adjusting screw does for the opera glass. . . . This faculty of adapting itself to various distances is called the "accommodation" of the eye, and is brought into requisition whenever there is

the slightest change in the distance of any near object that we look at." Similar quotations could be multiplied *ad nauseam;* in fact, as before stated, this is the generally accepted view of the mechanism of accommodation.

It is also generally believed that the failure of the eye to adjust itself properly for vision at different distances is due to a permanent change in the shape of the eyeball. A myopic or short-sighted eye is one that is too long from the front backward. In such an eye light rays coming from a distance are focussed not upon the retina but in front of it, producing either a complete failure of vision, or the formation of a blurred image. A hypermetropic or far-sighted eye is too short, and all rays of light would be focussed, if they could be continued, behind the retina, instead of upon it. As the distant or parallel rays are focussed more nearly upon the retina than those coming from a distance, such eyes see better at the distance than at the near-point, but do not see distinctly at any point. An astigmatic eye is one in which there has been an unequal deviation from the normal in the curvature of the cornea — more rarely of the lens — so that light rays come to a focus at different points, some behind, perhaps, and others in front of or upon the retina. According to the accepted theory the only remedy for these conditions is to be found in glasses which so change the refraction of the light rays that they are brought to a focus upon the retina, in spite of the wrong shape of the eyeball.

Now, it is these theories which the experiments conducted by Dr. Bates refute, and which, as we shall see, tend to be further refuted by our researches in crystal vision. To render this newer view of the facts intelligi-

ble to the reader, we may, perhaps, be permitted to quote from an article by Dr. Bates, in the *New York Medical Journal,* May 8, 1915, entitled "The Radical Cure of Errors of Refraction: by means of Central Fixation." Dr. Bates says: —

"I have been engaged during the past three years in the physiological laboratory of the College of Physicians and Surgeons of Columbia University, New York, in a series of experiments on the eyes of animals, which show, I believe, that the prevalent ideas concerning the causes of errors of refraction are not correct. . . . Those ideas ascribe such errors to permanent, innate, and acquired deformations of the eyeball. My experiments seem to demonstrate that we can go further back and find such deformations in abnormal strain of the extrinsic muscles of the eye. In animals, myopic refraction is produced by excessive contraction or strain of the oblique muscles; hypermetropic refraction by an excessive contraction or strain of the recti muscles; and astigmatism by a modification of the action of the extrinsic muscles. . . .

"The sole cause of all uncomplicated or functional errors of refraction is a conscious or an unconscious effort or strain to see. The only remedy for this strain is relaxation. Relaxation or rest of the eyes is accomplished only by central fixation. . . . By central fixation is meant the ability of the eye to look directly at a point, and while doing so to see best with the centre of the fovea or the centre of sight of the retina. . . .

"The lens is not a factor in the production of accommodation. . . .

"Hypermetropic refraction is always produced by a strain of two or more of the recti by electrical stimulation

or advancement, and is always prevented by relaxation of these muscles by tenotomy.

"Myopic refraction is always produced by a strain of two obliques and is always prevented by relaxation of these muscles by tenotomy.

"The cause of all errors of refraction is a strain to see. The cure is accomplished by relaxation. Relaxation is secured by central fixation."

To state the facts in simple, non-medical language for the lay reader: When we look at a near-by object, we see nearly all parts of it clearly. If, now, we move this object across the room, and we are inclined to be myopic or short-sighted, we unconsciously strain — when looking at the now-distant object — in an endeavour to see it *as* clearly as we did before. This unconscious strain causes a contraction of the oblique muscles which form an almost complete belt around the eyeball and it is thereby elongated, just as a rubber ball would be elongated if one squeezed it in the middle. The eye thus becomes myopic, or near-sighted, for the time being. The more we strain to see, the more near-sighted we become. The more near-sighted we are, the less clearly do we see the distant object, and the more we strain. We are thus in a vicious circle. The only means of egress is by learning to use the eyes properly; to look without strain, with relaxed muscles, and this is accomplished by learning central fixation — *i. e.*, how to look at the distant object and see one part of it best. When this is once learned, the eyes are normal, the vision is perfect. (Of course, the reverse of all this is true in the case of far-sighted persons; in their case the strain is to see a near-by object clearly; but the

same laws are at work, and the method of cure is also the same.)

Dr. Bates made these startling discoveries as the result of an elaborate series of experiments upon the eyes of dogs, cats, rabbits, fish, etc., and of extensive clinical observations upon human eyes. After removing the lens from the eyes of fish and rabbits, or pushing it out of the line of vision, he found that accommodation took place precisely as if nothing had happened. By electrical stimulation of the oblique muscles he was always able to produce accommodation, but after one or both of these muscles had been cut across, or after they had been paralysed by atropine, accommodation could not be produced by electrical stimulation. After the effects of the atropine had passed away, however, or after a divided muscle had been sewed together, accommodation took place as usual. Again when one oblique muscle was absent, as was found to be the case in all cats observed, a few fish and an occasional rabbit, accommodation could not be produced by electrical stimulation; but when the rudimentary muscle was strengthened by advancement, or the absent one was replaced by a suture which supplied the necessary counteraction, accommodation could always be produced by electrical stimulation. By operations upon the oblique muscles of the various animals studied, myopia was produced at will, and by corresponding operations upon the recti muscles, hypermetropia was produced at will — astigmatism being usually produced in connection with these two conditions. In human subjects whose lenses had been removed for cataract, accommodation was often observed to take place normally; that is, these subjects were able to read

diamond type at six inches, and to read the small letters on the card used for testing the vision at twenty feet, without any change of glasses. Myopia and hypermetropia were produced at will in human subjects simply by inducing them to strain their eyes to see at the distance, or at the near-point.[1]

These experiments conclusively proved (1) that the lens has nothing whatever to do with accommodation; (2) that the shape of the eyeball is not permanent, and that, therefore, the vision may fluctuate from moment to moment as the strains and relaxations of the muscles on the outside of the eyeball are brought about. A person may be myopic one instant, normal-sighted the next and hypermetropic the next. This should follow from the facts; and this we actually found to be the case in studying the eyes while crystal visions were being produced. These experiments may, therefore, be said to offer a new and indirect proof of the correctness of Dr. Bates' conclusions, and to confirm his observations in a striking manner.

These various changes which take place in the eye may readily be detected by means of the retinoscope. To make clear what happens, the following details should, perhaps, be understood.

