



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

2nd

PROPERTY OF
*University of
Michigan
Libraries*

1817

ARTES SCIENTIA VERITAS

OCCULT BOOKS
SAMUEL WEISER,
INC.
117 Fourth Ave.
New York, N. Y.

1847

~~Nov.~~

Dec.

NEW LIGHT ON IMMORTALITY

BY THE SAME AUTHOR

**TWO NEW WORLDS. I. THE
INFRA-WORLD. II. THE SUPRA-WORLD.**
Crown 8vo, 3s. 6d. net.

THE ELECTRON THEORY : a
Popular Introduction to the New Theory
of Electricity and Magnetism. With a
Preface by G. JOHNSTONE STONEY, M.A.,
D.Sc., F.R.S. With Frontispiece Por-
trait of Dr. Stoney, and 35 Diagrams in
the Text. Crown 8vo, 5s. net.

LONGMANS, GREEN, AND CO.
LONDON, NEW YORK, BOMBAY, AND CALCUTTA

NEW LIGHT ON IMMORTALITY

BY

E. E. FOURNIER D'ALBE

B.Sc. (LOND.), M.R.I.A.

AUTHOR OF "THE ELECTRON THEORY" AND "TWO NEW WORLDS"
HON. SECRETARY OF THE DUBLIN SECTION OF THE
SOCIETY FOR PSYCHICAL RESEARCH

WITH ILLUSTRATIONS AND
DIAGRAMS IN TEXT

LONGMANS, GREEN, AND CO.

39 PATERNOSTER ROW, LONDON

NEW YORK, BOMBAY, AND CALCUTTA

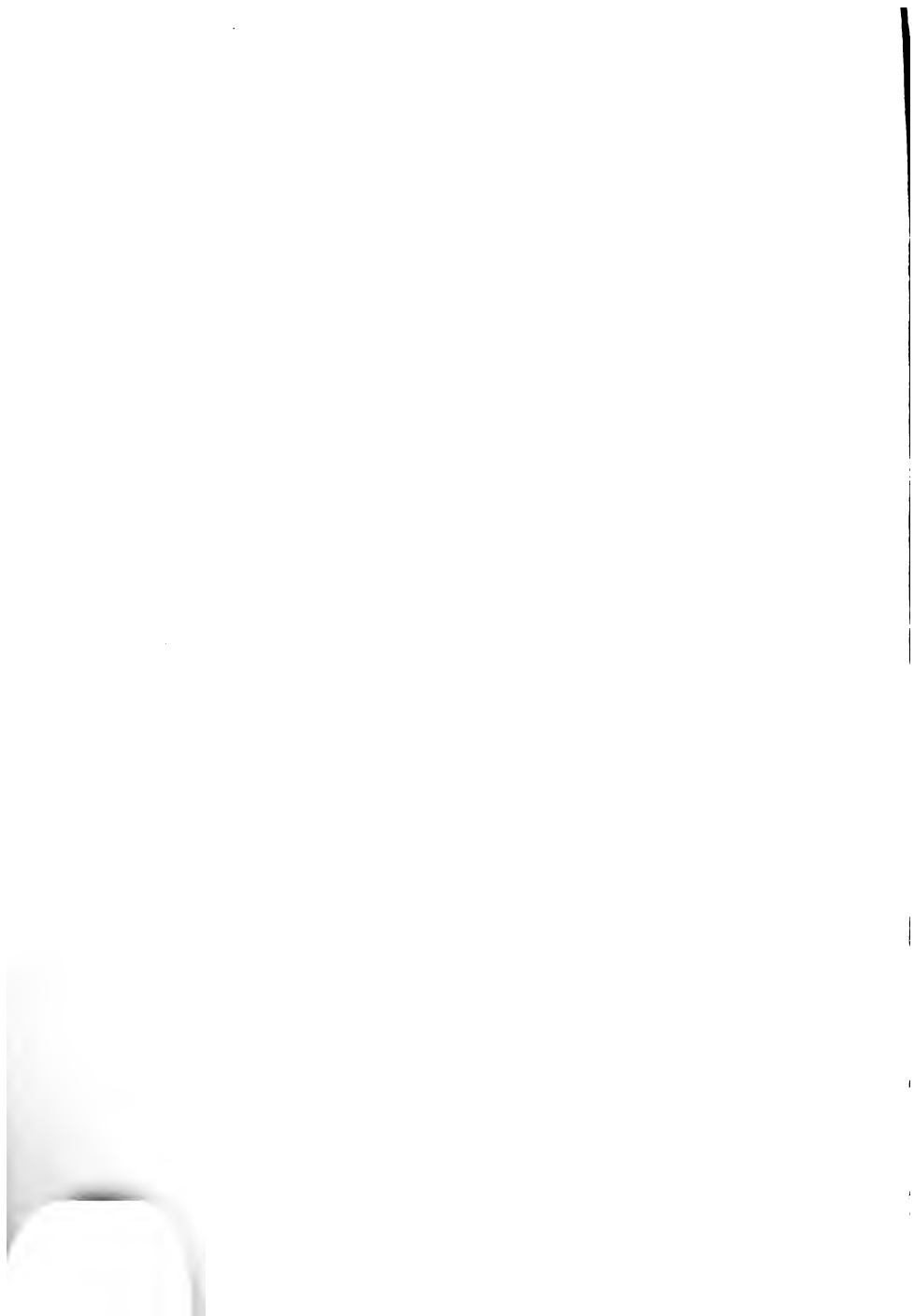
1908

All rights reserved

BF
1031
.F78

Gift
Mrs. H. H. Hughes
12/29/53

TO
MY DEAR WIFE
EDITH CONSUELO
THIS BOOK IS
AFFECTIONATELY DEDICATED



PREFACE

THE present work has arisen out of the cosmological speculations embodied in "Two New Worlds," which themselves were suggested by certain recent advances in our knowledge of the atoms of matter and of electricity. It seemed to me desirable that the new materials should be used as soon as possible to further the solution of the "question of questions," the possibility of human immortality.

Lest it appear presumptuous for a physicist to venture an opinion on such a subject, which is usually associated with psychology and theology rather than experimental science, I may plead that the relations between mind and matter require for their elucidation an extensive acquaintance with what is actually known about matter and what is *not* known about it. And every one, I think, will acknowledge that the relations between mind and matter are at the very root of all possible theories concerning immortality. Now the physicist is permanently confronted with problems concerning the ultimate nature of matter, more so even than the chemist, and much more than the physiologist, who usually derives his ideas concerning matter from elementary text-books of physics and chemistry. This explains the fascination which ultimate ques-

tions are found to exert upon representatives of physics rather than upon devotees of other branches of science.

This book, then, is an attempt at what we might call a Physical Theory of Immortality. Such a theory must make the minimum of new assumptions, must not contradict any known law of physics, and must bear thinking out in all its consequences without leading to qualitative and quantitative absurdities. These requisites I have borne steadily in mind. The result, to me at all events, has been distinctly satisfactory, and although not all the points are fully worked out yet, I have, so far, failed to discover any inconsistency with the laws and experiences of the world we live in.

I have taken pains to remain throughout in close touch with the *facts* of physiology, and have embodied some of the most recent results of that great science in the following pages. At the same time I have guarded myself against accepting those crude hypotheses and speculations concerning ultimate realities with which some physiologists are inclined to cloak their real ignorance concerning the inner working of the phenomena they investigate.

The theory developed in the first two parts of this book may be taken, at all events, as a *type* of a theory of immortality which has a chance of being accepted by the scientifically trained mind. It remains for theologians to declare whether a theory of this type can be satisfactorily embodied in their systems. On this question I cannot venture to express any opinion, but I think they will acknow-

ledge the obvious advantage of having even a working hypothesis of a future life presented to them, such as both parties could possibly be brought to agree upon.

In Part III. I have gone a step further. I have ventured to include in my survey a large class of phenomena which official science has not yet accepted. I refer to what are now most usually styled "metapsychical" phenomena, and which form the subject-matter of what is known as psychical research. Of these I have had little personal experience, but a careful examination of the extensive literature of the subject has forced upon me the conclusion that a large and solid basis of reality is at the bottom of these somewhat rare and elusive happenings. That being so, it seems naturally a little strange that they have not yet been fully recognised. But that fate has historically been shared by many other facts which did not happen to fit in with the views prevailing at the time. To judge from the trend of modern opinion, the time is approaching when a slight rearrangement of our general principles will provide the elasticity necessary to allow of these facts being duly placed and catalogued. The step I have here taken is therefore not fraught with such dire dangers of heterodoxy as some of my scientific friends have so kindly warned me of. And, even if it were, I should regard it as an obvious and imperative duty to state in precise and unambiguous language the conclusion I have, after careful examination of witnesses on both sides, deliberately arrived at.

But it should be understood that the views advanced in this book do not stand or fall with the reality or otherwise of metapsychical phenomena. The hypothesis sketched out, or something like it, is necessary to explain the phenomena of every-day life and growth, which are not fully accounted for by *any* theory so far put forward.

The central beam of the "new light" is the rehabilitation of life as the primary and ultimate reality. The reduction of the laws of nature to the laws of life of that congeries of inferior strata of life which we call "matter" is the most important of the new conceptions here established. It is, of course, an obvious corollary of the theorems proposed in my "Infra-World."

In conclusion I beg to thank those kind Dublin friends who have assisted me with the loan of books and the verification of references, and Mr. E. Dawson Rogers and Mr. Henry Withall for the loan of valuable photographs.

E. E. FOURNIER D'ALBE.

11 SUNBURY GARDENS, DUBLIN,
September 1908.

CONTENTS

PART I

CHAPTER I

THE PROBLEM BEFORE US

	PAGE
The modern attitude towards death—Quantitative aspects of death—Unknown territories to explore—Man's growing optimism—Attitudes of science and theology—What we want to know	1

CHAPTER II

WHAT IS LIFE?

Ancient and modern definitions—Attempts to define life in terms of matter—No sharp demarcation between living and dead matter—Life more fundamental and "knowable" than matter—What do we know about matter?—The prestige of matter—Practical evidence of "existence"—Orders of reality—Matter expressed in terms of life—Laws of Nature—The life of "dead matter"—Low-order consciousness—The laws of Nature are the moral laws of lower universes—The life period of atoms	10
--	----

CHAPTER III

THE BUSINESS OF LIFE

The human messenger—The organic life-work—Pre-natal activity—Development after birth—Social or "waking" consciousness takes the place of the organic consciousness	
--	--

—Vicarious experience—The function of language—The submergence of the organic consciousness—Maturity a birth into the social world—The social business of life—Racial consciousness—Extension of personality—The personality of communities—Selfishness—The interpretation of ordinary avocations—Happiness—Wisdom	PAGE 30
--	------------

CHAPTER IV

THE MECHANISM OF LIFE

A problem of chemical physics—The human machine—A cell mechanism—Wilson on co-ordination—Intercellular connections—Protoplasmic continuity—Grades of vitality—The organic hierarchy—Self-determination—No purely local phenomena—Regeneration—The death penalty—The deathless amoeba— <u>Heredity and the Chromosomes</u> —The centre of vitality of the cell— <u>An invisible body</u>	50
---	----

CHAPTER V

THE LAWS OF NATURE

A security or a restraint—Who frames the laws?—Impossibility—How we generalise—Majesty of natural law—Its human import—Discrediting of speculation—British and continental schools—Materialism still in power— <i>Pax Romana</i> —Universality of life—Definition of a world—The world of atoms—Life of atomic species—The laws of nature are the social laws of inferior worlds— <u>Souls within souls—Our blood relationship with all life, and with all that exists</u> —Superior aggregations	76
---	----

CHAPTER VI

BODY, SOUL, AND SPIRIT

No room for a universal cataclysm—A new monism—Diagram of existences—The individual covers an infinite series of worlds—Death is the extraction of the vital or directing

CONTENTS

xiii

	PAGE
elements—The search for a spiritual body—Possibility of its extraction—Externalisation of personality—Properties of the externalised body—A gaseous constitution—Where is heaven?	96

PART II

CHAPTER I

BIRTH

If life were reversible—Unicellular cell-division— <i>Tetramitus</i> —Conjugation—Union of the nuclei—Alternation of generations—Necessity of subdivision—The multiplication of nuclei—Division and fusion of souls—The function of sex—Germ-cells—The problem of development—No physical causality conceivable—Infra-world memories	115
--	-----

CHAPTER II ✓

LIFE AFTER DEATH

Are we prepared for a theory?—Orthodox reticence—The negative attitude of materialism—No real belief in a future life—A scientific demonstration required—No room for dogma—Modern tests and requirements—Unexpected complexity—No finality—Popular ideas reduced to absurdity—Our guiding principles—No world outside God	131
--	-----

CHAPTER III

THE SOUL-BODY

Self-determination and the conservation of energy—The soul-body consists of material particles or structures—Proposal to call them "Psychomeres"—Darwin's "gemmules"—Weismann's "determinants"—Relation to chromosomes	
--	--

and centrosomes—Weight of the soul-body—Effects of withdrawal of the psychomeres—Probable experiences—Time required for withdrawal—Comparison with chloroform—Defence of the organism—The final struggle—The moment after—The liberated soul—New functions—Earth-memories—Can a soul be wounded?—The souls of cripples—Shape of the soul—Probable resemblance to a flame—Familiar instances—Cohesion of the soul-body—Assumption of former terrestrial shape	PAGE 144
--	-------------

CHAPTER IV ✓

THE SOUL-WORLD

Where is it?—Alternative locations—Non-euclidian space—The fourth dimension—Three-dimensional space—Choice of worlds—The claims of our atmosphere—No valid objection—Structure of the atmosphere—Recent investigations—The isothermal layer—Evidences of stratification—Conditions of aerial life—Anatomical peculiarities—Sense-organs—Life in the soul-world	160
--	-----

CHAPTER V ✓

INTERCOMMUNICATION

The soul-world as seen from the earth—The earth as seen from the soul-world—Difficulties of intercourse—Relations between the two worlds—Not necessarily amicable—No absolute separation—Community of ideals necessary—The struggle between opposite ideals—The basis of ethics—Public aspects of intercommunication—Stamping it out—How a truth becomes a myth—The flight of the fairies—Recent revivals—Methods of communication—Alternative methods—Method of the soul-world—Method of the earth-world—Spirit control of an earthly organism—Passivity and familiarity—No revelations concerning earth-life to be expected—No terrors ahead—Disease and death	175
--	-----

CONTENTS

XV

CHAPTER VI ✓

THE WIDER PROBLEMS OF IMMORTALITY

	PAGE
Do animals possess souls?—Are animals and plants immortal?—Conditions of immortality—Will and utility—Optional immortality—Amalgamation of individuals—Grades of disintegration—Blood relationship—Reincarnation—Its difficulties—Karma—Higher entities—Kingly souls—Our responsibility—Human power	191

PART III

CHAPTER I

THE NEW PSYCHOLOGY

Decay of the introspective method—The psychophysical laboratory—Psychopathology—Hypnotism—Known and unknown—A theory more necessary than further facts—Summary of our theory in 19 articles—New data to be embodied—Boirac's classification—Hypnoid, Magnetoid, Spiritoid—Misuse of the word "force"—Definition of "force"—The specialisation of science—Most modern theories are specialist devices applicable to a limited range of facts—Frederick Myers—The panorama of the soul—Our modification—Refutable and verifiable—The subliminal self—The spirit hypothesis	203
--	-----

CHAPTER II ✓

THE STORY OF "KATIE KING"

The best-authenticated record—Miss Florence Cook—Annie Morgan, <i>alias</i> "Katie King"—Her full form photographed by magnesium light—Reproduced as a wood-engraving—May 7, 1873—Exceptional conditions—Stringent tests—Mr. Luxmoore's account—Mr. Harrison's account—Difficulties of exposure to light—An authentic photograph—Alleged "exposure" of the medium—Cromwell Varley's	
---	--

	PAGE
electrical test—Full report—Further particulars—Mr. Coleman's account of the farewell scene—Portrait of Miss Florence Cook in 1874—Separate identities of Miss Cook and "Katie King"—Later portrait of Mrs. Corner (Florence Cook)—Preserved pieces of "Katie King's" dress—Mr. Harrison's account—Souvenirs of hair—Parting words—"Florence Marryat's" account—Thorough examination of the form—The question of separate identity—The press on "Katie King"—Lombroso and Richet	218

CHAPTER III

INTERPRETATION OF THE PHENOMENA

"Clearly impossible"—Why official science was not convinced—Sir William Crookes' advantages—Why he succeeded—A remarkable test—Hasty generalisations—Spiritualism in Europe and America—Physical characteristics of "spirit forms"—Mental characteristics—No shadow ghosts—Voice manifestations—Moral characteristics—Sensations of the medium—Drapery—Harrison's hypothesis—Alternative interpretations—"Katie King" an independent entity—"Katie King" a "double" of Florence Cook—The spirit hypothesis the simplest—Mechanism of materialisation—Risks and limitations	268
--	-----

CHAPTER IV

SUPERNORMAL PHYSICAL PHENOMENA

The Dialectical Society's Report—Movements of furniture—Method of the spiritualists—Instructions for private investigations—Dr. Maxwell on rape—Eusapia Paladino at Cambridge—Crookes' catalogue of phenomena—Weighing of evidence—Science cannot recognise miracles pure and simple—Man supreme in his own sphere—Externalisation of energy—Source of power—The demon theory—The effect of enlightenment	294
---	-----

CONTENTS

xvii

CHAPTER V ✓

PROOFS OF SURVIVAL

	PAGE
Difficulties of identification—Identification of living persons	
—Similarity of methods and of evidence—The case of Frau von Bille-Dahl—Mr. Aksakoff's observations—	
Mental tests—Communications from Myers, Hodgson, and Gurney—Cross-references to "Mrs. Holland" and Mrs. Verrall—Sir Oliver Lodge's announcement . . .	310

CHAPTER VI ✓

CONCLUSIONS

The road behind us—How we found the soul—Survival a thinkable contingency—A question of physics and physiology—The fear of death—The needs of the heart—Reward and punishment—A boundless prospect . . .	321
INDEX	329

ILLUSTRATIONS

PORTRAIT OF "KATIE KING". . . .	<i>To face p.</i>	222
A PHOTOGRAPH OF "KATIE KING" . . .	"	232
MISS FLORENCE COOK IN 1874 . . .	"	250
A LATER PORTRAIT OF MISS FLORENCE COOK (MRS. ELGIE CORNER). . . .	"	253



NEW LIGHT ON IMMORTALITY

PART I

CHAPTER I

THE PROBLEM BEFORE US

THE twentieth century is too busy to occupy itself much with the problems presented by death and what follows it. The man of the world makes his will, insures his life, and dismisses his own death with the scantiest forms of politeness. The churches, once chiefly interested in the ultimate fate of the soul after death, now devote the bulk of their energies to moral instruction and social amelioration. Death is all but dead, as an overshadowing doom and an all-absorbing subject of controversy.