The pupil of the eye is not really black, as most persons suppose, but transparent. It appears to us to be black, simply because ordinarily no light is reflected from the interior of an observed eye into that of the observer. In the early part of the nineteenth century, a French physiologist, while holding a cat under water in the per-

[1] If a patient strains to see a distant object, myopia is produced; if a near-by object, hypermetropia results. This is true, not only for human beings, but also for dogs, cats, rabbits, fish, etc.

formance of some experiment, was surprised by seeing the blood-vessels of the retina. This showed that the interior of the eye was not necessarily invisible at all times; and culminated in the invention of the ophthalmoscope by Helmholtz, in 1851.

When we speak of "seeing" anything, we mean that rays of light proceeding from it reach our retina; and the pupil ordinarily *appears* black, because the eye of the observer is not placed in a position to receive the rays of light coming from the interior of the observed eye. If, for instance, we hold a candle in front of an eye to illuminate the pupil, the light thrown back from the bottom of the eye through the pupil, and towards us, will be intercepted by the flame; and, of course, we cannot place our eye in the course of the rays, between the flame and the observed eye, without shutting off the light altogether. In either case, the pupil of the eye examined will appear black, simply because no light passing out through it can reach our retina. This part of the problem is solved by using, instead of a candle, a small mirror, usually concave, with a hole in the centre. Light is thrown by the mirror through the pupil, and the observer, by placing his own eye behind the central opening, has it directly in the line of the rays reflected from the interior of the eye examined, — a bright red reflection from the blood in the vessels of the choroid immediately takes the place of the usual blackness of the pupil.

In our own experiments, we used an improved apparatus, in which this mirror was connected with a powerful, though small, electric light.

Our object in making these experiments was not, however, to observe the condition of the retina, but to

note the changes of the shadow which passes to and fro across the pupil when the eye is not focussed at the same distance at which the eye of the observer is placed. If you are examining an eye focussed, say, at a spot one metre away, your own distance from the eye being the same, there will be no shadow when the light is moved to and fro across the pupil. If, however, the eye has been elongated by the contraction of the oblique muscles and cannot focus at one metre, a shadow will be seen to travel across the pupil in a direction *opposite* to the movement of the light. If, on the other hand, the eyeball has been squeezed into a shortened (hypermetropic) condition, and cannot focus at any distance, the shadow will be seen to move in the *same* direction as the light. The movement of this shadow, therefore, is a sure and immediate index to the condition of the eye — whether it be short or long-sighted, or normal, at any given moment. If the shadow changes in its direction, or disappears altogether, during the observation, it is a certain proof that the eye is constantly becoming either short- or long-sighted, or returning to a normal condition, which is what we should expect from the facts cited above — for we can readily imagine that the delicate muscles on the outside of the eye would constantly change in their tension, as the eyes were being employed in looking into the ball. And this is precisely what we found to be happening in our crystal-gazing experiments. The subject being requested to look into or at the ball, and visions having begun to appear, the beam of light was thrown into the interior of the eye,— and the movement of the "shadow" was very evident. In this way, the frequent changes of refraction could be observed,— while the crystal-visions were actually going on.

The majority of these experiments were undertaken in June, 1916,— the chief "scryer" being Mrs. John G. Peppler, a professional business woman, who kindly consented to submit to the experiments, on the condition that her eyes would not be injured thereby. Mrs. Peppler is in no sense a professional psychic; these experiments are the only ones of the kind she has ever tried,— though she has also conducted a number of valuable experiments herself, with the crystal and otherwise, as her Reports will show. She has also been the recipient of a number of interesting spontaneous experiences. It is hardly necessary to say that Mrs. Peppler received no remuneration for her services, which were given gratuitously, and that we have every confidence in her veracity and strict sincerity of purpose. She and her husband later conducted a number of researches at their own home, which are reported in their letters. We wish to express our thanks and appreciation, in this place, to Mrs. Peppler, for her whole-hearted interest and support, and for the time and patience with which she afterwards carried out a number of independent experiments herself. To Mr. John Peppler we also owe much for his collaboration with his wife, in their investigations conducted at home.

The second scryer was Mr. William de Kerlor, who kindly consented to "scry" for us on one occasion, and whose eyes when examined, showed precisely the same changes as did those of Mrs. Peppler. Mr. de Kerlor is well-known in psychical and occult circles, and has lately made an excellent translation and abridgement of Boirac's *La Psychologie Inconnue* under the English title *Our Hidden Forces*.[1] While Mrs. Peppler was our chief scryer, therefore, the experiments with Mr. de Kerlor con-

[1] Also Boirac's later work, *The Psychology of the Future*.

firmed them in a very interesting and conclusive manner.

Our first experiments were conducted on the evening of June 8, 1916,— Mrs. Peppler scrying. She sat at one side of the dining table, the ball in front of her, shaded from all high-lights by a large black silk handkerchief. The two investigators sat on the opposite side of the table, so that the beam of light thrown into the eye would be practically horizontal. The room was partially darkened, save for one shaded light, but the subject could clearly see the surface of the crystal at all times. The subject was requested to relax, first of all; and then gaze at the surface of the ball, without blinking if possible, and without strain. Under these conditions, the experiments began.

After about one minute, the pupil of the eye appeared dilated, the interior of the eye being normal. So far, no visions had appeared in the ball. At this point, however, a tiny luminous spot of light was observed, which became light and then dark. (The following extracts are from notes, taken at the time.) The first vision was that of a large fist, closed, on a big arm, supporting it. The fist becomes a lotus flower, with five points "hollow inside." This faded. A tooth-brush was then seen. An examination of the eyes at this point showed them to be normal. While the examination was being made, however, they became myopic (short-sighted). Mrs. Peppler then said: "I see my own eye, very large; now a brilliant spot all down the side of the globe. . . . A big nose flat at the bottom. . . . The outline of a face. . . . Huge brow, large orbits, the upper lip shaved, concave nostrils with hairs in them, large head, a regular dome. . . ." (Eyes normal.) "A steeple, a flag