The spectacle of 2,000,000,000 human beings rushing to their doom with no definite knowledge of what that doom may be, and yet taking life as it comes, happily and merrily enough as a rule, seems strange and almost unaccountable. The spectacle somewhat resembles that inside a prison

A

during the Reign of Terror, when prisoners passed their time in animated and even gay converse, not knowing who would be called out next to be trundled to the scaffold.

Such a spectacle has from time to time appalled sensitive hearts, and led them to endeavour to impress upon their fellow-creatures the precariousness of their predicament and the uncertainty of their fate. Such admonitions have, however, but a temporary effect generally. It is only when death approaches the individual himself, or those most dear to him, that the Problem confronts him in deadly earnest. What are we? Whence and whither? Here am I yet, a being full of mental and physical activities, in full possession of my reasoning faculties, with a vast memory and experience in the background, capable of understanding and influencing my surroundings, filling my place to the happiness and advantage of others, indispensable, perhaps, to their well-being—and yet this will all come to an end, a painful and perhaps inglorious end, just as it did in that other being whose soul was intertwined with mine, whose thoughts and very life were mine, and without whom I could not conceive of existence as possible!

Every year some 40,000,000 human corpses are consigned to the earth. A million tons of human flesh and blood and bone are discarded as of no further service to humanity, to be gradually trans-

formed into other substances and perhaps other forms of life. Meanwhile the human race in its myriad forms lives and thrives. Its aggregate weight of 50,000,000 tons shows no sign of diminution. No matter if the whole race is renewed every fifty years. No matter if the population of the Unknown Land increases every year by half the population of the United States. The individual perishes, the species survives. Death is a natural necessity, a matter of exact science and statistics, an inexorable doom. The individual terror sinks out of sight in the triumph of the aggregate, a triumph reflected in the ordinary indifference of the individual. "Thy fate is the common fate of all." What need to murmur when we all must suffer the same fate? Our ancestors have faced it before us without flinching. We have nothing to complain of. We are like soldiers on a battlefield, with equal chances of being shot. A spirit of comradeship keeps us courageous and resourceful. We have spells of panic, but a single bright example of bravery suffices to annul it. And so the race lives on, surrounded on all sides by deadly peril, and manages to smile amid a thousand forms of torture and annihilation.

This magnificent nonchalance in the face of death must have some justification. It is inconceivable that all these millions should be indifferent to their future fate. It cannot be the effect of

religion, since this indifference is found in its most pronounced form among the least religious communities. It can hardly be a growing conviction that there is no immortality, that death cancels and swallows up everything, for such a feeling could not produce a vigorous and cheerful life. Most likely it is a half unconscious conviction that somehow everything will work out well, that the brightness and beauty of this world is a promise of more joy and delight in other forms of existence, and that the Power which gives us even a few glimpses of happiness now is the same Power that will rule and bless our future life.

It may be also that the task of probing into the future has proved so beset with difficulties, the results of research so meagre and disappointing, the most eminent opinions so contradictory, that many have given up all "idle speculation" in that direction, confining themselves to more accessible fields of endeavour, exploring the visible universe and tracing its laws, or ordering their surroundings and material prospects so as to secure the maximum of comfort and enjoyment for themselves and those whose personalities are linked amicably with their own.

Yet one cannot but imagine that this state of things will change. Mankind is so inquisitive, so restlessly active in elucidating mysteries and extending the realm of certainty, that the land beyond

the grave must surely some day be asked to yield up its fruits of truth. When we dissect the body and probe the human soul to its depths, it surely does not mean that bodily comfort and mental sanity for threescore years and ten are the highest aim of all our work! No; our minds will not be satisfied with half truths. When we explore any new territory, any new portion of the Unknown, we are not finally satisfied with contradictions and incomprehensibilities. These only act as irritants and stimuli towards further endeavour. They encourage younger minds to try and succeed where the first pioneers failed. Nothing is so discouraging to a young Alexander as the thought that his father has left him no worlds to conquer! Well, here are your worlds, young men! Here is Freedom and Necessity, Mind and Matter, Moral Responsibility, the Origin of Evil, Life and Death, and Immortality—all subjects full of difficulties and pitfalls, puzzles on which the mightiest intellects have in vain plied their weapons of analysis. Ye shall succeed where your forebears failed.

Has Science any new light wherewith to illumine the Debatable Land? Have we explored in vain the depths of stellar space? Have we solidified air, harnessed the lightning, isolated the bacillus, and split the atom without making any real and vital advance? Are we for ever to inscribe on our tombstones a note of interrogation, and—

"Speak of death with bated breath,
And faces blanched with fear"?

It has been said that the lives of savages are played against a perpetual background of dread, that certainty, safety, reasonable security, are the highest gifts of civilisation. We may therefore expect that efforts will always be made to dispel the haunting insecurity of our existence, and to give us a firm footing in both worlds—the world we live in and the world to come.

But the difficulties of the task are complicated by two diametrically opposite factors. On the one hand we have Science, largely materialistic or agnostic, which either denies point-blank all existence after death, or regards its problems as insoluble and all attempts in that direction as doomed to failure. On the other side stands theology in its many forms, armed too often with dogmatic pronouncements and girt about with a narrow-minded and ultra-conservative bigotry which would fain reserve the Unknown Land to itself and refuse admission to all surveying expeditions. Mankind will refuse to be fettered by either of these. No preconceived negative theory will prevent a new science being born which shall embrace all discoveries on the new continent, and that new world will be too closely associated with mankind at large and man's departed to be willingly handed over to the exclusive use of any one theology, however ancient or imposing.

We may therefore set to work on this pioneer's task, with due care and reverence and circumspection. We want to know what life is, and what relation it holds to matter, how it is organised and supported, how it thrives and multiplies, decays and disappears. We want to know what gives us our present bodies, why they develop as they do, without our knowing or controlling the process; why we pass through certain stages at certain epochs, and subsequently, much against our will, gradually withdraw into ourselves and disappear from the stage. We want to know what constitutes death, what are its essential attributes and conditions, what makes it inevitable. We want to know what constitutes our individuality and identity, why we are *we* and none else, what hope we have of preserving this identity. We want to know how it feels to die, and what happens to us after we have passed the portals of the Unseen. We want to know whether we shall live for ever, and if so, whether we have lived before, or only begun existence when we entered this world. And if we are immortal, are horses and dogs immortal, and trees and plants, and mushrooms and earwigs, and tubercle bacilli? And if not, is the cleverest dog more mortal than the unborn babe or the hopeless idiot or the lowest savage? And if that is so, what is it that gives man this tremendous privilege over the highest animal intelligence?

And then we want to know the function of pain, the essence of happiness, the mission of good and evil, whether there are eternal rewards and punishments, and whether our conduct here determines our fate hereafter. We want to know if any communication exists between this world and the next, any wireless telegraph joining the two continents, any code of signals, any Esperanto for communication. We ask whether the dead return, whether they appear again to us in this world, and if they do, whether such phantoms are real or imaginary. We want to know whether communication, or increased communication, between us and the departed is likely to benefit either us or them. In any case, we want to indicate how, if required, the gulf between us can be bridged over, and intelligent communication safely established.

All this is to be done with the aid of an enlarged and enlightened Science. The foundations of present-day science are not broad enough to reach those ethereal heights where the spirits dwell. Like Marconi in Connemara, we must build a wider and vaster structure on new foundations, a structure of superior range and carrying capacity. But in doing so, all the latest results and advances of science must be brought into play. All the magnificent work hitherto accomplished in physics, astronomy, chemistry, biology, and experimental psychology must be pressed into service. Special attention

must be paid to the more recondite problems of mental pathology, and the results of the psychical and metapsychical research. Just as physicists and chemists use that rare substance, radium, to discover new and fundamental laws of matter, so must we search among the authentic records of supernormal phenomena for new guides and new enlightenments. And combining all these materials with the accepted and universal canons of logic, applying to them a sound and fearless common sense, and clothing them in a simple and unambiguous language, we may hope to acquit ourselves of our task with some benefit to afflicted humanity.

1

CHAPTER II

WHAT IS LIFE?

WHENEVER we wish to define or explain a thing, we require something else to which, in whole or in part, it is equivalent, something to which we can reduce it or with which we can compare it.

Ancient philosophy wisely refrained from a definition of life in terms of something else, and dealt by preference with the soul, the "formal cause" of the organised body, assuming, as a rule, some connection with the breath, the steaming blood, the shadow, or some other less material and more evanescent aspect of the body or its functions.

Modern science, more discerning and enterprising, and less devout, has attempted to define life in terms of that conception with which most of its researches have hitherto dealt, viz. matter or material.

Thus we find in Baldwin's "Dictionary of Philosophy and Psychology" the following:—

"Life: A form of organisation found in certain material things, having the properties of self-perpetuation, for a longer or shorter time, and of reproduction in some form, and further distinguished

by certain characters described as vital properties, or properties of living matter."

These characters are usually described as (1) nutrition, (2) reproduction, and (3) irritability, but later researches have eliminated (1) and (3) from the essential characteristics of living matter. Leduc's artificial plants, Lehmann's "living crystals," and J. Chunder Bose's researches on the irritability of metals have pushed back the boundary between the living and the non-living until it is hard to say where it lies, or whether there is in truth any such boundary at all. Growth and assimilation are only approximate criteria. "Assimilation enables us to recognise life only by means of long-continued observation." As regards reproduction, Burke's "radiobes" should warn us against any dogmatism on this point. Nor does chemistry help us. Le Dantec says¹: "We cannot say by what chemical or colloid peculiarity the living being differs from its corpse" (p. 29). And again: "We cannot distinguish the living whole 'cytoplasm-nucleus' from the dead aggregate corpse of the cytoplasm and corpse of the nucleus" (p. 46).

Life, according to modern biology, is "an aquatic phenomenon." It is "a surface accident in the history of the thermic evolution of the globe." Life is a matter of chemical physics, but "in the present

¹ Le Dantec, "The Nature and Origin of Life." Hodder and Stoughton, 1907.

state of science, we are able to define exactly neither the chemical structure nor the colloidal state *peculiar* to living substances—and yet this, doubtless, would be sufficient to characterise life” (Le Dantec, p. 45).

The least material definition is perhaps that which defines life as a succession of “functions” or rather “functionings,” or, more generally, as a continual self-adaptation to surroundings.

A purely mechanical or chemical view would reduce life to the configuration and motion of the molecules, atoms, or electrons of the substance apparently endowed with it, such motion taking place in strict and rigid conformity with the unchanging laws governing the moving forces. This view would make every event of life inevitable, predestined, and ultimately calculable.

The “vitalistic” school, on the other hand, recognises a something apart from matter and motion, something not subject to mechanical or chemical laws, which yet exerts a determining influence upon vital processes. This something may be a “growth force” (Cope), a “genetic energy” (Williams), a kind of “self-adaptation” (Henslow), or “self-direction” (Eimer), or, finally, a directive action of mind (Lodge), which is able to direct the flow of energy without influencing its amount, and thus remains in accord with the doctrine of the conservation of energy.

WHAT DO WE KNOW ABOUT MATTER? 13

These, then, are the main attempts to explain life in terms of something else which is not life.

Now it is obvious that an explanation is valueless unless it reduces something of which we know little or nothing to something of which we know more. The question then arises as to whether life or matter is the more fundamental, familiar, or knowable phenomenon. We must, in fact, find out whether matter, with or without some semi-material or immaterial adjunct, is capable of "explaining" life, and of forming a basis for its interpretation and control.

WHAT DO WE KNOW ABOUT MATTER?

Matter has acquired a tremendous prestige through the development of physical and chemical science. Formerly treated with contempt as something gross, corrupt, and perishable, it has almost become an idol fit to worship. It has at least become the substratum of the visible universe, an eternal and indestructible substance, capable, by the permutations and combinations of its elements and particles, of giving rise to all the various forms, happenings, and beings which make up our world. A great number of rules have been discovered which apparently govern the action of one portion of matter on another. A vast proportion of such interactions have been made amenable to prediction,

calculation, and control. The more of these rules we discover, the greater becomes our interest in, and our respect for, the properties and workings of this mysterious substance. Our reverence for matter has much in common with the ancient reverence for a mighty king. We enter his country. We find his coinage and his image everywhere, his soldiers in their uniforms, his police, his laws, his rewards and punishments, his unfailing benevolence for the good, his wrath which falls upon the evil-doers, his irrevocable sentence, his unfailing mercy and charity. Our admiration increases when we find his whole people permeated by their ruler's ideas and aspirations, devoted to his person, willing to give their lives in his service. To these subjects, the king personifies all that is permanent, stable, mighty, and majestic. They find it easier to imagine the end of all things than a change in the order of their state.

Or again we may admire a great empire or republic, a great organisation of any kind. We may entrust our whole fortune to a bank, believing it to be firm as a rock. In short, we find something that is firm and sure, a foothold in the swirl of phenomena, and straightway we build upon it the structures, material or mental, which the human mind ever loves to design.

And so with matter. We find in it something that does not shift with our passing whim, or (more

important still) our neighbour's passing whim. That is really all we care about. If I have a watch which keeps good time, it matters not to me whether the gold or brass of which it is made evolved in past ages out of uranium or lead, nor whether there is any "ultimate reality" behind that bundle of sensations which I remember and combine under the label, "my watch." Enough that when I look at it I can see the time, that I can feel it in my waistcoat pocket, that I can hear it ticking, and that I have a reasonable assurance of being able to enjoy those three sensations whenever I like. Of course, without those three sensations I should have no evidence of the existence of my watch, and if I cannot obtain such evidence indirectly (through somebody else's sense organs) I cannot know whether or not it has ceased to exist. And further, if I take away all memories of those three sensations, my watch will be practically non-existent. As far as I am concerned, the world may be full of watches, crowded with them indeed, but so long as neither I, nor other sentient beings with whom I am in touch, can perceive them, or the effects of their presence, I am justified in taking their non-existence for granted.

The same argument applies to all matter. We may therefore define matter as that which, when brought into a certain relation (distance or proximity) with us, or with beings similar to ourselves excites in us or in them certain sensations.

The proviso "beings similar to ourselves" is important. For when we come to think of it, our unaided evidence is not conclusive. If I see a book lying on a table I can as a rule safely conclude that it is "actually there." But what does "actually there" mean? It cannot mean simply that I *do* see it, for that would be nothing new. It must mean (1) that I can "do" things with it, and thus derive other groups of sensations from its presence; (2) that other people also could see it, and test its presence in the same manner.

When (1) turns out to be correct, I have reasonable grounds for "crediting the evidence of my own eyes." But there is still a possibility that I am dreaming! To reassure myself, I call in a friend, and if he agrees with my verdict, my conviction that I have an "actual thing" to deal with is strengthened. To make assurance doubly sure, I call in other friends, and if we all have the same impression, the "fact" is established.

Is this, then, the generally accepted and conclusive manner of establishing a fact? By no means. For in the history of the human race it has happened over and over again that a fact has been implicitly believed and attested by hundreds or thousands of people, and yet has been finally discredited, perhaps even by many of its original observers.

This fate has not only overtaken "facts" which

are essentially theories (like the flatness or immobility of the earth), but even sensory phenomena observed and described by half-a-dozen experts, and corroborated by photography. Of this, Blondlot's "N-rays" furnish a familiar and instructive example.