thereon, a standard" (eyes myopic; then changed to normal). "A pyramid with four sides. . . . sands. . . . a palm tree. . . ." (eyes hypermetropic,) "and a horse, with purple and blue trimmings. . . . A river which curves, a bend in the river; on it is a boat with a beautiful sail" (eyes normal) "a triangular sail, going up-stream, against the current rapidly" (eyes myopic). "There are three men in it; now it is going beyond the horizon. . . . upwards" (Eyes hypermetropic). . . . "There is some one signalling as it were with a red flag. The one who signals is a woman with the face of a man; the eyes are round, dark, nose curved, the eyes not prominent. . . . A nice curve to the eye. The hair is parted low and going to the side — tall, not masculine" (during this vision the eyes showed mixed astigmatism — both eyes). "She is making her mouth round; her hand is being put to her mouth as if shouting a message. . . . A huge head of an owl" (refraction normal, followed by mixed astigmatism). "The owl has a big beak, with round eyes. Feathers like hedgehog quills. Now it is bigger and yet further away. . . . I don't understand that" (eyes myopic). "It is standing on its legs. It has three claws; it is standing on a piece of oak tree. It is saying 'I am he of the wisdom'" (apparently an auditory hallucination, heard simultaneously). "That same sentence is written on a piece of paper under its claws. There is a phosphorescent light on one side. The sign *Pisces;* a big capital *N.*" (Eyes normal; pupils not changed, convergence slight.) "I see the sky at night, with stars. No mountains, but smoke as if houses were in flames blown in the night, as it were. The smoke is rampant. The houses are burning. There are woods. Letter B. Letter E.

A sudden burst of reddish light; a great flash at the base of the crystal; at the top the letter Z." (Eyes normal.) "Three women; a triangle. The one on the right is white; the one in front is blue, the one to the right is dark, perhaps red. A crown of iron; a ridge on the top and bottom" (mixed astigmatism) "square stones, right and left, the right one red, the other yellow" (eyes myopic; then normal). . . .

After a period of rest, the experiments were resumed:

"A little girl walking across, she seems lost, she is wandering. . . . *(Dr. Bates,* who was making the observation at this time: "Only once in a while she focusses on the ball; she is looking way beyond the ball: now she has myopia — more than two diopters"). . . . "The tail of a peacock; a convent, a procession of white-robed figures." (Myopia; "The left eye more near-sighted than the right.") "There is a big gate through which they are walking. There are men all in white. A ship; a battleship; there are men moving about its deck" (mixed astigmatism — there is no proper focus in mixed astigmatism). The experiment was tried of magnifying the battleship by means of a magnifying glass. This made the whole scene clear, and seemed to bring it nearer. It changed to a painted picture (whether or not of the same scene was not noted). "The bust of a musician" (myopia, 1 D). "Looks like Handel. A tumbler" (mixed astigmatism; changed to simple myopia). "A plain man; a landscape at dusk. . . . A stream running through it; a beautiful woodland" (eyes normal); "now there are clouds in the sky; now we are at a circus; I see the clown and all the people" (myopic

astigmatism). "Clouds . . . clouds. . . . I can't see any more. . . ."

Later, the following was obtained: —

"I see a woman in the crystal — tall, fair, beautiful; she is impatient and has quick actions. She is very sensitive" (apparently "sensed" by the subject). "She is looking at Dr. Carrington. She is lifting her right hand; the fingers are exquisite. . . . A woman in an old-fashioned bed; sitting up in bed; there are curtains at the sides of the bed." (Myopia, more in the left than in the right eye; pupil moderately dilated; myopia less at times; it is one diopter for the right eye; now mixed astigmatism in both eyes.") "Skulls. . . . I see skulls! This picture of a skull lasts a long time. . . . Now, I see a rabbit hanging up. . . . There is some one in a hammock. . . ."

Another gentleman who was present then picked up the ball, and looked into it. This gentleman is usually near-sighted. He at once saw a big crowd of men shouting and fighting. "A mountain. . . . Blood. . . . a lantern; the crowd is going away; they are poor people, dark clothes. . . ." (Myopia revealed.) "I can't see any more. . . ."

On the evening of June 13, we again tried experiments in examining the interior of the eye, this time Mr. de Kerlor scrying. The eyes before scrying were found to be normal. Experiments begun:

"I see a table, with a white tablecloth; the things on the table seem flat." ("Eyes not focussed on the ball,

but far beyond it.") "A woman, dressed in white; fair hair, blue eyes. A friend comes from a great distance to greet her; there is a meeting of three friends. . . . A bouquet of flowers — roses" (pupils dilated; eyes normal). "I see corn flowers, narcissus" (myopia; astigmatism). "A train — some one going on a journey to the northwest. . . . Black; there is some one who is ill, near the water; it is by the sea. A square patch of reddish light — danger. A swastica. . . Some one is in the midst of danger" (eyes normal) ". . . there is some one with a moustache, slim, big eyes — beautiful, tall, pale-faced." (Some one present recognized this as a description of his nephew. Mr. de Kerlor is very psychic.) "A hall — a door — an old palace — I open the door; there is a church inside; candles burning; it is a Catholic church; things are burning" (mixed astigmatism) "it is damp — the ground outside is cultivated. . . . A tree, not very tall; an orange or olive tree. . . . Peace, peace, Fertility" (uttered by the subject, no known reason) "Blue water" (myopia) "There is no living thing in it — calm — blue sky — sun shining from behind — it is morning — dawn" (myopia) "Waves on the sea" (eyes normal). . . "I see a man with a dark moustache" (mixed astigmatism) "about five feet, ten inches tall; well built, dark, he has on a dark tie; he has the mannerisms of a professional man. . . . Shakespeare. . . . Wilson. . . . Some one is giving a devilish laugh" (apparently heard). . . . "A man of gross skin, big teeth, tall, yellow" (mixed astigmatism) "he turns his face; he takes things calmly" (eyes normal) Three stars; behind a red sun; from each star comes a hand, and coming down are streaks of magnetism or light. . . . It looks

like rain; it is dark. . . . Reflection of three lights. . . . Flowers. . . . I see the words 'I will ascend'"; (myopia) "there is the beat of a drum; the impression of a ferocious man" (eyes normal) "Lilies. . . . Clouds . . . Everything has gone; I can't see any more. . . ."

These extracts will probably be sufficient to give the reader a fair idea of the kind of visions usually seen by our "scryers," and also the method of making the investigations regarding the condition of the eyes at the time the visions were actually seen. It will be observed at once how rapidly the refraction of the eyes changed. It is idle to believe that these rapid changes could have been brought about by any alterations in the shape of the lens of the eye,— quite apart from the anatomical demonstrations before mentioned; but they become quite intelligible if we conceive the eye as a delicate, plastic sphere, constantly subject to spasmodic pressures and squeezings from the muscles on the outside of the ball. While indirectly proving the correctness of Dr. Bates' view of accommodation, therefore,—these experiments have also furnished us with an interesting series of facts regarding the condition of the eye, during the production of crystal visions. These, so far as we know, have never been observed before.

One or two remarks may be made regarding this series of observations. In the first place, it is to be noted that, in many instances, the subject was not looking *at* the ball at all while seeing the visions; his eyes were focussed in space either beyond or on the near-side of the crystal, while he actually thought he was looking into it steadily and with great care! As soon as the subject began to strain, to see objects more clearly, myopia or astigma-

tism was produced; on one occasion hypermetropia was noted when the subject was trying to see something which appeared to be moving at a great distance. These phenomena are what we might expect, were the figures seen 'objective'; but they are doubtless the result of suggestion, and are to be explained as are those formerly quoted in this paper, noted by "Miss X" and others. The rapidity with which the eyes changed was very striking,— and unexpected also. Dr. Bates has frequently observed such changes, however, in the eyes of patients who were looking at distant objects.

Following these initial experiments, Mrs. Peppler kindly undertook to conduct a number of researches of her own, in conjunction with her husband,— who is a man of good scientific training,— and report the results. The extracts are from Mrs. Peppler's Reports, with an occasional Report by Mr. Peppler. The interest and value of some of these experiments seem to us to be very great.[1] (The first letters were written, it will be noted, before our experiments, described above; the later letters afterwards, in order to undertake the various optical tests suggested.) With this, we leave the Reports to speak for themselves.

[1] The Reports are *verbatim,* save that certain portions of the letters, not bearing directly upon the experiments, have been omitted. Otherwise — save for a few verbal alterations — the accounts are exactly as received.

REPORTS

(Extracts from letters, from Mr. and Mrs. Peppler)

June 1, 1916.

My dear Dr. Carrington:

If you will remember, a little more than a week ago, I telephoned you for information as to where I could purchase globes for Crystal Gazing, and you kindly asked me to report to you any results I might have.

My husband, Mr. Peppler, who is interested in psychical research, to some extent, being very anxious to get one of the globes, I called you up in order to obtain the information for him. He has tried off and on, for the past few years, to see visions in glass marbles, balls, ink-wells, magnetized spirit cups, mirrors, etc., etc., without result, and being from the "Missouri" kind, he discredited most of the veracity of the literature on that subject. However, recent published experiments caused him to look 'round for something to be used for gazing to see if I could see anything that he could not see. The evening of the day that I called you up, my husband and I, upon looking around the house for something resembling a gazing globe, discovered a cut-glass pitcher, having a hemispherical bulge at the handle, of smooth curved glass, which we decided to use until we got the regulation globe. As per your directions, we placed a black cloth on the bottom and around the entire glass pitcher, leaving only the hemispherical glass exposed. It was becoming dusk and my husband started in gazing for ten minutes without any result whatsoever. Afterwards he asked me to try my luck. After gazing for a minute or so, I saw what seemed to me a pulpit with a preacher in it. A minute or so later I saw what seemed to me to be a coffin, draped with a black cloth, and a woman with outstretched hands kneeling beside it. The nature of the picture caused me to discontinue my experiments for the time being. Later on in the evening, my husband asked me to gaze once more, after he had again tried unsuccessfully, there being no light in the room, except the glow of a gas heater on the floor. What I

saw is as listed below, jotted down by my husband while I spouted out:

1. A stage with a curtain.

2. A fellow with whiskers, with a slab or some kind of a banner hanging downward from the elbow to his knees, like a sign. (Sign too small to be able to read contents.)

3. A little dog, (or some small animal) running around the stage.

4. A box-seat at the side of a curtain, like in a theatre, also a chandelier, also footlights at the bottom of stage and around the curtain.

5. A beautiful scene of trees, scene like sunset, with strong sunlight in the distance, beautiful scene of some tropical country, apparently a warm place, plants like stickers or cacti, growing evenly together.

6. A mining district scene, people walking, a mountainous district, people walking one by one behind each other, also a man and a woman walking and bowing and talking to each other, as though just introduced.

7. A beautiful plant, shaped something like a pyramid, a tropical country, very beautiful skies, something like Golden Gate on the Pacific Coast, or a very hot place near the Equator.

8. A King like Franz Joseph, or a General like Carranza; side whiskers; old gentleman, military bearing, like a soldier; crowd after him, he is standing by himself.— It's an army after him, he is trying to duck. He is thinking seriously. They want to kill him; the country looks very mountainous; looks like a gold region, something like Mexico; pictures are running one after the other, almost like a moving picture show. If the globular glass were bigger I am sure the pictures would be bigger in proportion to the size of the ball. . . .

My husband took down everything with pencil and paper, as I described one picture after the other, as above.

The next day my husband succeeded in purchasing a globe at Martinka's, and, in the evening, after another unsuccessful attempt on his part to see anything, he asked me to continue where I left off the night before. We placed the crystal ball on its black enamelled wooden pedestal on the black cloth, covering the

rear of the ball, again using the glow from the gas heater in the rear of my chair as the only light. I immediately saw the following:

1. An Eagle.

2. A man's face looking something like Bryon's, looking down at a manuscript, in the background a suspension bridge with water underneath; a girl's face like my sister Lulu's, her mouth open, flesh very plain,— just as plain as day; — same suspension bridge.

4. A ship — battleship — plain as day — and it is not very far away from the Statue of Liberty; Liberty looks small against the ship. Ship is far away from the Liberty Statue but moving toward it; it looks like night; Liberty is illuminated more than the battleship.

5. Same battleship again. Statue of Liberty is gone; battleship very large,— something right near it — something peculiar but I cannot distinguish it; think it is a boat; if it is, it is a funny one. Little object is chasing the battleship; not sure big ship is a battleship; has three tremendous smoke stacks; cannot see Statue of Liberty now. Am making drawing of small object. See Exhibit 1.

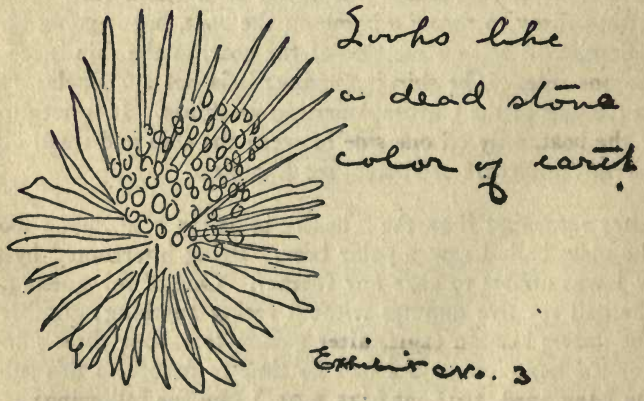
Now I see a balloon; it is lighted; it hovers above the ship and the small object. Perhaps the latter is a submarine. Balloon is getting ready to throw a bomb on the boat, but is going to miss it. Bomb will fall on the side of the boat, as the ship is scooting off to one side. The ship is moving; it is not a Zeppelin, rather looks like one of the Curtiss-American machines. It is not directly over the boat, only on one side between the ship and small object. Am drawing picture of airship, see Exhibit 2.