We cannot, therefore, arrive at a definition of matter from our own observations, or those of our neighbours, or from any hypotheses concerning "real existence"—a term which in this connection would be utterly meaningless. But we *can* be perfectly sure of our own sensations. No matter what may be their cause, whether they be brought about by "objective reality" or whether they be the wild fancies of a fevered brain. So long as they last, they are real, and they form the only ultimate reality which we can postulate from personal observation. "Objective reality" we can only ascribe to those things which produce similar sensations in organisms similar to our own when similarly situated, and "matter" is such an "objective reality."

This, it will be remarked, is rather a flimsy substratum on which to build our "material universe." So it is; but it is the only substratum which logic and philosophy can afford us. However, for practical purposes it is quite sufficient. Suppose, for the sake of argument, that by some sudden and curious inversion of things our dream world should

become "reality," and our waking world should become a dream. Suppose that dream events were found to observe certain unalterable rules, different perhaps from those of our waking world, but still as permanent and as independent of our will as they. Supposing such a real dream were continued indefinitely. Then by what process could we ever be convinced of the "unreality" of our dream? Dream and reality would have simply changed places. Like "Alice in Wonderland," we should have to try and find out the queer new "laws of nature" of our dream world, and make the best of them.

All we know about matter, therefore, is that it produces certain sensations in the vast majority of individuals of the human race. Matter is therefore by no means a fundamental conception. In this respect, it is surpassed by many other conceptions. A child gets to know its mother long before it arrives at the conception of matter.

As we depart from the fundamental realities of our own sensations, we have to bring into play more of our powers of cognition, and less of our perceptive faculties. We may give, perhaps, the following list of ultimate realities, proceeding from the most fundamental to the less fundamental:—

- (1) Our own sensations.
- (2) The existence of other people.
- (3) The sensations of other people.
- (4) The existence of matter.

The reasoning given above proves, I think, conclusively, that none of these can be regarded as existing, unless those preceding it are taken for granted. It is apparent at once that, since (1), (2), and (3) involve consciousness, and (4) does not, we cannot "explain" consciousness in terms of matter. We cannot even define it in terms of matter, since matter is itself but a fourth-rate abstraction. There is, on the other hand, no logical difficulty in reducing matter to terms of the first three fundamentals. That this has not been done is due to certain practical considerations of economy. The word "matter" is a convenient abbreviation for a certain tangle of sensations and memories of sensations, individual or collective. The practical effect upon us of that reality which is at the back of matter is not changed by (erroneously) regarding matter itself as a reality. So long as we remember that matter is not a fundamental reality, but an abstraction derived from sense experience, there is no harm in dealing with it practically as if it had an existence independent of ourselves. But the mischief is, that we *don't* remember this when we deal with the higher problems of philosophy, and so we get lost in a hopeless maze of contradictions.

It is right for me to remember, that if I wind up my watch regularly it will go; in other words, that if I produce in myself certain muscular sensations having a certain connection with the sensations of

touch associated with that abstraction from experience called "my watch," said abstraction will continue to develop in the same orderly visual manner in which it has hitherto progressed. Practically, the first way of expressing this fact is very much more convenient than the second way. But philosophically the second way is more correct, and applicable over a much wider range of experience. It is, moreover (though one might at first sight think otherwise), much freer from risky theorising, and, indeed, much more "matter of fact" in the true sense.

This example not only shows what economy the conception of "matter" introduces into our modes of expression, but also explains why matter should gradually have acquired the place and prestige of a fundamental reality, if not *the* fundamental reality.

MATTER IN TERMS OF LIFE

In this work, however, we are not engaged in the task of stating and cataloguing phenomena in the shortest and most concise manner, but in discovering the real nature, origin, and destiny of life. For this purpose, it is not legitimate to regard life and matter as things apart. In order to escape from this obsession of materialism, from this ever-present and almost irresistible temptation to regard matter as self-existent and independent, we must follow out

our logical course to the end. That logical course gives us only one perfect way. We must explain matter in terms of life, not only in a general way, but down to the most minute particulars. Thus we may hope to gain a real advance in knowledge, keeping all the while in touch with full and ultimate reality.

How, then, shall we reduce the phenomena of "dead matter" to terms of life? Obviously, we must begin with our own most fundamental realities, and gradually venture outside ourselves into the open, into that teeming world peopled with intelligences billionfold, where we delight to recognise now and then something akin to ourselves.

The growth of every infant illustrates this fascinating process. The only things present to the immature infant mind are sensations, which rapidly assume an orderly sequence: hunger, food, satisfaction; darkness, sleep; cold, crying, nursing, warmth; and so on. Next come more elaborate motor activities: visual sensations invariably accompanying certain motor impulses, developing gradually into voluntary motion. Then the perception of outside personalities, originating in similarities of voice, of appearance, of motion, until the mother or nurse becomes, after self, the most dominant and fundamental reality. Then the perception of things, originally regarded also as evidence of personalities, but gradually catalogued in a class of sensations indirectly subject to will.

The child stops there. To the child, and to the unphilosophic members of the human race, material things are ultimate realities, while they last, at all events. But by-and-by, when the thinking faculties are developed, the mind probes deeper. The things are taken to pieces and are reduced to combinations of parts. Forms are distinguished, and when two things still differ, though having the same form, the conception of material is arrived at. The infinite variety of materials is reduced by analysing them into their elements, and recombining these in various ways. The behaviour of the elements is studied, and rules are found which denote their "properties" and the properties of their combinations. The human mind is thus ceaselessly active in adapting its environment to its own needs. For all this analysis and recombination has that one single object—betterment. We seek for new combinations of parts, of forms, of materials, of elements in order to find combinations which suit us better. The child, in grasping a toy, does what we all do in more elaborate ways. It has learnt the centripetal law of appropriation, and has known the delights of ownership. We look for laws of wider sweep and more universal sway. The child learns the rules of the nursery. We search out the laws of nature.

These "laws of nature," whence are they? Why do elements have certain properties, and their com-

binations new properties? Proceeding, as before, from the known to the unknown, we begin with the "properties" we observe in ourselves, with the qualities of our fellow-men, the dispositions of animals, the behaviour or activity of minute organisms. Nothing very mysterious there! The farther down we go, the less familiar does the life of the other organisms become. But whose fault is that? Are we to suppose that we alone have a fully conscious life, simply because our own kind of life is the only one we can fully grasp and comprehend?

Take a lump of chalk and a lump of yeast. The one contains millions of minute shells which once were the homes of living and intensely active beings. The other contains millions of beings *living even now*. Who would suppose it! Who even suspected it fifty years ago! The air, the water, and the ground simply swarm with life, with minute invisible organisms which are capable of living for months or years within larger beings, or hibernating in cold and drought till they find a more agreeable season. And why draw the line there! Who knows but that some future biologist, armed with optical instruments a thousand times more powerful than ours, may discover evidences of "life" in the very molecules and atoms of matter? Even if these consist of aggregations of hard geometrical solids, they may, as I have shown in "Two New Worlds," be the homes of untold numbers of infra-beings whose

lives, being reduced in the same proportion in time and space, are probably not very widely different from our own. Is it not, then, natural and reasonable to assume that it is life, and not dead matter or blind force, which rules the properties and events of the "material" world?

Let us assume, at one bound, that the "laws of nature" are in reality the rules of conduct and interaction and co-operation of countless living beings of all grades, and see whether we cannot found a new and truer and profounder philosophy upon that hypothesis.

That a mass of individuals may develop certain uniform qualities resembling physical or chemical properties will, I think, be readily granted. A human crowd has been likened to a viscous liquid, which acquires a certain speed under the impulse of a certain propelling or attracting force, which streams most rapidly in the middle of the street, and offers a certain constant resistance which prevents its speed exceeding a certain maximum. An army of 100,000 men is dealt with as a compound containing a certain proportion of officers and men, and might be represented by a chemical formula such as ON_3M_{30} , when O stands for officers, N for non-commissioned officers, and M for men. A shoal of herrings, a swarm of locusts, a herd of sheep, are masses having a certain consistency, speed, impetus, and inertia, which would appear to us as such if our

bodies, instead of being what they are, were magnified to the size of the earth. The smaller the individuals, the less able are we to detect individual differences. A lump of yeast appears to us no more alive than a lump of putty. Yet yeast consists of countless small and simple cells, a thousand million of them to the cubic inch. Could we, by a suitable reduction in size, lump the whole human race together in the space of a cubic inch, we should get something greatly resembling that shapeless lump of yeast. We should be able to determine its physical and chemical properties, its absorption of oxygen and evolution of carbonic acid, the decomposition of its food-stuffs, accompanied by a certain development of heat and energy.

We cannot logically deny to the atom what we are already bound to concede to a particle of matter little larger than a molecule. It is true that the more minute the particle the less does any conceivable consciousness we may attribute to it resemble our own consciousness. But that is simply due to our own limitations. We know that atoms take an intense part in all the physical happenings of the universe. Every beam of light, every electro-magnetic wave out of the myriads of waves crossing and recrossing every part of the universe brings some change, temporary or permanent, into the most intimate structure of the atom. It awakens some "response," some adaptation perhaps. The dis-

covery of radio-activity has even strongly suggested the idea that the "life period" of all atoms is limited; that they evolve and devolve; that uranium or actinium is the "parent" of radium; that helium atoms are the offspring, spores, or buds of the atoms of radium or of the atoms of substances evolved from radium. The smaller the scale and the vaster the number of individuals we have to survey the more "mechanical" or purely physical do their qualities or properties become. And so is eventually born the idea of "dead matter"—dead to us because its life is inaccessible and unintelligible to us, because we have no language understood in those remote regions, no key nor code of signals by which to communicate with their inhabitants.

Yet we cannot doubt that those regions of life on the borderland have traditions and laws of their own. Every hydrogen atom is a small society held together by its own social laws, which make for its safety and stability, and do actually preserve it from disintegration for very long periods of time. This social system has become stereotyped among all hydrogen atoms, just as the shape of a man or a horse has become stereotyped. Whether hydrogen atoms reproduce their own kind we cannot say. If we had nothing but a lump of yeast and no microscope, we could not possibly say whether yeast cells reproduced their kind or not. The process would

be lost in the average. If the life of the "adult" hydrogen atom were a million times as long as its "childhood" there would not at any time be more than one "young" hydrogen atom in a million. It would be lost in the crowd, and we should declare birth and growth to be absent among hydrogen atoms.

We see, then, that mechanical, physical, and chemical properties may quite conceivably originate in social systems obeying laws which we could describe as social, moral, or intellectual laws. We, in our turn, utilise the uniformities so established to further our own purposes. We observe those laws, study them, make them part of ourselves, and so proceed to rule and control matter. We "stoop to conquer."

It matters little to us *why* hydrogen, oxygen, or iron atoms have certain properties so long as those properties suit our purposes and can be relied upon. If these atoms are living beings it is no concern of ours. All we ask of them is that they shall perform certain functions in the place which we assign to them, like a horse harnessed to a cart, or a pack of hounds brought out to a hunt. The "life" of atoms is not perceptibly affected by what we do with them. They may pass through the most passionate convulsions of feeling without our being able to influence them, or even to detect any such crises. Similarly, the human soul may pass through

the most violent crisis without perceptibly affecting the shape and general mechanical properties of the body, and, for aught we know, some beings on a larger scale than ourselves may be at the present moment utilising the average mechanical properties of the human race without our being aware of it. Even if we were, the individual effects upon ourselves might be much less formidable than, say, the effect of the weather, and we might be quite willing to agree to such a utilisation. These considerations suggest the following set of new definitions which shall form the basis of our researches into the possibilities and nature of immortality:—

1. Life is the interaction between living beings.
2. Matter is the aggregate of living beings belonging to universes inferior to our own.
3. The laws of nature are the social laws of the inferior universes.

No. 1 may be criticised as being in effect a tautology. That is so, but it is inevitable. It simply illustrates the fact that life is a fundamental thing incapable of being reduced to anything more fundamental.

As regards No. 2, the word "inferior" does not imply moral or intellectual inferiority, but simply dimensional inferiority. An "inferior world" is a world whose atoms (indivisible or practically undivided) are of a smaller order of magnitude than those of our own universe. The

"infra-world" is the universe next below ours in this series. The order of living beings with which we may "interact" is not stated in the above definition. In fact, the order varies. When we communicate with beings of our own order, we live socially in our own universe. When we do mechanical work, we utilise the social order of the infra-world to improve our position in our own. When we do physiological work, as in eating or drinking, we utilise the social laws of the infra-world to improve the social mechanism of that part of the infra-world appropriated to our private use, viz. our body. We build our earthly dwelling-place not on the ruins of other worlds, but on their triumphs and their permanences.

CHAPTER III

THE BUSINESS OF LIFE

EVERY child born into this world is in a sense an *angelos*, a messenger. It is as if each of us were sent forth, with a definite charge and purpose, with instructions to proceed along a certain path and take a certain course of action. Whatever may be the difficulties in the way, the task will be attempted, or the faithful messenger will die in the attempt. With an astonishing punctuality and conscientiousness certain parts of the appointed work will be carried out at the time prearranged. Nor will the work be done unwillingly or grudgingly. On the contrary, its performance will be accompanied by the keenest joy, its omission with poignant regret. Of all the impulses which control human action, the impulse to carry out the predestined task is the most powerful. When it is accomplished, the messenger takes his leisure, lingering by the way and pursuing those objects which seem most desirable to his own more characteristic and original fancy. After some further interval, the messenger voluntarily disappears from the scene of his earthly activities,

bringing them to a close within a certain maximum time limit which is seldom exceeded.

What is this life-work which is carried out with such astonishing devotion?

It is what is usually called the physical life of the organism. It is a form of life full of the most intense and varied activity, a "strenuous life" more worthy of the name than the business life of the busiest statesman or financier. Consider for a moment the work that has to be carried out by every human being from his earliest inception until maturity. An invisibly small germ cell, itself consisting of a thousand million complex molecules, has to be gradually subdivided and further divided until it produces an aggregate of 20,000 billion cells, each not only fulfilling its appropriate function in the organism, but ready to take a certain line of development consistent with the predestined development of the organism as a whole.

These cells have to be developed by segmentation according to well-defined laws. Their materials have to be laboriously collected, sifted, moulded, and put in their proper places. The power necessary for the cell functions has to be got in from outside. For this purpose fuel has to be imported, burnt in a special place, and its energy transported into the most outlying regions. Waste materials must be removed and replaced, and the introduction of noxious matter guarded against. Damage must

be repaired, and fatigue must be followed by rest. All this vast activity must be carried on systematically and ceaselessly, and with scrupulous regard to the laws governing the materials worked upon.

This marvellous process goes on every day before our eyes, though, like every process to which we are accustomed, it does not strike us as marvellous. It is not the unexplained, but the exceptional and unusual, that strikes us with wonder.

As a result of nine months of such intense activity, the newly born human babe finds itself provided with a complete digestive, circulatory, respiratory, and locomotor apparatus with which it can face the task of adapting itself to its proper functions in the world. The apparatus is there. It must now be developed in detail, adapted to its special circumstances, and prepared for its special destiny.

The physiological work before the baby between birth and maturity is not as formidable as that which it has already accomplished. The rate of creation of new structures and tissues is retarded. Development takes place along lines already marked out. It is a period of growth rather than creation. The apparatus already fashioned is exercised and strengthened. The skater, having found his feet, now endeavours to acquire security, speed, elegance, and special accomplishments. The bicyclist, having acquired his machine and found his balance,

proceeds to familiarise himself with the various peculiarities of the sport, and tests and develops his newly acquired powers.

So the infant waves his arms and tramples his legs, fills his lungs and delights his own ears with the trumpet sounds of his own voice. Having found everything sound and in good order and repair, he proceeds farther on his appointed road, and enters into communication with surrounding beings of his own species. These are at first nothing but sources of warmth or food supplies, and barely distinguished from their inanimate surroundings. But it gradually dawns upon the consciousness of His Infantine Highness that there is some purpose and intention, some gleam of intelligence in the multicoloured objects he so often perceives before him. They respond to his needs, to his will. They emit sounds not quite unlike those he is himself capable of producing. He imitates them, and gradually finds that certain agreeable processes follow the emission of particular sounds, and that these processes undergo a certain regular variation on varying the sounds in a special manner. And so he acquires the gift of language.

Up to this, his experience has been entirely personal. There was nobody to tell him how to accomplish the arduous task of building up a vastly complicated organism. It had to be accomplished

entirely by his own organic intelligence, aided by the prenatal impulse which sent him forth as an *angelos* into this world. The acquisition of language places him in touch with the accumulated experience of humanity, and gives him an enlarged sensorium, a wider personality. He begins to see with the eyes of others, and hears with their ears. This new power exerts upon the infant an extraordinary and far-reaching effect. Henceforth, his own experiences are registered by the stereotyped formulæ of language. What they lose in personal vividness they gain in generality and in permanence. They now become, potentially or actually, part of the sum of general human consciousness. As such, they acquire a certain dignity and value. They are like the acknowledged wit, more appreciated because generally accepted and recognised.

These elements of memory, clothed and embodied in words, repeated from mouth to mouth, and recalled again and again, form themselves into a new and special kind of consciousness, a consciousness which, from its greater stability (due to its wider human basis), is invested with a special importance, just as a casual phrase becomes more imposing by being engrossed on vellum and framed.

Gradually this new consciousness is associated with all the normal social activity of the child. It becomes essentially the *social consciousness*. But being in close relation with (and largely governed

by) the consciousness of others, and thus clearly distinguished from the incoherent and irresponsible consciousness of dreams, it becomes colloquially known as the "waking consciousness" or the consciousness proper.

Then what becomes of the "organic intelligence," that wonderful master-builder which built up the complex machinery of the human organism out of the miscellaneous materials supplied to it?

It shares the fate of all forms of consciousness which become superfluous or habitual. It sinks "below the threshold." In the same measure as an act becomes habitual, so does it become less conscious. The memory is still there, and so is the power to utilise the memory. But not requiring a new effort of will, a new application of attention, it ceases to emerge into the open.

A budding pianist will expend a great deal of conscious effort on the task of placing the fingers correctly on the keys, on giving the proper touch, on keeping the prescribed time. The accomplished player will perform a hundred separate musical actions every second with barely a trace of conscious effort. Reverse the succession of the keys from right to left, and the most brilliant pianist will have to begin his training all over again.

In games played with a ball this development is equally marked. After a little training, the various actions and attitudes become "instinctive," as much

so almost as the instinct which makes the lungs breathe and the heart beat.

Still, most pianists recall their early struggles with the stubborn keys. The process of learning has remained potentially a part of the waking consciousness. But we do not remember having learnt to walk or to speak, not to mention breathing or taking food. This, however, does not necessarily mean that these processes never were conscious. It simply means that they never were part of our social consciousness, *i.e.* that our experiences at that time were never clothed in words, never embodied in the audible material of the aggregate human consciousness. That we cannot recall our early efforts of organic body-building does not prove that those efforts were not supremely conscious. Our waking consciousness is continually losing material which is found to be useless or detrimental to the normal business of life. How much more will this apply to the organic prelingual consciousness!

That the organic consciousness, however, retains its activity is made evident by the continued development of the body. It grows in all its parts, and its organic development goes hand in hand with the development of the social consciousness. The earlier years of boyhood and girlhood are characterised by a very intense activity in the social consciousness. The restless questionings of childhood, its remarkable mental acquisitiveness, offer

some sort of parallel to the intense physiological activity of embryonic life. And in fact the social consciousness is building up a complete set of mental organs, emotional, intellectual, and volitional, ready for the next great stage in the journey of life.

The transition to maturity is man's birth into the social world, just as his physical birth is his emergence into a separate physical existence. In both cases, organs recently acquired and developed are tested and exercised. In the young man we find the awakening of ambition and enterprise, associated often with a wide sympathy, a valiant optimism and idealism, a tendency towards self-sacrifice for the benefit of a community. In the young woman we have a greater development of the social instincts and affections, a desire for a deeper spiritual life, a readiness for self-surrender awaiting the appropriate stimulus. The wide range and fulness of this period of life is attributable to the fact that both the organic consciousness and the social consciousness are supremely active, the former in adapting the organism to its wider social purposes and possibilities, the latter exercising the newly acquired mental organs of social life, and feeling its way vaguely towards a personal character and individual consciousness.

That this change towards maturity occurs with very tolerable precision about the fourteenth year

is another proof that the organic consciousness neither sleeps nor slumbers. It is another evidence of the faithfulness with which the *angelos* goes through the predetermined stages of his journey. It is absolutely no explanation of this almost miraculous coincidence to speak of "hereditary tendencies" or of "instinct." Things cannot be explained by simply giving a name to them. Much less is it an explanation to speak of the chemical properties and necessities of a given aggregation of cells. Every one knows that chemical equilibrium is timeless. Every chemical or physical change can be accelerated or retarded at will by a suitable variation of the supply of energy. These fundamental vital changes are quite independent of the supply of energy. They will take place at substantially the same age in various climates on different diets, and under widely divergent standards of living. Their parallel is not found in chemical reactions, but in psychical phenomena like hypnotic suggestion, or in the familiar experiment of determining to wake up at a certain time. That this time is hit upon almost to the minute in eight cases out of ten (a very common experience) cannot possibly be explained without having recourse to a faculty of the organic consciousness which is capable of exactly appreciating time, and recent experiments in post-hypnotic suggestion have proved that this unconscious

measurement of time is exceedingly accurate and apparently endowed with powers of minute calculation.¹

The social or "waking" consciousness meanwhile prepares to tackle the problems of life, to increase the sum of human experience, and to enlarge the resources of the race. The "business of life" acquires more of its ordinary acceptation. The civilised man enters upon a complex inheritance conveyed to him chiefly through the medium of written and spoken language. The wealth of this inheritance fully compensates him for the loss of direct organic consciousness; for the organic consciousness, however resourceful and successful, has limits of its own. These limits can only be transgressed by bringing into action the higher social consciousness acquired by the human race in its ceaseless battle with nature. This higher consciousness nowadays implies an enormous extension of most of the elementary faculties and powers developed by the organic consciousness. Man takes up the sense organs as provided by "nature" (his own organic consciousness), and develops them a thousandfold. The limit of vision is pushed back into the remote regions of space. Things that are far are brought near. Small things are made large. The apparently simple and structureless turns out

¹ See *Proceedings of the Society for Psychical Research*, Oct 1907.

to be a maze of delicate organisation. Invisible radiations are discovered. Light, visible and invisible, is made to record its own structure, and intimate secrets of matter are brought to light by the analysis of its vibrations.

Hearing is extended over hundreds of miles, and fugitive sounds are fixed in waxy substances ready for repetition as required. Analysis by smell and taste is replaced by the most delicate and diverse chemical reactions.

But it is the sense of touch, and more especially muscular action, that experiences the most astounding extension. Every tool, instrument, or weapon is a development and extension of the corresponding organ, and more especially of the hand. Man is hundred-eyed and hundred-handed. A knife is a detachable modified finger-nail or tooth of superior power. A stone or bullet or hammer is a detached fist of superior impact and penetration. A pump is but the hollow hand prolonged and amplified. Cloths are modified and removable skin and hair. Man's personality does not end at the limits of his body. Whole portions of matter outside him belong to it. Whatever man controls is part of his personality. What a community controls is part of the larger "personality" of the community. In establishing himself in the world, man aims at enlarging his personality and safeguarding it. He builds himself a house to safeguard his food-

supplies and economise their consumption, but more especially in order to simplify his organic life. As his waking or social consciousness requires a larger sway, so the organic consciousness tends to sink farther and farther below the threshold. Man brings the accumulated experience of his race to bear upon the problems of his food-supply, his safety, his comfort. Civilisation means the simplification of life, the more direct sway of the conscious will. Civilisation tends to make the supply of man's organic needs automatic, in order to give freer play to his higher social talents. In this respect it simply carries the process of human growth a stage farther than "nature" carries it.

Health, wealth, and wisdom are considered the three greatest gifts of this world. Health is the equilibrium of the organic life, the adequate response of physical circumstance to predetermined development, the successful carrying out of the prenatal commission. Wealth is the successful extension of the human personality over a wide range, the freer play of the will, the greater command over matter, the enhanced power of resistance to unfavourable circumstance. Wisdom is the health of the social consciousness, the capacity of design and initiative in the social and material world, the clearness of mental vision.

The business of life is to secure these for ourselves and for our larger selves. For the "self" of the

socially normal man is not limited to his own body or wealth. It is a varying entity, extending over other persons "near and dear" to him, acquiring perhaps a wider range, possibly co-extensive with his race or state or nation. "Unselfish devotion" is really a devotion to a wider self. Selfishness in the wider sense is not only a vital necessity; it is a virtue. When any one's feelings are so engaged in another person's welfare and happiness that an injury to the latter is felt as a pain in the former, a tendency to guard against that injury is "selfish" as regards the combined self of the two, and "unselfish" as regards the first-named individual. This is a simple and somewhat obvious solution of the old problem as to the possibility of "unselfishness."

Consider the working day of a business man, and translate his successive activities into more philosophic language.

Wash and Dress.—He ensures the frontiers of his physical organism against intrusions of extraneous matter, whether organic or inorganic. He protects those same frontiers from such intrusion or other damage by surrounding them with a modified skin constructed with special regard to possible adverse contingencies.

Breakfast.—He stores up within his organism certain kinds of organised matter from which his organic consciousness is able, with the aid of ex-

perience (inherited or acquired) to derive energy and to replace waste material.

Business.—He endeavours to benefit other people, so that in turn they may benefit him. He acquires money, *i.e.* a universally recognised certificate of benefit rendered, which he in turn is empowered to transfer in recognition of some benefit received. He endeavours to put himself in such a position that he may confer benefits rapidly and more or less unconsciously, so as to acquire the largest possible number of "certificates" with the least expenditure of energy.

Family Life.—He cultivates the larger consciousness which extends over all the individuals in his household, endeavouring to harmonise its development with the dictates of his own wisdom, or enjoying the free exchange of mental life and the growth of the aggregate self of the family.

Social Life.—In the social sphere, the family life becomes more or less "subliminal" or unconscious. The man feels with the larger self of the society he frequents. If ambitious, he seeks to embody the will, rather than the emotion, of this larger social self.

Politics.—His "self" now extends all over his country. He becomes a unit, a cell, in a higher organism, and, according to his talents, becomes part of its system, whether its digestive department (industry), its circulation (commerce), its respiration

(post, railways, &c.), its nervous system (press), its musculature (armed forces, police), or its bones (law). If he has special qualities or qualifications, he may aspire to become a brain cell, and govern the country through laws, emotions, or ideas.

Sleep.—In sleep, our busy man returns to his prenatal state, in which his organic consciousness, awake as ever, repairs the machinery it designed before birth and never ceased to construct or reconstruct every night since.

The *enjoyment* of life consists chiefly in the exercise of faculties newly acquired or too little used. These faculties may be physical (*i.e.* acquired and controlled by the organic consciousness), or social (acquired and controlled by the waking consciousness), or a combination of both, which gives the greatest enjoyment of all. Our dearest dreams of happiness are those of a position in which we can exercise a number of untried faculties, be the recipients of great benefits and the source of the same to others. Such is the healthy child's dream of bliss. If the present outlook is gloomy, if the faculties are overtaxed, the body and mind overburdened, our dream of happiness is more negative, more concerned with rest and peace.

The happy life is that in which power is neither overstrained nor left unemployed, a harmonious and progressive development and exercise of all the faculties. From day to day we are engaged in three

different kinds of activities : constructing, exercising, and using the materials of life. From the date of our conception, from the very origin of our mundane existence, we are fashioning apparatus and machinery wherewith to carry on the operations of life. This apparatus may consist of bodily organs, of language and book-learning, or of connections with larger centres of social life. In each case we first acquire or construct the apparatus. In the next stage we exercise it—a most delightful and more especially youthful experience, but open to the adult also who gets a new motor-car or comes into some property, &c. In the third stage we use the apparatus, information, or connection unconsciously, as when we walk and eat, or speak our mother tongue, or exchange hospitalities. The degree of unconsciousness with which the complicated machinery of life is manipulated is a rough and ready gauge of what is called “social status.” The upper classes are those who can let the more commonplace details of life sink below their level of consciousness. But essentially one can hardly speak of “higher” or “lower” activity. In many respects the “organic consciousness” is far superior to the waking consciousness in its resources and attainments. The structure of the humblest moss is a permanent reminder of this significant fact. And whether we are organising a baby body or a joint-stock company, our activity is essentially the same. It is the constructive stage

and element of life in general. The difference lies in the kind of material we handle. In one case we have supplies of colloid aggregates of molecules of different complexities to organise in the way of cells; in the other case we have to weld a number of associations of human proprietors into a larger organic unit. One man gives an army the order to "march." Another whistles to his dog. A third takes up his pen and writes. In each case an action is performed in order to produce a certain effect, with a reasonable certainty that such an effect will ensue to the individuals concerned. The importance of the action may vary greatly. None of the three know what ultimate effects may follow upon their action, and its effect upon themselves may vary within an indefinitely wide range.

The activity of any single individual at any instant of his life is immense. It includes, of course, all his unconscious organic activity. It is sleepless and ceaseless. When we, with our imperfect standards of activity, speak of a man being reduced to inactivity by disease, we commit a gross blunder. The disease itself is probably a gigantic effort of the organic consciousness to throw off some malign influence.

That a man can effectually superintend the working of several thousand billion cells seems incredible. But then we must remember that by "a man" we do not mean a being whose only conscious-

ness is the little flicker of "waking" consciousness, itself comprising at any moment but an insignificant fraction of his total waking memory, but a being with a consciousness extending and working over the whole range of his personality, whether "instinctively" or deliberately. That being does not, like the former, go out of existence every time he goes to sleep, but simply turns his attention to vital processes founded at a time of life when he could not speak, and before words or other social symbols could be used to bring these processes within the purview of the ordinary waking (or social) memory. This is the real man, a being endowed with a stupendous memory and activity, and with almost unlimited command over vital and even physical processes, a man such as only rare illumined geniuses are ever *aware* of being, but which we all *are*, though we know it not.

The normal life of man, or of any species of plant or animal, is like a practicable road made by long centuries of ancestral pioneering. This road has been constructed by those who went before us, and is kept in repair and improved perhaps by the efforts of our contemporaries. A current of life wells up constantly from the immeasurable sea of existence, and pours into the accustomed channels. Every minute of our lives some new human being commences the journey of life, treads the well-worn road, and follows in the footprints of his

ancestors. Some find out new paths for themselves, but such pioneering work is difficult and dangerous, and often leads to disaster. Such failures tend to preserve the uniformity of the species. Youth is not original, but imitative. Originality is mostly confined to the intellectual sphere, or to the higher social consciousness, and this only develops later in life, when the organic consciousness, having done its constructive work, falls more and more into a subordinate position.

From the cradle to the grave, life is a perpetual expansion of consciousness. In early youth we test and enlarge our physical powers, and lay the foundations of our mental equipment.¹ Later on we develop our social gifts and memories. In the last stages of life, the normal tendency is towards "wisdom," a translation of our whole experience into the language of our social or waking consciousness, its formulation in terms of the common language which embodies the thoughts of the social world about us.

And then, in due time (and sometimes earlier) comes death. That stream of molecules which we call the body runs dry. The instrument which has placed us in contact with the visible universe

¹ This distinction between "physical" and "mental" is convenient, but it must not blind us to the fact that all powers are mental in the wider sense, *i.e.* parts of our full (organic and social) consciousness.

withers away. The perpetual process of renewal and repair slackens and finally ceases. The clock-work, no longer wound up from day to day, runs down and stops. The ancestral road ends on the seashore. What then?

CHAPTER IV

THE MECHANISM OF LIFE

"The study of life belongs to chemical physics."—LE DANTEC.

OUR conclusion (p. 28) that life is an interaction between living beings, carried on mainly by utilising the social laws of an inferior universe (which social laws we call "the laws of nature") enables us to go all the way with those biologists who wish to reduce the mechanism of life to physics and chemistry. It is by these sciences that we carry out all material improvements in our surroundings, and it is by physics and chemistry, by our organic familiarity with their laws, that we construct the physical basis of our lives. From our earliest independent existence onwards we utilise the laws of nature as we find them for the purpose of building up our bodies.

These bodies are, however, highly differentiated structures, adapted to the pursuit of a number of special activities. The human skeleton is a system of struts and levers designed to give rigidity, strength, and mobility to the body. The tendons and muscles are structures which store the necessary energy for the various movements in a form in which it can be

made instantly available on receipt of a signal from the controlling centre. These signals are transmitted by a system of lines called nerves, whose structure and functions closely resemble a telegraphic network of great complexity. In this manner the fundamental necessity of motion is provided for. But we require much more than that. We want not only an organism capable of moving in a desired direction or producing motion in other objects—we must be kept constantly informed of the state of our surroundings, in order to determine what kind of motion will be most advantageous to us. We require a delicate instrument for detecting the emanations of surrounding objects. We require another for analysing the waves of elastic displacement which impinge upon us, and yet another for analysing the waves of electro-magnetic energy which pervade the space around. And so we provide ourselves with a nose and ears and eyes.

Nor is this enough. The energy accumulated in the substance of our muscles is not unlimited. It requires renewal. If we were plants, we might take the necessary energy direct from the sunlight. But that source is too precarious for practical purposes, and it is much simpler, as well as more certain and more economical, to take the energy from lower organisms, plants by preference, which spend most of their time collecting it for us. All

we have to do is to provide ourselves with a portable laboratory where the energy accumulated by plants or by inferior animals may be converted into a form suitable for our own mechanism. Hence our digestive system. The finished product of that digestive laboratory must then be taken to the very doors of all our subordinate mechanicians, and the waste products must be removed. This necessitates a heart and a circulation of the blood. That portion of the produce of the digestive laboratory which is to serve as fuel must be exposed to a slow combustion and supplied with a constantly renewed quantity of air. Hence our lungs and respiration. And finally, all this elaborate machinery must be closed in, to guard it against hostile influences and give it consistency. Sentinels must be placed at the outposts to warn us of the state of our immediate surroundings, and specially delicate or sensitive districts must be specially protected. Hence our skin, and hair, and sense of touch.

And so we get that miracle of mechanism, the human body, controlled by a central exchange to which all the wires converge, the brain. And within that brain, invisible to all prying eyes, sits Ego, the self, receiving every second a thousand million messages, answering them with an astonishing industry and despatch, and getting through an amount of business which might well be the envy

and despair of the most strenuous New York business house.