After returning from the Theatre at 10:15 P. M., upon looking at the glass ball, I saw a polar bear. Being interrupted by company I was unable to gaze any further. One of my guests gazed at the ball for five minutes without seeing anything; another one of the gazers saw an eagle, after gazing for about three minutes.

For the next few days I had no time to devote to this subject.

On May 23rd, 1916, at 6:35 P. M. I saw the following:

1. Sapphire ice, shade between blue and purple; looks like polar region.



2. A planet in the sky.— Two big stars colliding, one has a little tail, like sapphire ice; it is on the ground. One star has

a terrible lot of fire in it, the other has not so much. It is smaller,— looks like a scene at the North Pole, all kinds of icebergs in the water,— not a living creature to be seen.

A cold desolated country. A long stream of planets. Seven planets, one a very tiny one; they are scooting in and out playing tag with each other, but something seems to be drawing them together,— some magnetic attraction, perhaps. The country is quite dark; no sign of life there.

May 25th, 9 P. M.

1. Gazing into the glass ball, I see three stars, something in the distance of duller light, very, very large.

2. A tremendous monster, composed of brownish substance, with crab-legs,— hazy, dry and dead looking. Am drawing outline of same, see Exhibit No. 3.

3. Figure of a person wearing a bathrobe, walking with back turned. Glass ball somewhat unsatisfactory tonight, so am returning to the glass pitcher.

1. I see the figure of a nude woman sitting with one arm down. It's her left arm held downward. She has dark hair.

I am gazing under difficulties tonight, nursing my baby while gazing into the crystal. Am now gazing again into the crystal ball. I see the same crab-like figure. A fiery object diamond-shaped. Have put my baby into the cradle; am gazing now again into the pitcher.

1. I see a black cat staring at me. Cat has wild shiny eyes; cat is sitting up on its haunches; — am again gazing into the ball. I see a house on fire, not a very big fire but a very large house, one window all aflame. It is a very large window.

My husband tells me to disregard all mention of the stars, sapphires, etc., and the crab-like monster, as they are probably due to bubbles and flaws in the crystal. I find the cut-glass pitcher more satisfactory than the ball tonight, apparently for this reason.

My sister called on me the other night and I asked her to gaze into the crystal, but she was unable to see anything, although I saw a polar bear immediately upon looking into it. My husband is unable to see anything, no matter how many

times or how often he tries, but is convinced that I really see the things I describe, although they may be the products of my imagination. To me they are very real, but the ball and the pitcher-surface being so very small, the objects naturally are very small, and I am quite sure that if I had a very large ball, I could distinguish faces more definitely. To me these pictures are very, very real, with natural colours. Sometimes they stay for a long time and sometimes they remain for an instant and other pictures take their places.

If you wish to have me report any further pictures or scenes, which I may discover in the ball or pitcher, I shall be more than pleased to do so.

Of course, I do not know the meaning or significance of these pictures. They appear and disappear in the glass, and if you know more about the significance of these things, I should be very thankful to you if you will advise me.

Sincerely yours,

DAISY T. PEPPLER.

June 5th, 1916.

My dear Dr. Carrington: —

I have received your letter of the 2nd inst.

Since writing you, my husband succeeded in purchasing a hollow glass ball, eight inches in diameter, which when filled with water, serves the purposes of a crystal better than anything I have used, so far, as the pictures appear larger and more distinctly. I have written a report of my experiments on a separate sheet enclosed.

As to scrying at your residence, my husband believes I ought to try to contribute my share to science, and I shall, therefore, call at your address some evening this week, providing you will assure me absolutely and positively that the proposed examination of my eyes by means of a beam of light, will be absolutely harmless.

EXPERIMENT WITH WATER GLOBE

June 8th, 1916.

1. Empty launch,— empty seat in stern.

2. Wash hanging on a line,— a man's night-gown and a man's under-shirt, not far from the launch, on shore. I see a little sea-shore, but no people.

3. A tin pail in the boat.

4. It is night time,— I see something in the water like an eeling light; the water is quiet and there is white sand on shore.

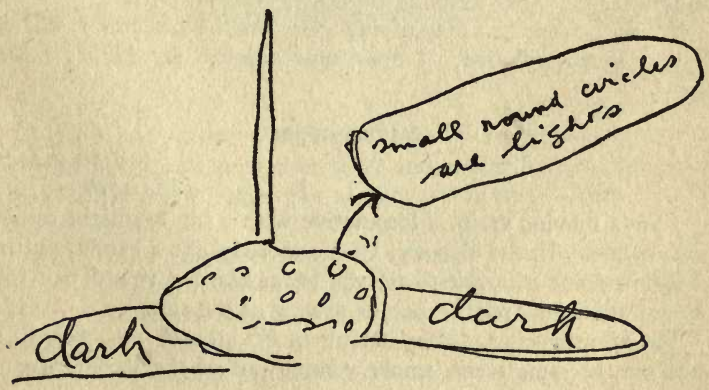
5. On the other side of ball I see somebody kneeling down and crying,— looks like a woman's figure, face buried in her hands. Now I see two women,— one standing up,— there is a lightish gown on kneeling woman; she has a very nice figure; the other woman has on a kimono and she is standing next a dresser; her hair is made kind of high and fluffy and the room seems to be in disorder, especially the table with various papers on it. The one standing up is a young woman. She is slightly lifting her dress and I see one bare leg. There is an oval shaped mirror standing on the dresser.

My sister, upon gazing into the ball, suddenly saw a fast moving train racing across the prairie, then, a second later a mountainous country full of sheep. She was startled at what she saw, as only a few moments before she had been ridiculing my crystal gazing "stunts."

WATER GLOBE

June 9th, 1916 — 6:30 P. M.

I see an object in the water. It is night time. It is moving. It is dark on both ends and has lights in the centre, and I am drawing sketch of same as I see it.



It looks like a battleship. It is still moving. It is going into port.

Adjourned till a little later in the evening.