The manifold calls which may be made upon every part of the organism necessitate a localised adaptation which expresses itself in a certain amount of decentralisation. The whole body is divided into minute districts, each of which is divided off from the rest and leads, to some extent, an independent life, looking to its own growth and food-supply, and fitting itself for its special function in the life of the whole. These districts are called "cells," and the adult human body contains some 25,000,000,000,000,000 of them. So small are they that twenty of them are contained in the thickness of a finger-nail. And yet each cell is itself a mechanism consisting of much more minute parts. If we go right down to the atoms, we find that the smallest living cell contains over 100,000,000 of them. But these are not distributed at random through the cell, but built up into structures of great complexity, structures which have a "colloid" or gummy consistency, and are supposed to be made up of complex but more or less regularly constituted chemical molecules. The human body has therefore aptly been called "a mechanism of mechanisms of mechanisms"; in other words, a mechanism of cells, which are mechanisms of colloid bodies, which again are mechanisms of complex molecules.

Imagine, then, for a moment what it means to be

in actual effective possession of such a marvellously complex instrument. Here is a whole world of cells, numbering as many individuals as the aggregate human race has produced for the last million years, but all existing and flourishing at the same time, and working together towards the one purpose of placing the human self in contact with the material universe.

How the individual cells play their part in the life of the whole organism is luminously expounded in Dr. E. B. Wilson's classical treatise on "The Cell"¹ (pp. 58-61).

"In analysing the structure and functions of the individual cell we are accustomed, as a matter of convenience, to regard it as an independent elementary organism or organic unit. Actually, however, it is such an organism only in the case of the unicellular plants and animals and the germ-cells of the multicellular forms. When we consider the tissue-cells of the latter, we must take a somewhat different view. As far as structure and origin are concerned the tissue-cell is unquestionably of the same morphological value as the one-celled plant or animal; and *in this sense* the multicellular body is equivalent to a colony or aggregate of one-celled forms. Physiologically, however, the tissue-cell can only in a limited sense be regarded as an independent

¹ Columbia University Biological Series. Macmillan Company, New York, 1904.

unit; for its autonomy is merged in a greater or less degree into the general life of the organism. From this point of view the tissue-cell must in fact be treated as merely a localised area of activity, provided it is true with the complete apparatus of cell-life, and even capable of independent action within certain limits, yet nevertheless a part and not a whole.

“There is at present no biological question of greater moment than the means by which the individual cell-activities are co-ordinated, and the organic unity of the body maintained; for upon this question hangs not only the problem of the transmission of acquired characters, and the nature of development, but our conception of life itself. Schwann, the father of the cell-theory, very clearly perceived this; and after an admirably lucid discussion of the facts known to him (1839), drew the conclusion that the life of the organism is essentially a composite; that each cell has its independent life; and that ‘the whole organism subsists only by means of the reciprocal action of the single elementary parts.’ This conclusion, afterward elaborated by Virchow and Haeckel to the theory of the ‘cell-state,’ took a very strong hold on the minds of biological investigators, and is even now widely accepted. It is, however, becoming more and more clearly apparent that this conception expresses only a part of the truth, and that Schwann went too far

in denying the influence of the totality of the organism upon the local activities of the cells. It would of course be absurd to maintain that the whole can consist of more than the sum of its parts. Yet, as far as growth and development are concerned, it has now been clearly demonstrated that only in a limited sense can the cells be regarded as co-operating units. They are rather local centres of a formative power pervading the growing mass as a whole, and the physiological autonomy of the individual cell falls into the background. It is true that the cells may acquire a high degree of physiological independence in the later stages of embryological development. The facts to be discussed in the eighth and ninth chapters will, however, show strong reason for the conclusion that this is a secondary result of development, through which the cells become, as it were, emancipated in a greater or less degree from the general control. Broadly viewed, therefore, the life of the multicellular organism is to be conceived as a whole; and the apparently composite character which it may exhibit is owing to a secondary distribution of its energies among local centres of action.

"In this light the structural relations of tissue-cells become a question of great interest; for we have here to seek the means by which the individual cell comes into relation with the totality

of the organism, and by which the general equilibrium of the body is maintained. It must be confessed that the results of microscopical research have not thus far given a very certain answer to this question. Though the tissue-cells are often apparently separated from one another by a non-living intercellular substance, which may appear in the form of solid walls, it is by no means certain that their organic continuity is thus actually severed. Many cases are known in which division of the nucleus is not followed by division of the cell-body, so that multinuclear cells or *syncytia* are thus formed, consisting of a continuous mass of protoplasm through which the nuclei are scattered. Heitzmann long since contended (1873), though on insufficient evidence, that division is incomplete in nearly all forms of tissue, and that even when cell-walls are formed they are traversed by strands of protoplasm by means of which the cell-bodies remain in organic continuity. The whole body was thus conceived by him as a syncytium, the cells being no more than nodal points in a general reticulum, and the body forming a continuous protoplasmic mass.

"This interesting view, long received with scepticism, has been to a considerable extent sustained by later researches, and though it still remains *sub judice*, has been definitely accepted in its entirety by some recent workers. The existence of protoplasmic

cell-bridges between the sieve-tubes of plants has long been known; and Tangl's discovery, in 1879, of similar connections between the endosperm-cells was followed by the demonstration by Gardiner, Kienitz-Gerloff, A. Meyer, and many others, that in nearly all plant-tissues the cell-walls are traversed by delicate intercellular bridges. Similar bridges have been conclusively demonstrated by Ranvier, Bizzozero, Retzius, Flemming, Pfitzner, and many later observers in nearly all forms of epithelium; and they are asserted to occur in the smooth muscle-fibres, in cartilage-cells and connective tissue-cells, and in some nerve-cells. Dendy (1888), Paladino (1890), and Retzius (1889) have endeavoured to show, further, that the follicle-cells of the ovary are connected by protoplasmic bridges not only with one another, *but also with the ovum*; and similar protoplasmic bridges between germ-cells and somatic cells have been also demonstrated in a number of plants, *e.g.* by Goroschankin (1883) and Ikeno (1898) in the cycads and by A. Meyer (1896) in *Volvox*. On the strength of these observations some recent writers have not hesitated to accept the probability of Heitzmann's original conception, A. Meyer, for example, expressing the opinion that both the plant and the animal individual are continuous masses of protoplasm, in which the cytoplasmic substance forms a morphological unit, whether in the form of a single cell, a multi-

nucleated cell, or a system of cells. Captivating as this hypothesis is, its full acceptance at present would certainly be premature; and as far as adult animal tissues are concerned, it still remains undetermined how far the cells are in direct protoplasmic continuity. It is obvious that no such continuity exists in the case of the corpuscles of blood and lymph and the wandering leucocytes and pigment-cells. In case of the nervous system, which from an *a priori* point of view would seem to be above all others that in which protoplasmic continuity is to be expected, its occurrence and significance are still a subject of debate. When, however, we turn to the embryonic stages we find strong reason for the belief that a material continuity between cells here exists. This is certainly the case in the early stages of many arthropods, where the whole embryo is at first an unmistakable syncytium; and Adam Sedgwick has endeavoured to show that in *Peripatus* and even in the vertebrates the entire embryonic body, up to a late stage, is a continuous syncytium. I have pointed out (1893) that even in a total cleavage, such as that of *Amphioxus* or the echinoderms, the results of experiment on the early stages of cleavage are difficult to explain, save under the assumption that there must be a structural continuity from cell to cell that is broken by mechanical displacement of the blastomeres. This conclusion is supported by the recent work of Hammar (1896,

1897), whose observations on sea-urchin eggs I can in the main confirm.

"Among the most interesting observations in this direction are those of Mrs. Andrews (1897), who asserts that during the cleavage of the echinoderm-egg the blastomeres 'spin' delicate protoplasmic filaments, by which direct protoplasmic continuity is established between them subsequent to each division. These observations, if correct, are of high importance; for if protoplasmic connections may be broken and re-formed at will, as it were, the adverse evidence of the blood-corpuscles and wandering cells loses much of its weight. Meyer (1896) adduces evidence that in *Volvox* the cell-bridges are formed anew after division; and Flemming has also shown that when leucocytes creep about among epithelial cells they rupture the protoplasmic bridges, which are then formed anew behind them.

"We are still almost wholly ignorant of the precise physiological meaning of the cell-bridges; but the facts indicate that they are not merely channels of nutrition, as some authors have maintained, but paths of subtler physiological impulse. Beside the facts determined by the isolation of blastomeres, referred to above, may be placed Townsend's recent remarkable experiments on plants, described at p. 346. If correct, these experiments give clear evidence of the transference of physiological influ-

ences from cell to cell by means of protoplasmic bridges, showing that the nucleus of one cell may thus control the membrane-forming activity in an enucleated fragment of another cell. The field of research opened up by these and related researches seems one of the most promising in view; but until it has been more fully explored, judgment should be reserved regarding the whole question of the occurrence, origin, and physiological meaning of the protoplasmic cell-bridges."

This discovery of a probable "protoplasmic continuity" gives us a new and vivid insight into the intimate structure of that marvellous apparatus which we call our body. The untold millions of individual cells are bound together by fine threads of that primitive jelly which we call protoplasm. The whole body is a "syncytium," an organised state or community of cells. Most probably the albuminous protoplasm, with its nuclei in every cell, represents the really essential part of the organism, the highest rank in the hierarchy of material mechanisms which link our inmost spiritual self with the outer world.

We are familiar with the fact that many parts of our bodies are more essential, more "vital" than others. In his great work on modern war, Bloch draws a diagram of a man showing where wounds inflicted are "slight," where "severe," and where "fatal." The first areas are left white, the second

are shaded, and the last are black. The diagram presents the appearance of three beings, one inside the other, the black figure being the innermost. This diagram applies not only to the body as a whole, but to each individual cell of it. For in each cell we may distinguish an outer skin or covering, which may be classified as unessential in company with the storage and decomposition products; an inner active "cytoplasm," in which the bulk of the physiological work is carried on; and an innermost nucleus, the governing part of the cell, which decides its general activity, fixes the broad outlines of its development, and gives the first impulse towards division, if such is to take place.

The forces which bring about the necessary harmonious development of this vast array of cells are the great outstanding riddle of physiology. And no wonder, for (as we have already seen) no physical explanation will ever explain anything, or can, in the very nature of things, be expected to do so. We cannot explain life in terms of death, or dead matter. For we know life by direct experience, but we have only a secondary knowledge of "dead" matter, and as for death, we do not know it at all.

Failing a purely physical explanation of life, we have the various vitalistic theories, which distinguish between living and dead matter, organic and inorganic, as things sharply divided from each other,

or as things which entered on a separate development at some remote age. This view, though more reasonable than the purely physical view of life, suffers from some fatal defects. The sharp division between living and dead matter is found to be non-existent. Much of human bone, hair, and skin is practically inorganic material, having no more life than an artificial tooth. On the other hand, Lehmann's "living crystals" and Stephane Leduc's "artificial plants" imitate so closely the most "vital" phenomena of life that we cannot say with any certainty where the line of demarcation must be drawn. And that line, if it were drawn to-day, would probably be obliterated to-morrow by new discoveries.

No, we must take our courage in both hands, and prepare to go all the way, following the light of our unclouded intellect. There is nothing to fear. There is nothing so simple as truth, and when our reason is satisfied, our hearts will be at peace also.

The living body is a vast army or hierarchy, with elaborately graded ranks, whose graduation is lost in the minute subdivisions of the infra-atomic universe. Each rank is alive with its own characteristic life, which, though not widely different from the life immediately above it or below it, has a tendency to appear fixed and mechanical to beings of a far higher rank, and vague and arbitrary to

the lower ranks. It is life, life, life, all along the scale.

In moments of supreme consciousness there is in the healthy and fully developed human individual a free exercise of will and choice, a self-determination towards a chosen line of development. No logical quibbles will explain that away. It is a primary fact of consciousness. Such a pure exercise of will may be exceedingly rare, but we can in practice approach it as closely as we please. To use an expression taken from geometry, we can approach it "asymptotically." There may always be a certain amount of unconscious impulse which makes for determinism, but that impulse may become more and more a negligible and immeasurably small quantity. We all "have it in us" to decide our own development, our own fate, by a free choice. But it must be a choice of practicable alternatives. The degree of practicability decides the will-power required, and that degree depends largely upon the forces at our command. A general may have two alternative ways of attacking the enemy. Both may be equally advisable or equally risky. He chooses, and the army obeys. But his powers are limited by his numerical strength, his commissariat, the training and *morale* of his troops, the enterprise of the home government, and other factors. Within those limits he has freedom of choice. So absolute is his power that he can

send thousands of men to their death, and they go with a cheer to meet it. He thinks in regiments, squadrons, and batteries, as the admiral thinks in ships. The individual thinks, instead, in arms and legs, in fingers or lips or teeth, in eyes and ears. The details involved in the due execution of his orders he leaves to the nerves and muscles and bones concerned. They are well trained, and accustomed to obey. Each consists of millions of cells, accustomed to work together, each cell-nucleus controlling the proper metabolism of organic materials supplied by the "commissariat" to the individual cell, replacing waste material, and seeing that the work is properly performed. In doing so, the cell-nucleus, or rather the life-principle which it visibly represents, is no doubt aware of some kind of choice or will-power involved in such control. That choice, that self-determination, is the central aspect of the cellular "life" we have been driven to postulate. Each cell has a certain amount of "home-rule," circumscribed by the imperial interests of the organism as a whole. The consciousness of the cell is part of our "organic consciousness," that consciousness which built up our bodies from our prenatal days. The solidarity of the aggregate consciousness of the cells is probably maintained by something akin to "telepathy," whereby states of consciousness are transmitted to suitably attuned receivers. But just as, besides telepathy, we have

visible and audible language, signals, telegraphs, and telephones, so the cellular system is provided with special contrivances designed to localise action and sensation. The telepathic control determines the general policy of the cells, whereas the nerve control carries out its details, and provides for special emergencies.

The whole organism, then, may be compared to a kind of sponge of exceptionally fine grain, traversed by canals and fibres and strengthened in places by those jellies stiffened with lime and phosphates which we call bones. Countless varied actions can be executed by this admirable mechanism, which surpasses any man-made machinery more than the most elaborate watch surpasses the flint arrow-head. And this whole machine is *one*. "In the individual," says Le Dantec, "there is no local phenomenon." The organism is like some palace whose every opening is filled with automatic alarms. Every part communicates with every other. A pin-prick, a local pressure or tension, raises the temperature of the whole apparatus, and produces first, a concentration of attention on the spot, a feeling of uneasiness, and then a flow of blood towards the threatened quarter. The human organism is, in one respect, like the amoeba. It is a continuous mass of protoplasm. But, unlike that most primitive of all animals, its parts are highly differentiated, and all

are under the control of the nervous system. It is useless to circulate food-stuffs through a muscle. It will not assimilate them except under the proper stimulus from its governing nerve. The differentiation of the various parts has the inevitable effect of making some parts more "vital" than others. For those parts whose action is essential to the nutrition and government of the entire system are naturally of greater importance than those which are only called upon to perform special tasks. Thus, the heart, the lungs, the digestive apparatus, and the brains are the citadel of life, whose permanent injury means death. The limbs and sense organs can almost all be dispensed with before life must necessarily cease. And yet these latter are those upon whose activity our social life is most largely dependent. They are, in that sense, "higher" organs. But then we are familiar with the "bread-and-butter" argument which tells against many "higher" activities, and which finds but one more illustration here. The moral of it is that our present life is a stage preparatory to a higher form.

Some animals, like the hydra, the starfish, the crab, the earth-worm, and the lizard may be cut to pieces, and each piece will, under suitable conditions of food-supply and temperature, grow into a complete adult animal. On the other hand, a small ciliated microscopic infusorian called para-

mæcia, when truncated, remains so, unless it is operated upon when very young. The renewing power appears, indeed, to be merely a matter of age. Every animal has a stage in its growth up to which it can restore any limb it loses. It is only when bones or other hard and permanent structures are formed that the organic consciousness loses the power of duplicating its own work. It is the price the organism has to pay for permanence. We want to do things habitually, "instinctively," without having to think about it. We want certain parts of our organism to be unchanging, to be always at our immediate disposal, to be capable of withstanding or exerting a certain force. Well, we get what we want. We secure the services of certain combinations of hard substances, and place them in position. Once they are provided, we forget all about the process by which they have been secured, and as their renewal is a matter of no urgency, we resign ourselves to leaving these hard materials in undisturbed possession of their assigned posts.

But then we have to pay the penalty. And that penalty is—death. Could we, like the crab, shed our bones every now and then, we might prolong our life into thousands of years. But the crab's way of growing bones is not our way. We want ours inside instead of outside, so that we may retain our full and quick sensitiveness and mobility.

Moreover, the placing of the bones inside facilitates their own growth and their adaptation to the growing organism.

The primordial sin whose "wages is death" is the desire for a more spiritual life, for a larger and wider sphere of mental and emotional activity than that offered by a mere animal struggle for existence. The deathless amoeba is also sinless in this respect. Its whole consciousness is probably concerned solely with the problems of nutrition and multiplication. Its organic consciousness is co-extensive with its social consciousness. It has no "subconscious self," no areas of consciousness which but rarely emerge above the threshold. It does everything consciously and deliberately, nothing instinctively. It acquires no property in the way of permanent mechanisms, held in reserve for special occasions. It has nothing to outgrow, no dead matter accumulating in its tissues. It is called *Proteus*, because it can assume the most varied forms without endangering its anatomy. In fact, it has no anatomy. It is just a speck of jelly with a nucleus. That nucleus embodies the essential life-principle of the animal. Says Wilson¹: "A fragment of a cell deprived of its nucleus may live for a considerable time and manifest the power of co-ordinated movement without perceptible impairment. Such a mass of protoplasm is, however, devoid of the powers of assimila-

¹ "The Cell," p. 30.

tion, growth, and repair, and sooner or later dies. In other words, those functions that involve destructive metabolism may continue for a time in the absence of the nucleus; those that involve constructive metabolism cease with its removal. There is, therefore, strong reason to believe that the nucleus plays an essential part in the constructive metabolism of the cell, and through this is especially concerned with the formative processes involved in growth and development. For these and many other reasons, to be discussed hereafter, the nucleus is generally regarded as a controlling centre of cell-activity, and hence a primary factor in growth, development, and the transmission of specific qualities from cell to cell, and so from one generation to another."

There is no birth in the world of *Proteus* and no natural death. Multiplication takes place by the splitting of the nucleus, which is followed by that of the cytoplasm or cell-substance. This fission gives rise to two separate and independent individuals, each of which shifts for itself. In the higher animals, and in the human being, there is in the earliest prenatal stages a similar fission. But instead of leading to total separation, this fission leads to a co-operative aggregation of cells, and eventually to the graded hierarchy already spoken of.

The establishment of this graded hierarchy intro-

duces profound and significant changes into the method of propagation. The differentiation of the cells becomes "hereditary" in the sense of each cell reproducing, by fission, a cell of its own kind. Thus, an epithelial cell produces, by fission, two cells of epithelium. A nerve cell produces two nerve cells. But how is the whole individual to be reproduced? As we have seen in some of the lower animals, every single cell retains the power of reproducing a whole individual. In the higher organisms such powers may exist in a latent form, depending upon the provision of external conditions which cannot practically be supplied, or which nobody has yet thought of trying. The mechanical, physical, and chemical conditions required, for instance, to make a dog's ear, when cut off, develop into a dog, are quite unknown, or even impossible. The conditions would probably be so unusual that the result would be very different from the accepted notion of a dog, vague and wide though that notion be. The tendency to variation, which always exists, and sometimes leads to monstrosities, must be checked unless the most valuable lessons laboriously learnt in the previous history of the species are to be thrown away. This danger is guarded against in the higher organisms by substituting conjugation for simple fission. This conjugation implies the union of the nuclei of two cells, leading up to their complete fusion, the "twain"

becoming "one," and then giving rise to one or more new individuals by fission. What conjugation is to the simpler organisms, sexual reproduction is to the more highly developed ones. The essential thing is that the vital portions, the nuclei, of two germ-cells should combine. The mechanism for producing such combination and safeguarding the results of it depend upon less important circumstances. This essential equality between the sexes is strikingly borne out by an important recent discovery made by Van Beneden in 1883. Cell-division is usually (*i.e.* in all cases except those of degeneration or intra-cellular division of the nucleus) preceded by a striking phenomenon known as *mitosis* or *karyokinesis*. It is shown by the nucleus of the cell, or rather that fibrous part of the nucleus which easily takes up colouring matter and is therefore called *chromatin*, forming itself into a *spireme* or tangle of threads, which gradually thicken and shorten, and break up into a small but perfectly definite number of rods. These rods are called *chromosomes*. They arrange themselves in a straight line and split along their length, and each new cell takes up just half of the rods thus split to form its new nucleus. Every species of plant and animal has a fixed number of chromosomes. "In some sharks the number is thirty-six; in certain gasteropods it is thirty-two; in the mouse, the salamander, the trout, the lily, twenty-four; in the

worm *Sagitta*, eighteen; in the ox, guinea-pig, and in man the number is said to be sixteen, and the same number is characteristic of the onion."¹

Now in each of the germ-cells whose conjunction gives 'rise to the new individual, the number of chromosomes is exactly half the number found in the ordinary cells of the body. The germ-cells are thus equal and supplementary to each other. Their combination makes a complete cell, whose subdivision is capable, under suitable surroundings, of reproducing the entire individual.

It has been suggested that the chromatin of the nucleus is the most vital and living part of each cell. Others have put forward a body called the "centrosome," a minute speck of matter which seems to be the first to divide, and forms two stars between which the chromosomes arrange themselves before splitting. But the most essential structure appears to be the "spindle," a web of fibres connecting the two stars or "asters" with each other. This spindle does not take up colouring matter, and is therefore less visible under the microscope. In summing up a long discussion of the process of cell-division, Wilson says²: "These facts show that mitosis is due to the co-ordinate play of an extremely complex system of forces which are as yet scarcely comprehended. Its general significance is, however,

¹ Wilson, "The Cell," p. 67.

² Ibid. p. 120.

obvious. The effect of mitosis is to produce a meristic [part by part] division, as opposed to a mere mass-division, of the chromatin of the mother-cell, and its equal distribution to the nuclei of the daughter-cells. To this result all the operations of mitosis are tributary; and it is a significant fact that this process is characteristic of all embryonic and actively growing cells, while mass-division, as shown in amitosis, is equally characteristic of highly specialised or degenerating cells in which development is approaching its end."

In this connection, it should be remembered that the most vital part of the cell is not necessarily the most clearly visible. In fact, there is no reason why it should be visible at all. The rivalry of the chromatin and the centrosome for pre-eminence may, for aught we know, be a mere illusion, produced by peculiarities of refraction and absorption. The most essential governing parts of the cell may differ in quite other physical properties. Our eyes cannot distinguish readily between water and hydrochloric acid and glycerine, and yet these substances are widely different in their chemical properties, and would *look* different to eyes sensitive to light of other wave-lengths. That we cannot definitely locate the *sanctum sanctorum* of the living cell may be a pure accident, or due to the lack of a suitable dye. It may be located to-morrow by some new chemical means. What concerns us is the proof

that every cell is highly differentiated with regard to the vitality of its parts. A nucleus weighs about a thousandth of the average cell-body. Its really vital, and perhaps invisible, portion may be a ten-thousandth of the weight of the cell. In other words, taking all the cells together, our real living matter, the vital portions of our body, may have an aggregate weight of about one-fifth of an ounce! Could we eliminate all the rest of the cell material, we should have a "body" consisting of all that is most "alive" in every single cell. But that "body" *would be quite invisible*, and would, if it filled the outline of the body as before, ascend some fifteen miles into the air before it found a position of equilibrium. It would, indeed, live in a new world, hitherto "unseen," retaining all its social and organic memories and fulfilling all its essential functions except that of exerting force upon ponderable matter as we do with the help of our ponderous bones. To restore such a body to its ordinary mundane functions, it would suffice to enable the various cell-centres to resume their assimilating activities for some little time. Such a withdrawal and restoration has nothing inconceivable about it. That something of the kind occurs at our own death, and that it is a possible, though perhaps unusual, process even in our ordinary life, I hope to make clear in the sequel.

CHAPTER V

THE LAWS OF NATURE

"We assume the existence of uniformities in nature—natural laws; the narrowing down of these into exactitude being the endless problem of discovery, and the completest knowledge of them already attained at any period being, for that period, the basis of all explanation, prediction, and proof."—ALFRED SIDGWICK on "Fallacies."

To some of us, the laws of nature are as the bars of a prison, shutting us off from freedom and the alluring delights of the world outside. To others, they are a refuge from the whirlpools and tornadoes on the sea of existence, or as guiding-stars through a dark and trackless forest. We are perpetually oscillating between the delights of possession and those of acquisition. We are conservative and radical in turn. When we have, we are glad of the limitations, safeguards, and guarantees offered by the immutability of the laws of nature and the majesty of the law of the land based on them. When we want, we feel keenly the restraint thus imposed upon us. We endeavour to remove it by discovering superior laws which allow the exceptions desired by us. Science is that pursuit of knowledge which discovers and formulates the

laws of nature. Every law so discovered imposes new restraints and limitations. Yet science is not essentially conservative. On the contrary, it is usually regarded as essentially radical and revolutionary, since it is constantly relegating long-cherished beliefs to the limbo of exploded fallacies.

Now, what exactly is a law of nature? Who or what is the law-giver? Who or what enforces it? Can it ever be broken, or superseded, or revised? These are the questions I shall endeavour to answer in this chapter. It is necessary to arrive at a clear conception of natural law before we can penetrate any distance into the unknown land which we are endeavouring to explore.

Our daily life is based upon a number of impossibilities and improbabilities. These are based upon "natural laws." We shut up a criminal in a dungeon with thick stone walls, iron bars, and ponderous locks. It is "impossible" for him to get out. Why? because his muscular force "cannot possibly" attain the strength sufficient to burst his bonds. We present him with a problem which his physical and intellectual powers are incapable of solving. We rely upon the cohesive force of granite and steel to resist any force which he may bring to bear upon his fetters. And so we keep him safely locked up, and if he escapes at all, it is usually not the fault of the natural laws we relied upon, but the fault of the jailer.

Again, we lay in a store of coal, having at the back of our mind quite an array of laws which we expect to hold good. Among these we may specify the following: coal does not decompose; it does not fly away; it "keeps" indefinitely, unless raised to a certain high temperature in the presence of oxygen; when that happens, it burns and gives out heat.

Other laws upon which we rely are more complex. The law of supply and demand, and the laws of political economy in general, hold good when taken over a wide area, though they fail in almost every case taken individually. In the widest sense, a natural law is any continuity or constancy we observe anywhere. When we go to an hotel and proceed to dress and wash, we use the water as if it could by no possibility be sulphuric acid, or a solution of potassium cyanide, or a diluted culture of *cholera morbus*, or other bearer of deadly peril. We rely upon the average honesty and kindness and carefulness of man, or upon his fear of pains and penalties.

In other cases, our sense of confidence and safety is still more precarious. We trust a friend, judging from his past actions, or the actions of persons resembling him. Because we have known him to show signs of manliness, or ability, or sympathy, we believe him to be manly, clever, and kind. We formulate, in fact, a provisional kind of natural law concerning him, or, if you like, an hypothesis, and

act upon that until something (or somebody) disillusioned us. We then recognise that the character we attributed to our friend was not a "reality," but an illusion.

In other fields we are still less rational. In politics we vote for free trade or protection after a hasty generalisation from a few cases of prosperity or poverty observed in connection with one or the other of these policies, sometimes reasoning from a single case imperfectly observed. And yet this most unscientific manner of reasoning and acting is expounded and advocated by the pick of the country's intellect and ability!

Little wonder that people turn from such fragile reeds to the more solid props offered by the laws of nature discovered by science. Here the area of observation is immensely enlarged. Instead of a single nation or a few individuals, we have thousands of objects to judge from, objects which are, as a rule, accessible to everybody, so that our deductions can be verified by any one who has the inclination and the necessary leisure. This circumstance secures to the laws of nature a recognition co-extensive with the human race. Their great prestige, their "majesty" as it is sometimes called, often produces the erroneous opinion that they are unalterable and infallible. As a matter of fact, they are as changeable and as fallible as the human race itself. Not one of them embodies

an eternal and changeless truth. Not one of them but must remain subject to revision. They are all approximate, some of them closely approximate as judged by our present standards, but no matter how they are formulated, they may have to be recast to-morrow.

Take two of the most fundamental and universal laws known: Newton's law of gravitation, and the rectilinear propagation of light. Newton's law makes gravitation proportional to the attracting masses, and inversely proportional to the square of the distance between them. But electrical experiments have recently shown that mass and inertia may depend upon speed, and molecular physics have long taught us that at very small distances the force varies more rapidly than with the square of the distance. Again, the rectilinear propagation of light is a kind of optical illusion due to the interference of innumerable wavelets. When the beam is very narrow, it may be distinctly observed to spread out laterally, much as a sound-wave would.

Take the law known under the name of *biogenesis*, which maintains that all living beings are derived from other living beings, and none from inanimate material. In spite of some apparent exceptions such as Burke's radiobes and Lehmann's "living crystals," this law still holds good. But how much longer *will* it hold good? If such a law as that were

endowed with all that majesty and sway which is sometimes attributed to it, what would happen if it ceased to be true? Everybody knows, of course, the answer: things would remain much as they always were. There would be no cataclysm, no sudden upheaval. These laws are true *for us*, so long as they embody the results of *our* aggregate observation. None of these laws exist in nature objectively, apart from the human intellect. The chemist maintains for several generations that "atoms are indivisible and indestructible." Then a physicist comes along and proves that atoms can be both split and destroyed. The world, which appeared to base its whole existence on the chemist's formula, remains profoundly indifferent.

No, the laws of nature are of purely human origin, and of purely human importance. The processes which give rise to them—well, that is another matter. As Johnstone Stoney puts it, What we see moving is the shadow of some elaborate machinery. The machinery is invisible to us, but we see the shadows of some of its cranks and levers and cog-wheels. We observe that there is some sameness about the motions, that they seem to obey some law. We see a rod moving to and fro, and a wheel turning. We conclude that the rod turns the wheel, or rather (since both rod and wheel are invisible and unknown to us) that the shadow of the rod turns the

shadow of the wheel! That is all we are really concerned with, since the internal mechanism is inaccessible to us. Thus we formulate our "laws of nature." A superior being might come in and remove a spring or a catch in the machine, and then the rod would move without turning the wheel. Our "law of nature" would then have to be revised or abandoned, and the superior stranger would have proved that a wider law holds good. He again might be nonplussed by a still more gifted individual who, while leaving the catch untouched, might establish some other connection, invisible to stranger No. 1, whereby the rod and the wheel would again move together and the original law of nature be restored!

Of these possibilities the advanced man of science is fully aware. Hence he is ceaselessly endeavouring to get at the internal mechanism of the universe, to learn all the secret springs and catches, and to control them himself.

But no amount of analysis or mensuration of the *shadows* will ever enlighten us concerning the internal mechanism of the real machine. A surer way is to endeavour to construct a machine as best we can, or at least to consider its functions and the effects it is obviously intended to produce. A person ignorant of the watchmaker's art cannot expect to understand watchmaking by taking the watch to pieces and trying experiments with the

various wheels and pinions and springs. His best way is to enter, as far as possible, into the mind of the watchmaker, and find out the *ideas* underlying the connection of the various pieces of mechanism, seeing how this moves that, and how something keeps something else in position. The access to the secret chamber is through the man who holds the key thereof. We must learn "to think again the great thought of creation," before we may hope to fathom its inner secrets.

This is not yet, however, the accepted method of scientific research. Far from it. The scientific method of to-day discourages speculation. It encourages observation and experiment, and is frugal in the matter of hypotheses. The ruling fashion is to assume as little as possible, to be chary of theories, to state rather than explain facts. This fashion is the result of bitter experience of how premature theorising may retard discovery and the advance of knowledge. But since the function of a theory is not only to explain facts, but also to state and summarise them in a concise form, and since this latter function results in a distinct economy of thought, a sparing use of theory is indulged in. The British school is rather more prodigal of auxiliary images than the Continental school. But though the habit of framing theories is now somewhat restrained in public, it is so ingrained in the human mind that it cannot be eradicated, and being

in the blood, it breaks out in all kinds of places, half unconsciously.

This state of things is particularly apparent with regard to the subject of this book. Immortality has no place in any department of official science. The official theory is that there is nothing after death but annihilation. Even where that theory is not openly professed or acknowledged, or where it is not even consciously held, the bias is altogether against life after death. Such life, at the best, is treated as a "negligible quantity." And not only is this the case in official science, but in many other departments of human activity. The State still disposes of its worst and hopeless criminals by capital punishment, which is, in practically all cases, tacitly assumed to amount to annihilation. If the soul or spirit is referred to, it is done as a piece of conservatism, a concession to tradition or to ancient and not altogether extinct prejudice. Even the Church, by relegating the resurrection to a distant and ever-postponed resurrection morn, precludes the dead from all possibility of intercourse with us, and corroborates the official attitude of science and statecraft in a less direct but quite as effective manner.

Thus has the internal aspect of nature been more and more lost sight of, and pure materialism, expressed or understood, actually holds the field of "practical politics." And should any one arise to

protest against this inversion of all the canons of logic and legitimate reasoning, and endeavour to bring about a saner and more fruitful policy in the world of thought, he will at once be met by outcries against the reintroduction of medieval superstition with all its horrors and barbarities!