WATER GLOBE

June 9th, 1916 — 9 P. M.

1. I see a man having on a uniform, a military cape, helmet with plume — he has a long moustache, ends hang down about half a foot, although his features resemble those of the German Kaiser. He is standing in front of a building, resembling an arsenal. Now he is walking toward it. I can just see his head now, and the back of his neck. I am using the magnifying glass now, and the picture is greatly enlarged.

2. Now I see a tremendous steel battleship. It is a very light grey colour or perhaps nearer tan. I am looking toward the bow. Now I see the deck. Now I see the same military man with the long moustache, walking around on the deck. I have turned the glass ball around, and now I see the *other side* of the battleship. Now I see a life-boat attached to the front deck of the vessel. I am turning the globe around again and the long-moustached man is still there. I have been looking for over half an hour and the battleship with the man walking on deck is still there, and the picture will not fade, although I have left the globe, every now and then, but every time I return to the globe the same picture is still there. Ship looks as though it were in port.

When I focus the magnifying glass on the picture, I still see it very much enlarged. I must now adjourn my gazing experiment.

WATER GLOBE

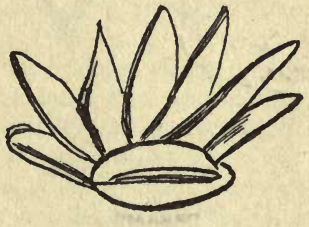
8:30 P. M.,
June 17th, 1916.

I see a moving train, a locomotive with a big headlight coming toward me. In the distance, I see somebody like a bandit, putting a log in front of track,— a large beam like a stripped oak tree. Trees on side of track,— see the setting of the sun.

10 minutes later (after taking walk around the room). I still see the same scene. smoke coming out of the locomotive. I

see figures in front of it. More than one man fussing with the beam; looks as if they were going to put it across the rail. I also see round ball of light — too large to be the moon, more like the sun but without rays around it. It lies on the side of the track, on the ground, not far from the men.

Now I see a fellow with a mask on.— Above the train, in the sky, I see a beautiful crown, such as that worn by kings or the nobility. I will draw a picture of the crown I see.



Sunday, 8 P. M., *June 18th.*

My husband calls me onto the verandah to look at something beautiful in the sky.— It is the moon, greatly enlarged, with fire in it EXACTLY AS I SAW IT IN THE CRYSTAL, or rather the WATER GLOBE, *last night.*

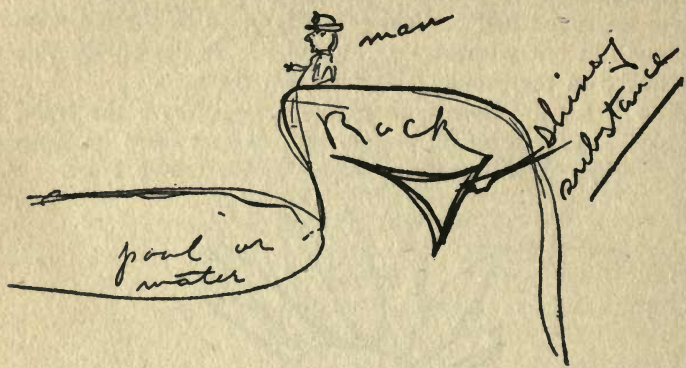
P. S. I have *good results* with the magnifying glass, but not, as yet with mirror. Maybe I haven't the right style of mirror. Also by pressing eyeball I see the object double. The small amount of light used in crystal gazing makes the mirror a difficult proposition.

Eleven P. M.
June 20th, 1916.

I see a man sitting on a rock — sort of a golden-shaped, three-cornered thing about two to three feet under him, slightly to his left. The water looks like a pool or a small river. It is a country scene.

(About 15 minutes later.) I still see the same thing. Once in a while the man stands up, but he is always on the brink. He is unaware of the three-cornered, golden-shaped thing underneath him. The rock is a large one, but one that can easily be climbed upon, from the pool to the top.

I will draw a rough sketch of what I see.



DREAMS

During week ending June 17th.

I saw the Kaiser on the upper deck of a battleship, painted quite light, with a number of military men, about a dozen in all. Each one of these men had a revolver, including the Kaiser. All of a sudden this boat made a dash toward a fleet,— looked like our fleet in Southern waters.

I don't remember just where I was when viewing this whole performance, but I must have been either floating through the air over the sea, or else on some observation tower in the sea. Then I remember walking through woodlands to a house, a small bungalow, or arsenal, with one room where powder and shot were kept, and there I met a little slip of a girl, with her hair hanging carelessly and loosely down the back of her head. The girl was not sixteen years of age. I never saw her face before but I would recognize it if I saw it again. She was a blonde but her hair was bleached, and no one seemed to detect this except myself. The soldiers were joking with her and treated her courteously and kindly. She had a very humble position among them dealing out things.

All of a sudden somebody discovered that this little slip of a girl was a *spy* of the German Emperor, and after the discovery much confusion prevailed. I do not remember what they did with her for at this point I woke up.

The following Report is by Mr. Peppler: —

July 12, 1916.

My dear Dr. Carrington:

On July 5th we (my wife and I), put the large water globe in the centre of the table, using the black cloth under and around the ball. Immediately she saw an office building (skyscraper), and a river in front of it, and an object like a tug-boat or a peculiar looking submarine in the river, in front of the building,— it looked to her like a downtown East River scene. Now I move a black japanned tray in front of my wife's eyes, while she is seeing the building. She cannot see the picture in the tray. I remove the tray,— she again sees the building in the globe. I remove the cloth,— she still sees the picture, but slightly fainter. I hand her the magnifying glass,— she sees the picture enlarged. Then I tell her to press her eye-ball,— she does so, and she says she sees the building doubled. I ask her in which part of the globe the building is, and she says in the back or rear of the ball. I turn the ball around, gradually,— the front entrance of the building is still visible to her, the picture has not changed,— I turn the ball around in the opposite direction,— the scene is the same unchanged. I tell her to close her eyes,— she does,— now she cannot see the picture, but she can imagine how it looked, but it isn't there. She opens her eyes at my request, and she sees the same picture in the ball.

Now I tell her to walk around the table to the opposite side of the globe. She gazes into the ball from the opposite side,— the building is still there, but she can't see the submarine! She goes back to her original position,— the building, river and submarine are there. I give her a mirror,— holding the mirror in all conceivable positions, she cannot see the reflection of the picture in it. She goes back to the opposite side of the ball,— the building, river and submarine *are* there now: — naturally she has not walked around to the opposite side of the miniature building. I have her repeat the performance, back and forth, making her gaze into the ball from various directions,— the building, river and submarine are there, although, in some positions, the submarine seems to be almost blotted out by the light falling on it, as viewed from this and that position,— that accounts for the absence of the submarine in the first test above stated. . . .