Science has put forth its mailed fist. It has established a *Pax Romana* among the warring creeds very much as the white man has confined the red or black native to his wigwam or his kraal. Finding that speculations concerning the soul of man led to more disorders and disturbances of the peace than anything else, it has decided to ignore that soul, or rather to shut it up in a barred cage called official psychology, whence it shall not escape to disturb the peace of mind of the materialist *savant*. And so we find physics and chemistry and physiology and mental pathology, as well as the whole of medicine, calmly proceeding on the tacit assumption that life is an "epiphenomenon," a shadow of shadows, and that its existence, if not already accounted for on purely chemical principles, may be so accounted for to-morrow, or if not, then certainly the day after to-morrow. It somewhat reminds one of the days of the French Revolution, when it was bad form to give hereditary or official titles, when everybody was *citoyen* this or *citoyenne* that, and Queen Antoinette was officially styled "la veuve Capet." But just as that affectation,

brought about by a violent swing of the pendulum, has since disappeared, giving way to a more dignified tolerance and independence, so, we may take it, will the rigid official boycott of the spiritual be relaxed when science feels sure of the safety of its fundamental and dearly bought principles.

The next great development will be the opening of the new passage into the inner workshop of the universe, where the Master-builder sits at work. We must endeavour to liberate science from its materialistic fetters, to enable it to soar into brighter and higher realms. Just as, by breaking down some of the cast-iron conventions of orthodox algebra, Rowan Hamilton created the freer and more powerful calculus of quaternions, so must we now, by dissolving the prison bars of the materialistic convention, enable science to enter on a new inheritance, of which this visible and tangible world forms a significant but inadequate portion. In doing this, it is inevitable that the work should bear the well-known faults of pioneering efforts. It will have a scent and flavour of the backwoods about it. The results will be rough-hewn, the tracks will be primitive, and the axe of the wood-cutter will leave many an ugly stump behind it. But a beginning must be made sometime, and having proceeded as far as this, there is no turning back.

NATURAL LEGISLATION

I have already, in "Two New Worlds," given reasons for believing that our material universe is really an infinite series of worlds within worlds having a certain numerical relation with each other. The argument there given proceeded on purely physical data. As our present task attempts the interpretation of these physical data in terms of life (every other interpretation having been found to lead to inconsistencies) we must be prepared to encounter an infinite succession of orders of organisation. But just as the "atoms" of our world, in spite of explosions and reactions and test-tubes, are found to be nearly as free and independent in their movements as, say, our own earth, so, we may suppose, are the "souls" of the 100,000,000 atoms which make up the minute spore of a fungus largely independent of whatever "soul" that spore possesses. Yet some of these atoms may well be more *beseelt* (a convenient German word imperfectly rendered by be-soul-ed) than others, just as the earth, according to Sir A. R. Wallace, is the only bearer of ordinary organic life in our stellar system. Thus, the human race may be that which fits the earth for becoming the most intellectual "atom" in our solar or sidereal system, and enables it thus to embody or represent a part of that vast oversoul which sways the visible universe.

Defining a world as *a system of discrete entities of the same order of magnitude and similar general attributes*, we recognise that our faculties place us in relation with three material worlds. These are:—

1. The *terrene-world*, in which the discrete entities are organised beings, ranging from the lowest unicellular organism to the highest multicellular organism.

2. The *supra-world*, whose entities are the heavenly bodies, solar or planetary.

3. The *infra-world*, whose discrete entities are atoms and electrons.

On our earth we are in touch with all these worlds. Matter may be roughly divided into inorganic and organic matter, though there is no sharp line of demarcation. The organic matter is connected with the *terrene-world*, and the inorganic matter with the *infra-world*. The whole earth is an entity of the *supra-world*, and the stars and planets are its fellows and companions.

In all the three worlds we have cognisance of a differentiation of types; witness the "Evolution of Celestial Species," in which Sir Norman Lockyer classifies the stars by their spectra; Darwin's "Origin of Species" on earth; and the evolution of the chemical elements which bids fair to account for the genesis of the atoms of the various elementary substances—the species of the *infra-world*.

If we accept Darwin's view of evolution we must suppose that species are survivals of variations which have a particular fitness for the surroundings in which they are placed. Planets and satellites, comets and suns people the heavens because solid rings and cubes and spirals cannot long survive. Plants and animals assume definite forms because only such forms can thrive and multiply. {The others go to the wall. Atoms grow into definite sizes, shapes, and weights because others have insufficient stability. That stability is governed by laws of which we are as yet entirely ignorant, but if the atom as such has some kind of intelligence, that intelligence is faced by those infra-laws just as we are faced by the laws of chemistry and physics. It must utilise those laws and adapt itself to them or perish. We are not concerned with the infra-laws. All we have to do is to consider and obey the laws presented to us by the world of atoms—the infra-world. Modern researches into radioactivity have familiarised us with the conception of the birth, growth, and decay of atoms. Future investigations may well extend this by showing that atoms have a definite and measurable life-period and birth-rate, that, in fact, they are as much "living beings" as are bacteria, with the difference that their rate of life is some 5000 times faster, and their number a million million times greater. The effect on us of this numerical strength, and the rapidity with

which the phases of atomic life succeed each other, is that details get lost, and we are impressed with the general constancy and stability of the atomic species :—

The laws of chemistry are the laws of life of the atomic species.

This is said with regard to the origin and interaction of chemical species as such. When there is no interaction, but only chance aggregates of atoms of the same or diverse species are considered, we get the laws of mechanics or physics. The difference is just as if we considered cross-breeding, say, in one case, and the sufficiency of cattle-truck accommodation in another. The former would be terrene chemistry, the latter terrene physics.

When we have to deal, not with atoms, but with higher aggregates of them, we get more complex laws.

Atoms can only form societies under certain conditions, which we may call "conditions of membership." Other forms of aggregation are no doubt occasionally devised, but they disappear owing to instability. And the higher we ascend in the scale of aggregation, the more complex do these conditions become, just as the machinery of a State becomes the more complicated the larger it grows. We get complex molecules, colloids, protoplasm, cells.

Result: the laws of biology.

And so are our laws of nature built up. They are *the social laws of inferior worlds*. Our laws of matter are the laws of an "infra-biology," the laws evolved by the interaction between living beings of an order very far below our own.

SOULS WITHIN SOULS

An obvious objection to the above reasoning is that it is a kind of rationalised materialism, in which the immutable laws of a mechanical nature are reduced to the no less immutable laws of a rather mechanical infra-society. But this objection ignores an equally obvious corollary of the same reasoning. *There is no determinism*. There is "free will" all along the line. The laws of nature, like human laws, are observed *in the aggregate*. Any member of any order of society is at liberty to transgress them, subject, of course, to the penalties given and provided. Aggregation is free and voluntary. Obedience and conformity are voluntary. Any aggregation of any order has a self-determining power strictly commensurate with its range of action and sphere of influence. All laws of nature are breakable, but they are practically unbroken. How closely social laws may simulate the generality of natural laws is seen in countless conventions of human society. What strange being, watching a crowd of 10,000 Europeans, would ever conclude or suspect that all

men, Europeans included, were born without hats, or, indeed, without any clothing whatever? Or, if the generality of head-gear may be put down to natural causes, what causes but social laws can account for the male evening attire or the striking and simultaneous changes in feminine fashions?

But what is this same aggregation? What bridges the gulf which separates every two individuals?

Herewe approach the next cross-road. Materialism lets the world consist of discrete particles, capable, in some logically inconceivable way, of interacting with each other. How on such a system any two things can ever become alike when there is *any* possibility of differentiation remains a mystery. Or how, granted a primordial uniformity, differences can ever arise, is equally mysterious. No, we must, in accordance with the principle of Economy, proceed from the Known to the Unknown. The Known in this case is the interaction among our fellow-creatures. The Unknown is interaction in general. Human interaction is based upon a fundamental relationship known to biology as the continuity of the germ-plasm, but which from our point of view must be styled the Divisibility of the Human Soul. Just as the body of the apple is part of the body of the tree, so the soul of the apple is part of the soul of its parent, the soul of the infant part of the mother's soul. *Omne vivum e vivo* is one of the best-

established facts of biology. No life without previous life. Ultimately all living beings are our blood-relations, which means also our soul-relations. Let us be deliberate, courageous, and emphatic about the word "all." Since there is no dead matter, but all is life, our soul-stuff is co-extensive with the universe, and not with the visible and tangible universe only, but with the life that was, the life that is, and the life that is yet to be. Thus we catch a far-off glimpse of that great Universal Soul towards which indeed "the whole creation moves." Ultimately there is only One that lives. We all are sparks from that Divine fire, not thrown off at some distant and half-forgotten date, but sustained by It now, and through It, linked with every being that exists, or has existed, or shall exist *in sæcula sæculorum*.

Remember that, but for the elimination of "dead matter" we are still moving within the sphere of influence of orthodox and accepted science. But already we may perceive the vast range of added power and enhanced possibilities that are opening out before us. We may feel the thrill of our new freedom, we may see the light of the dawn that will illumine the rising day of the new knowledge. We must now get ready to enter upon our new inheritance. We can "call our soul our own," and as regards our body, that is no longer our soul's prison-house, but its storehouse and library, subject in

every detail to our superior will, provided we have due regard to the traditions and prejudices of our vast army of subordinates. It is in our power to consider all their requirements, to satisfy all their demands, to pay the maximum price they may exact from us for obeying our behest. So much for our physical organism. And then we have our social life, the intercourse with our equals, "as a Sovereign State with a Sovereign State," in which all is at our disposal if we will but pay the price or take the penalty, but where the penalty becomes a reward if we but further the interests of that higher organism which is the community, our nation, or humanity at large. And lastly, we have the central link, which is unbreakable eternally, which connects us up with the Highest, through superior aggregations or organisations of which we are as yet but dimly aware, but which some, more privileged than the rest, see in rare glimpses in moments of ecstasy. Such a rare moment is this, perhaps, of ours, when we first see the ultimate consequences of this new vision of the universe. Who would not say that, even if it be not true, it deserves to be true? Yet truth is never wholly attainable. We can only make occasional strides towards it, big or little. This, let us hope, is a big stride. But neither can truth be made part of ourselves except by patient and detailed effort. In what follows, therefore, we must return to the plodding and the spade-work.

Science has been built up by the countless individual labours of innumerable observers. If materialism has for a time enthralled it, it is because its eyes were fixed in the eye-pieces of the microscope and the telescope, its hands were in contact with actual tangible fact. So must ours be, but our outlook must be wider, our instruments more accurate, our reagents more delicate, our tests more searching and sensitive. We must account for all the accumulated facts of science as well as is done by any existing theory. In addition, we must account for a large number of new facts not embraced by any existing theory, simply because existing theories are diametrically opposed to their possibility. If we can do that, no power on earth or heaven can stand against us, and science will, in a few years, be remodelled in accordance with these new and wider conceptions.

CHAPTER VI

BODY, SOUL, AND SPIRIT

"If there is a natural body, there is also a spiritual body. So also it is written, The first Adam became a living soul. The last Adam became a life-giving spirit."—SAINT PAUL.

OUR next great task is not one of analysis, but of synthesis. We have reduced the whole world and all existence to an infinite gradation of intelligences, all possessing a degree of freedom, but all eternally linked with the Universal Oversoul. From these simple data we must now reconstruct in detail the world we live in, with its animal, vegetable, and mineral kingdoms, its stars and molecules, its light and sound and heat, its birth and death, its joy and sorrow, its goodness and truth and beauty, its evil and falsity and ugliness, its love and hate, its selfishness and self-sacrifice, its age-long evolution and final destiny. It is a gigantic task, a task attempted hitherto only by one system, that which its authors style a "scientific monism," but which is known popularly with sufficient accuracy as materialism.

Other systems of philosophy have indeed claimed a like universal scope, but they have always postulated a dualism which the modern mind feels more

and more to be intolerable. The divorce between mind and matter cuts at the very root of their vitality. It is the old feud between Ormuzd and Ahriman, between light and darkness, between an all-powerful Good and an all but all-powerful Evil.

It is not surprising that such unsatisfactory systems have to give way before any kind of consistent monism. The dualistic systems can only exist by the hope of a final cataclysm, in which the greatest and best of the powers shall finally prevail. But such a cataclysm is philosophically impossible. If it ever takes place, it must take place at a definite time. If it is decisive, that epoch will divide all time into two eternities, one before the cataclysm and the other after it. Thus the cataclysm will be an abrupt and absolute break in the continuity of eternity, and we have to account for the peculiar accident which placed us at the hither side of the break instead of the farther side. Moreover, if the cataclysm takes place in a measurable time, let that time be x years. These x years will be such years to us only, in our present state. In another conceivable state, they might be equivalent to as many seconds, or, again, to as many geological eras. Time is only relative to the events taking place. It has no absolute existence. And in whatever way we imagine the cataclysm to take place, it will become meaningless if we make our scale of space or time large enough or small enough.

No, the cataclysm must go, and all forms of dualism must go with it. This has been felt more and more clearly. Hence the steady advance of monism. The materialist says: "There is but one God, and that is matter, eternal and indestructible." We also preach but one God, but it is a living God. Instead of universal death and deadness, we postulate universal life. Instead of regarding life as an accident, an efflorescence, we regard it as the only reality. Instead of explaining the life which we know by the matter of which we know nothing, we proceed from the known to the unknown, with precisely that regard for the economy of thought which is the pride and mainstay of orthodox science.

Let us see. We have evolved the laws of nature from the social pressure of the infra-world. The life-struggles of that vast mass of atomic existences present us with certain regularities and uniformities which we find universally followed. As the registrar-general boils down his births, marriages, and deaths into dry figures—birth-rates, death-rates, marriage-rates "per 1000 of population"—and finds them obeying a certain rule, often remaining constant for years to within a small decimal fraction, so we find the seething life of countless denizens of the lower worlds summarised in a few broad rules, which are essentially statistical laws. These rules we profit by to build up our bodies and souls and spirits. And what are these?

To illustrate our conception of the relations between body and soul we shall use a diagram constructed on certain simple principles. It gives an intelligible scheme illustrating the gradation of beings which make up an "individual," right down to the infinitely little.

Let O represent the universal centre of being, and let the rays proceeding from it represent separate intelligences. Let a line or plane MN represent a

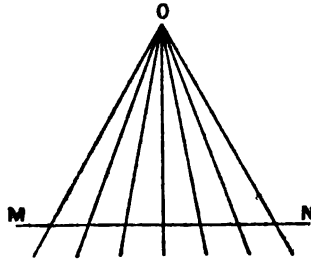


FIG. 1.

"world" in which these intelligences appear and act under similar conditions. The intersections of MN and the rays will be points, *i.e.* they will be "separate individuals," without any apparent direct connection with each other. They will, however, not be really isolated, as they all connect through O. This corresponds to our general scheme of existence, a number of apparently separate individuals united by an unseen mechanism with the

centre of all existence. It is a scheme which has many parallels in everyday life. A State, an army, a stock exchange, a telephone exchange, in fact, any human organisation, and, for that matter, any organisation whatever, is built on the same general plan. We must further postulate that O is eternal, and that every ray is eternal. For if any ray could be annihilated, O itself could be annihilated. The line MN is arbitrary. It can be shifted without affecting the eternity of the rays. In other words, the "worlds" in which the intelligences can act are infinite in number.

If the rays are eternal, they cannot either be born or die. We are inclined also to postulate that their number is infinite, as a limited number would mean a limited universe, and that is inconceivable. Still, the infinity of the number is not quite so obvious a necessity as their eternity. For the present we will assume that the number is infinite.

So far, then, we have an infinite number of eternal intelligences capable of acting in an infinite number of different worlds. We must now get closer to the meaning of the word "acting." The most obvious development is to endow the rays with motion, which changes their relative position. But position in itself does not exert any effect unless there is already a mutual action which depends upon that position. Let us take an analogy from celestial mechanics, and postulate an attraction between any

one ray and every other, which varies inversely as the square of the distance. To make this calculable, we must also postulate that the rays are elastic, so that as a rule they remain straight lines. They cannot get entangled, as their ends cannot be manipulated, and they are geometrical lines (*i.e.* length without thickness).

All these provisions are not intended to fix the "mechanical properties of intelligence," but simply to determine the working of our diagram. The diagram can prove nothing. It can make valuable suggestions, and the value of these will be the greater the more closely our symbolic diagram corresponds with the reality. Having got all the suggestions we like out of it, we can, if we please, discard our diagram in favour of another with different assumed properties.

We have, however, to endow our rays with at least one other non-geometrical property before we can utilise our diagram for an analysis of the universe as we know it. We have postulated that each individual ray is eternal. That means that it cannot lose its identity. It cannot perfectly coincide with any other ray. It can, however, approach it as closely as we like. It can be in "contact" with it for a certain part of its length, but its lower ends must always remain separate.

The junction of two rays gives us a new kind of point, a new kind of individuality, an individual

intermediate between the centre and the ultimate "monad."

In the world MN the appearance is much the same, but in the world PQ a new kind of individual has appeared at A. Five boating experts, we will say, come together and form themselves into a

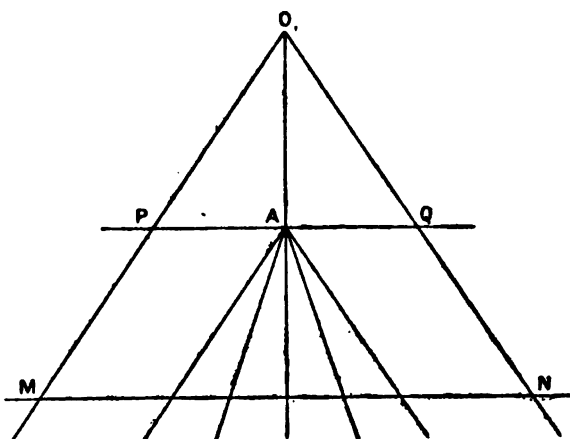


FIG. 2.

boat's crew. That crew is an "individual" as regards the training and the race. It is represented by A in the boat-racing world. When it is disbanded, the scheme of Fig. 1 reappears.