This was a good *test* opportunity, for the picture was practically a stationary or inanimate one, and I *proved* that the *same* picture was seen by her, no matter from which direction she looked into the crystal. Sometimes the pictures are moving pictures and the scenes keep changing continually. As in the case of the battleship,— one time she sees the bow, another time the deck, another time the opposite side of the vessel, without changing her own position or point of gazing. For the purpose of the above tests, such moving scenes are useless. . . .

JOHN G. PEPPLER.

July 18th, 1916.

My dear Dr. Carrington:

Answering the various questions contained in your last letter I would state:

1. Q. "Look into a spoon-bowl, and see whether or not the image is bent or curved, as an ordinary reflection would be."

A. I haven't a smooth rounded out spoon-bowl at hand, but in similar rounded out or curved things,— bottles, etc.,— I don't seem to see bent or curved images; or, rather, I pay no attention to such pictures when I see them, as those pictures are generally objects on walls of the room reflected up-side-down. Yes,— these things do form perfect images and pictures of things, at times, but I disregard them for the reason that I can locate the source from which they originate. (Note.— Pictures seen by her in concave bottles etc., are natural and not bent or deformed. J. G. P.)

2. Q. "See whether reflected in mirror."

A. I have had no success with mirrors at all, as yet.

3. Q. "See whether seen from opposite side of ball (when turned round)."

A. If ball is turned around while I do not change my sitting position, or standing position, I see the same picture, but if I walk around to the other side of the globe, or ball, I see the picture from another viewpoint,— on an angle, side or back, while some pictures I do not see at all on the opposite side of the ball. (Note.— These were probably slowly moving pictures. My tests with a stationary scene proved different conclusions, as per a former report. J. G. P.)

4. Q. "See whether magnified under a magnifying glass."

A. Yes,— all pictures are magnified under a magnifying glass.

5. Q. "Study the colours of the images, and see whether complementary colours are induced afterwards, while closing the eyes, or looking again into the ball."

A. With me, complementary colours are *not* induced by closing the eyes. But after closing and resting my eyes for a few minutes, I see the picture in the crystal, much clearer than before. I do, however, see beautiful colours of skies, and other magnificent colours in peculiar objects, unknown to me, just as I do see very crazy pictures at times, which seem to tell no story whatsoever, nor do they seem to have a head or a tail.

6. Q. "How big do the pictures look to you?"

A. Like ordinary snap-shot photographs,— say 3-½ x 5, or 4 x 6.— Sometimes they are small and sometimes very large and plain, though never larger than the crystal or water-globe used.

7. Q. "How long do they last?"

A. The moving pictures go rapidly before my eyes, at times so rapidly that I cannot talk fast enough to describe what I see. Some pictures move more slowly, changing position, as for instance, a profile will change to a full face, and vice versa, with the speed a person uses in turning the head. I often see what I call "Stationary pictures," which usually last a long time, as long as 10 to 20 minutes,— even longer than half an hour at times.

8. Q. "Are they opaque? — Do they shut out things behind them?"

A. Yes — usually they do shut out things behind them; while some pictures are dull, others are quite brilliant and beautiful, as for instance, a few evenings ago, upon looking at the concave water bottle, I saw a Chinaman, plain as day, preaching in what looked like a public thoroughfare. He had a white kimono on, and his queue was long and beautiful, reaching the ground, with a tassel at the end. He was talking from a platform, and a number of Chinese men and women were applauding him, waving their hands. The whole scene was coloured in the natural, beautiful colours, with the sun appearing in the sky, to the right.

This scene was to my extreme left in the water bottle as though to indicate that the scene hailed from the Far East.

Some time after that (a half hour or more), I placed the globe

on the mantel, and without expecting to see anything in it, and looking at it carelessly from where I was seated, I saw in the centre of the globe, a lot of ordinary large fish, with their heads bobbing out of the water, standing erect, but not floating around. There wasn't much colouring in this scene.

I had been reading the day before about a man-eating shark,— and this might have had something to do with this picture,— but the fish I saw in the globe, while large, did not tally with the pictures of the shark I saw in the newspapers; what I saw was more like this.

9. Q. "Does the state of your health seem to affect the visions, one way or the other?"

A. My health is generally considered good. I have, however, a highly artistic temperament,— easily offended. My health does not seem to affect the pictures one way or the other. But I might say my "whims" do. By that I mean that, if I do not feel like "scrying" or interesting myself in the globe, say because of an argument with my husband about it, then, in that event, I seem not to see very much; but if I put my heart and soul into it, feel happy, ambitious and in good humour, what I see is really wonderful,— to me!

10. Q. "Try telepathic experiments with a friend."

A. I cannot FORCE mental telepathy on another. But my husband and I have made a few experiments on each other, viz: he would write down a number on a piece of paper, holding it in his hand and repeating it mentally, while I would try to guess the number, and I succeeded in doing so, in one instance, the very first time, while in some cases I did it in some three to six guesses, other cases not at all, and *vice versa*. My husband did the guessing in about as successful a fashion as I did.

11. Q. "Try shell-hearing, with a big shell held to the ear, for voices."

A. Sorry I haven't had a chance to do anything with this, as yet, as I haven't a shell at hand, but I held the small open end of a lamp-globe to my ear and was surprised at the peculiar noises.

I purposely refrained from gazing much lately, or "scrying," owing to the Mexican situation, in which I am deeply interested because I have so many friends who have gone to the Border,—

members of the 69th, 71st, 7th and other regiments,—not wishing to see unpleasant scenes.

I do not think of anything further to say at the moment.

Thank you for your kind interest in me, and believe me,

Sincerely,

D. T. PEPPLER.

October 16th, 1916.

Dear Dr. Carrington:

The enclosed reports are like a "drop in the ocean" of the many scenes visible to me,— as for instance, one morning last week, between 8 and 9 A. M., I saw a beautiful palace, shrubbery, fine grounds, magnificently laid out, and an air-ship hovered over it, directly east. I lost sight of it, (the air-ship) in the shrubbery, and after that I saw an underground passageway in the palace grounds. Then the scene passed away and a marine picture took its place,— that of a tramp steamer, with no less than three small undersea boats after it, but something happened in my household that prevented my jotting down these *data,*— as has been the case in many other instances.

Really, there is so much to look at in these globes that, if I even attempted to report everything, I would not, truthfully speaking, know where to begin nor how to end. But you, no doubt, by this time, have a general idea of the different things I see from time to time; — all sorts of scenes,— beautiful landscapes, thrilling marine pictures, as well as pictures of beautiful objects,— and freakish ones, too!

Sincerely,

D. T. PEPPLER.

October 15th, 1916.

My dear Dr. Carrington: —

Replying to yours of recent date, wherein you request details regarding my wife's veridical visions in the water globe, while I was away, I desire to state that they are correct miniature reproductions of scenes that took place in Chicago,— the company I was in and the little odd things that took place while in said company. I cannot regard this as co-incidental guesswork, as my wife didn't know what company I was going to meet, much less could she know what was going to happen while in the com-

pany of these persons. If I tried to give details in a short letter, they would sound strange and peculiar, as the happenings are the result of several years of peculiar combinations of circumstances.

My wife has become quite proficient at crystal gazing and, while she sees her own visions continuously, if I ask her to see some certain person far away, and tell me what he is doing, she will usually see him in a few seconds in another part of the globe, but her *own* vision will remain where she first saw it, even after the second or induced vision has vanished.

During the early part of the summer, I procured a ruby water globe, and my wife claimed, that after she had gazed into it intently for a few minutes without seeing much of anything, the visions in the clear glass water globe were clearer and more distinct. But my experiments in that direction were meagre, for the reason that my wife took a sudden, violent dislike to the red ball, and it was very seldom I could induce her to look into the ruby globe, and she threatened to throw it out of the window every time I mentioned it. Her favourite is the large clear water globe, and, when she saw a picture, I also experimented with amber glasses or spectacles. She would still see the vision, but less distinctly.

Finally I decided to find out what effect dicyanin would have on her vision. I have since purchased a set of " aura " screens, and I experimented with them alone by myself, until my wife begged me for the loan of them. She claims she can see my " etheric double," and she also claims, that after she has gazed into the dark blue dicyanin screen for a minute, she can see the visions clearer in the clear water globe through the red screen, but, our experiments, in this direction, have been far from exhaustive. However, she now gazes into the red or ruby water globe, of her own volition, and actually sees things in it. Tonight, she saw a long distance vision in the ruby globe, which I am almost positive is veridical, because I and not she knew anything about it, and because she couldn't have gotten it from me, telepathically, as I was busy writing at the time and not thinking about it at all. [*i. e.* by direct, conscious telepathy]. . . .

Sincerely,

JOHN G. PEPPLER.

December 18th, 1916.

My dear Dr. Carrington:

I have reported a number of times, to Mr. Peppler, verbally and in writing, since last I wrote you, but whether or not he has had time to transmit the same to you, I do not know.

However, one very interesting incident occurred the other night, and I decided to write you directly about it, myself.

Evenings, Mr. P. has lately had the habit of saying to me: "Look into the Crystal (or Water Globe) and see what So and So is doing this very minute!"— Sometimes I balk like a donkey, as I prefer to "gaze" at random and see anything I happen to see without effort, rather than pin myself down to the strain of trying to see "what So and So is doing this very minute."— No doubt a great deal of practice is needed in this special way of scrying before the desired result is obtained, but the fact that much can be accomplished, in time, is beyond doubt, provided a person does not over-do this sort of thing.

But what I am driving at now is simply this: Saturday night, December 16th, Mr. Peppler asked me to look into the water globe and see what So and So was doing. I looked, and to the right of the crystal (or water globe) I saw beautiful mixed colours and a *Loving Cup,*— such as are usually given out as prizes in yacht races. I immediately told my husband I saw this *Loving Cup,* and he immediately retorted: "Now *cut out the symbolical stuff. What I want is the veridical material!"* And he would hear nothing further from me about the *Loving Cup,* and I was obliged to turn my thoughts to what "So and So is doing this very minute."

But, Sunday afternoon, about 3:30, I was asked by a member of one of the Clubs we have in our house (we now have two Clubs there) whether or not I had seen the cup their Club won in a prize dancing contest. I was amazed, and without saying anything, went at once downstairs to look at the cup, and behold, I saw the same shaped cup I saw the night before in the water globe.

I saw this cup about 9:30 Saturday evening and the boys won the cup 12:30 A. M. following morning. Mr. P. attributes the affair to "telepathy" for, at 9:30, when I saw the cup in the crystal, he (Mr. P.) claims the boys had their minds concentrated

on winning it, and I caught the wave,— thought wave,— which threw the reflection of the cup into the crystal. At any rate, I did not see it at the very time they won it, but 3 or 4 hours before, and I recall that the cup I saw in the crystal, while identically the same shape, was composed of brilliant, opaque, vapoury substance, beautiful colours, while the real cup is of solid silver. . . .

Sincerely,

D. T. PEPPLER.

These extracts will furnish the reader with sufficient material to enable him to see the character of the experiments, as well as their general psychological characteristics. Mrs. Peppler has continued crystal gazing experiments, on and off, since these Reports were written, but not systematically, and has written no detailed reports of the results obtained. Domestic duties interfered with her continuing the experiments systematically, and she probably lost her initial interest,— being disappointed that nothing of a strikingly supernormal character was obtained,— which she had hoped would be the case. We must therefore, accept the case as it stands, for the present,— and probably enough has been furnished to satisfy the most painstaking and patient reader! The reports of Mrs. Peppler we regard as interesting and valuable, and worthy of ranking with those of 'Miss X.,' Mrs. Verrall and 'Miss A.' Supernormal material is almost entirely lacking, though it will be observed that this was possibly beginning to appear at the end of the series, when the experiments ceased. It is a pity that further systematic investigations along these lines could not be carried on; and we can only hope that, at some future time, this opportunity will present itself,— in which case a further Report upon such experiments will be made.

The chief object of this paper, however, is to draw attention to the remarkable and hitherto unknown changes which take place within the eye, during the production or perception of crystal-visions, and the series of optical tests which rendered these changes apparent. It is earnestly hoped that these initial, and in many ways crude, experiments will serve to stimulate others to experiment along somewhat similar lines,— or to study other psychic phenomena from this physiological point-of-view. We shall feel that this paper has served its purpose if it has succeeded in calling the attention of serious students to a hitherto neglected field of psychical research, and has set them upon the road to making analogous experiments themselves.

INDEX TO NAMES