The importance of junctions or knots like A cannot be exaggerated. It symbolises individuality, the secret of sentient, organised being. It is the

Gordian knot which we have set ourselves here to disentangle. The laws of knot-formation are the laws of the organised universe.

Let us next endeavour to construct a complete individual of our own order by the same symbolism. The human body consists of organs, which are to a certain extent self-contained and independent. The organs consist of cells, which also have such a certain amount of home rule. The cells again are supposed to consist of *biogens* or *protoplasts*, which lead to some extent an independent life within the cell-organisation. The biogens consist of colloid aggregates, these again of complex molecules, and these again of atoms. We know nothing of the relative degrees of independence of all these, but we may assume with some show of reason that the atoms, at all events, are largely self-contained and independent. Thus we have in Fig. 3, a human being at A, one of his organs at B, one of the cells of that organ (say, a liver-cell) at C, one of the biogens of that cell at D, and at E, inseparable from its companions by the most powerful microscope, we have a single atom. Below that again we have further subdivisions, which, however, are invisible to us, and this continuous further subdivision may be symbolised by a thickening of the lines down to the infinitely small. The latter is embodied in the diagram by continually halving the successive intervals between one grade and the next. This

device gives an *infinite succession of gradations*, which stops at the base-line.

To represent reality more closely, the cells C should not be only nine in number, but more like

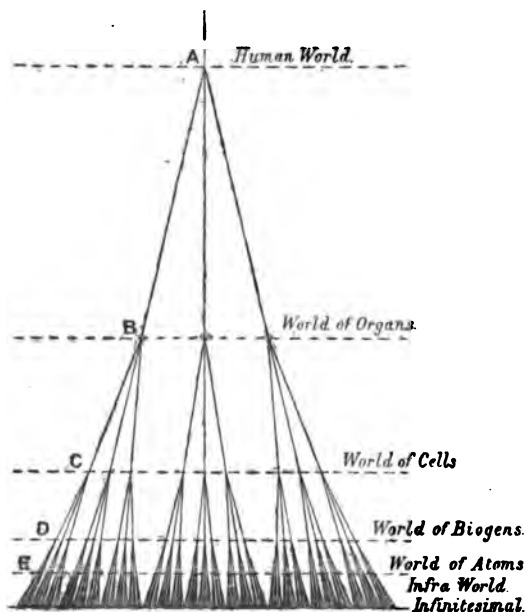


FIG. 3.

a million million (a "billion"). But this would introduce needless confusion. The principle is all we want to show.

This, then, is the human body, surely a more rational representation, more in accordance with

both philosophy and physiology, than any other hitherto devised ! It gives us a complete definition of the human body. But next we want to find the soul.

That there is some difference in the *value* of the various constituents of the body is indisputable. Some organs are "vital," others can be dispensed with. In each organ, again, some cells are more important than others. Within the cell itself, as we have already seen (p. 65), it is the nucleus which governs the processes of assimilation, growth, and repair. Within the nucleus, again, we have the chromatin, of somewhat undecided predominance. And there is no reason why the process should stop there. Whatever may be the "world" we are considering, we shall always find that some parts of it are essential to the organism, others unessential, others again purely accidental and easily separable, or even oppressive and noxious.

In the human subject, the nerve cells are credited with the most effective control of the organism. Every muscular fibre has embedded in it the flattened root-plate of a nerve, which connects it directly with the brain, furnishing a wire-like connection which strikingly recalls one of a bundle of telephone wires, or one of a bundle of "rays" in our own diagram above.

This gradation, according to essential value or importance, must also be read into our diagram

if it is to represent symbolically the main facts of life. In order to do this, we will establish the convention that the central branches of every unit are to be the most essential or "vital," and the lateral branches the less vital. Thus, in the world of organs passing through the point B the central knot may represent the nervous system, and in the world of cells some brain cells or important "sympathetic" ganglia may be predominant enough to be assigned the central place. Modern physiology does, however, not favour the idea of centralising life in any particular system or set of organs, more especially as all the cells are closely connected by cell-bridges (see p. 57). We must therefore recognise that there is a continuous gradation of importance, and that on some occasions the less important organs and cells may assume an increased importance. This is instanced by cases in which an operation on some non-vital part is followed by death from "shock." If we wanted to extract all the essential parts of the body, leaving behind those which are non-essential, it would be more advisable to extract the nucleus from every cell. Suppose for the moment that this could be done; what would be the effect on the remainder of the body? Obviously its behaviour would be similar to that of a single cell which has been deprived of its nucleus. On this subject Wilson says¹: "A frag-

¹ "The Cell," p. 80.

ment of a cell deprived of its nucleus may live for a considerable time and manifest the power of co-ordinated movement without perceptible impairment. . . . Those functions that involve destructive metabolism may continue for a time in the absence of a nucleus; those that involve constructive metabolism cease with its removal." The body will not assimilate, it will not grow, it will have no power of repairing itself. It will gradually die. Meanwhile the nuclei will retain all their capacities, and, if provided with suitable surroundings, with food-supplies at the proper temperature, will resume their functions as if nothing had happened, leaving the abandoned body to its fate.

Let us consider for a few moments longer the nuclear organism which we have extracted. Let us endeavour to obtain as clear a view of it as possible. If it retains the outline of the body, it will have just about the density of air. Its particles are, however, over a million times heavier than air molecules. They will, in fact, form a kind of mist, and a calculation by Stokes' law shows that if left to itself in air, such a collection of nuclei would settle down at the rate of about one inch in eight hours.

The extraction of nuclei has often been accomplished in the physiological laboratory by artificial peptic digestion. But the very fact that this is possible should warn us against identifying the

nucleus with what used to be called the "vital principle" of the body. It is already fairly clear that not all parts of the nucleus are equally vital. There is the chromatin, which greedily takes up colouring matter. There is the almost invisible *linin*, which forms the network and the spindle-fibres. There is the *paralinin* or ground substance. There is, further, the *pyrenin*, of which the nucleoli consist. And, lastly, there is the *amphipyrenin*, the substance of the nuclear membrane. Which of all these is the most essential it is impossible as yet to say. Wilson (p. 334) warns his reader "that in the whole field of microchemistry we are still on such uncertain ground that all general conclusions must be taken with reserve." It is not even decided whether the staining reactions (upon which we depend for discriminating between the various constituents of the nucleus) are of a physical or chemical nature.

Our search for the "spiritual body" may be a prolonged one, but there is no reason why it should be indefinitely prolonged. At some future time we may succeed in tracing a visible difference between a cell in full functional activity and a cell which has just "died." Perhaps that could be done even now. But since we are not *en rapport* with the life of a cell, we cannot fix upon the moment of death. Whatever the "vital principle" may be, it is probably associated with definite

material parts of the system. Indeed, we may say it *consists* of those parts. This is not materialism, since we have postulated that all matter is alive. These vital material parts are those entities which control the organism on behalf of our individuality. They are the officials which are empowered to act in the name of the Sovereign.

Now we have had reasons for believing that there is an infinite gradation both in the *order* of the subservient entities and in their relative importance. If, therefore, we call the aggregate of the more vital entities of our body our "spiritual body," we must guard against any hard and fast line of demarcation. There is no limiting line where we can say: This is spiritual, that is not spiritual. It is only a question of more or less. It matters little what we call the vital aggregate. We may call it the spiritual body, or the "astral" body (an unfortunate word) or simply the "soul." That the word "soul" has come to mean something altogether immaterial is only an accident. To follow that practice would be to rehabilitate the dogma of the existence of dead matter which it was our first business to demolish. We shall therefore simply call this vital aggregate "the soul," and next inquire whether, and under what circumstances, it is capable of existence apart from the body.

If we assumed, as before, that the soul consisted

simply of the cell nuclei, we should have to acknowledge that it is apparently impossible for the nuclei to exist separately. In any case, they are not observed to leave the cell at its death, but to "die" with it. What we have to find out is whether the soul can leave the body during its lifetime, or only at the death of the body, if at all.

A few years ago it would not have been permissible to think that any assemblage of material particles could simultaneously leave every cell of the body. But in the last few years our ideas of the possibilities of "matter" have been considerably enlarged. The atom has, with great probability, been shown to be a system of very much smaller bodies called "electrons," so that if an atom were enlarged to a sphere fitting within the orbit of Neptune, it would not be much more close-grained than is our solar system. This leaves ample room for all kinds of interpenetration, and we have to attribute the observed stability of our body, its constancy of volume and outline, to the play of imponderable forces acting at a distance across spaces vast in comparison with the size of the particles upon which they act. On this view, then, the body is itself a kind of mist, and there is nothing against the possibility of extracting from it a finer mist, and doing so in a short time, and repeatedly, with a nearly permanent possibility of

restoring it to its former place. For—and this is significant—the force of cohesion, which keeps our body together, is almost certainly of electrostatic origin. The full possibilities of electrostatic force are never realised in ordinary physical phenomena. It is quite conceivable that a more pronounced separation of positive and negative electricity in the “vital extract” or “soul” should amply compensate the tenuity of its constitution, and give it a consistency sufficient for all ordinary purposes.

Nothing can, therefore, be said *a priori* against the possibility, at all events, of a separation of the soul from the body, and of its temporary existence as a separate entity.

Now such a separation is not a mere possibility. It is a *practical reality*. It is known to modern psychical research as to “externalisation of personality” (*l'exteriorisation de la personnalité*). Details of this will be given in future chapters, but it may be stated here that a large number of credible observations are on record in which parts of the human form, more especially hands and arms, have been duplicated and have emerged from the body in a more or less shadowy state, not so shadowy, however, but that they could exert considerable force and produce results capable of being measured and automatically recorded. In other cases, entire human forms have been thus projected, and have been material enough to produce the appearance of normal human

personalities. These have, as a rule, been clothed in appropriate drapery, and it is this drapery, rather than the forms themselves, which have provoked intense incredulity. This attitude is, however, very illogical. If tangible hands, limbs, and faces can be thus produced, it means that a great deal of unessential matter (almost what we might call "ballast") is added to the soul-form. And if that is done, why draw the line at a little additional "ballast" which enables the forms to appear in a mixed company without immediately raising insuperable objections to their presence?

However inconceivable it may be to us that elaborately organised forms should be built up in a few minutes, there is not a trace of *a priori* improbability about it. Such a feat is a commonplace of nature, which builds up the most intricate organisms by the million at a time, and considerably exceeds the record of the printer in producing additional copies of a design once provided.

If we wanted to represent the soul diagrammatically, it would suffice to draw straight lines down from the level of C (Fig. 3 above), without any thickening towards the infinitesimal below. This would mean that none but the most essential parts form part of the soul. Could we arrive at some quantitative estimate of the proportion of vital (or detachable) portions to the whole, we might arrive at a really scientific definition of the soul.

We know that if it were one-tenth per cent., for instance, the soul would have the specific gravity of air. It would float in the air. If the proportion were less, and the volume were the same, the soul would rise in the air like a balloon, and find its natural home somewhere in the higher atmosphere. This would give a physical justification for the old-fashioned "heavenward" gaze upwards! As regards the "spirit," that term is too vague to be capable of even a provisional definition. In any case, to judge from analogy, there is no hard and fast line of demarcation between soul and spirit. Perhaps we might take the three straight lines radiating from A as representing the spirit, ignoring all branches which split off below. Or perhaps the main line upwards from A might serve as a more suitable symbol.

If the soul can be proved to be separable from the body even during the lifetime of a person, half the battle for immortality is fought and won. The great and overwhelming argument for the annihilation of the human individual at death is that no characteristic message from his mind to ours any longer reaches us. If we can prove that this is simply due to a kind of "moult," whereby an outworn or damaged covering is laid aside in favour of either vastly increased freedom or a more suitable covering, death will have lost most of its terrors. If physical death is a daily process, which

only attains a certain climax or permanence at the time of this "moult," it will no longer be looked upon as an impassable gulf. And, to go a little farther, if we can prove that the confinement of the soul in a heavily ballasted body conduces to its stability and safety, and facilitates the acquisition of certain kinds of knowledge, we shall understand that life and death are not matters of tragedy, but entirely matters of convenience, utility, and comfort. The ultimate fate of the human monad may still remain a matter of speculation and some uncertainty, but it will become apparent that this uncertainty has nothing to do with physical death, and will, in all probability, not be removed or in any way affected by it.

For practical life it will be useful to know more about the possibilities of temporary separation of soul and body, possibilities which largely partake of the nature of physical and physiological problems. The study of these possibilities will annex to science most of the realms hitherto regarded as "occult," and will enable us to deal with ghosts, apparitions, hauntings, and doubles much as we do now with meteorites or comets or icebergs, while it will throw the searchlight of accurate investigation over the path which we all one day must tread on our way into the unseen world.

PART II

CHAPTER I

BIRTH

BIRTH and death are the boundary stones of earth-life. Immortality presents itself in two different aspects in connection with these two events. In considering birth, we are faced by the problem of pre-existence, just as after death comes the problem of continued life.

In the process of birth we have to account for the appearance in the world of a new individual. The progress from birth to death is irreversible. Yet there is no logical necessity for its being so.

Consider the alternatives; and suppose that a portion or the whole of a human life process were reversible. If that portion were one-half of it, we should have a normal development from birth up to the age of thirty or forty, and then a gradual reversal, a diminution of bulk and strength, a generalisation instead of a specialisation of functions, more cell-fusion than cell-division, more elimination than acquisition, and a final dwindling of the organism to an invisibly small germ-cell, which in turn

might fuse with other cells and finally become untraceable.

A reversal of the whole life-process is more difficult to conceive. A fully formed but greatly ossified human body would have to become suddenly animated by a human intelligence, would have to gain in strength, suppleness, and soundness, to arrive at full vigour, and then dwindle to youth and infancy as already indicated.

Such pure reversals are unknown. But that there is a reversal in the tendency towards expansion admits of little doubt. The "second childhood" of old age looks like a reversal of some process associated with birth. It is as if, instead of expanding its realm and accreting new material, the soul retired from the world and gradually reduced its sphere of action and influence. The loss of stature and weight which usually accompanies old age is an eloquent indication of the general tendency towards retrenchment, a tendency which, but for the stability of the more permanent tissues, would no doubt go much farther than it does.

In the course of his "threescore years and ten" man builds him a house, many materials of which are permanent, and designed to be so in order to enable him to take a certain set of conditions as a firm and changeless base of operations. When the possibilities of development under those conditions

are exhausted, when the novelty has worn off, the organism is not demolished as carefully as it was built up. It is laid aside, like a garment outworn. The demolishing work is left to "nature's scavengers," the bacteria of putrefaction.

Although there is this *rapetissement*, this retrenchment towards both the boundaries of life, there are in other ways most significant differences. Death is not associated with the living in the way that birth is. Death is a solitary act, while birth is most intimately bound up with the maternal organism. The generalisation *Omne vivum e vivo* holds good, as far as we know, for the entire organic world. No individual is born into this world without the vital co-operation of at least one living individual, and in most cases two.

In its simplest form, the problem of birth appears to us in the process of unicellular cell-division, and here again the simplest conditions are found in the flagellates, such as *Tetramitus*, a little animal consisting of a single cell provided with four hair-like tentacles which enable it to propel itself through water. It resembles a bag of jelly, with a darker central sphere, apparently without structure, and granules of chromatin scattered irregularly about it. When division approaches, the sphere becomes lengthened out, a constriction appears about the middle, which becomes more pronounced and finally leads to cleavage. At the same time, the granules

collect about the sphere and divide themselves into two groups, each group attaching itself to one of the cloven spheres. These move apart in the substance of the cell, and the whole bag of jelly repeats the cleavage. The hair-like flagellæ do the same, so that they become eight in number, and when finally "the painter is cut" we have two individuals where before we had only one.

This is "birth" in its simplest form. But if we can account fully for *this*, the chief difficulties of the problem are solved. It would only remain to deal with the problem of conjugation, or the union of two different individuals which as a rule precedes the production of new ones. Of this, Wilson says¹: "The conjugation of unicellular organisms possesses a peculiar interest, since it is undoubtedly a prototype of the union of germ-cells in the multicellular forms. Bütschli and Minot long ago maintained that cell-divisions tend to run in cycles, each of which begins and ends with an act of conjugation. In the higher forms, the cells produced in each cycle cohere to form the multicellular body; in the unicellular forms the cells separate as distinct individuals, but those belonging to one cycle are collectively comparable with the multicellular body. The validity of this comparison, in a morphological sense, is generally admitted. No process of conjugation, it is true, is known to occur in many uni-

¹ "The Cell," p. 222.

cellular and in some multicellular forms, and the cyclical character of cell-division still remains *sub judice*. It is none the less certain that a key to the fertilisation of higher forms must be sought in the conjugation of unicellular organisms. The difficulties of observation are, however, so great that we are as yet acquainted with only the outlines of the process, and have still no very clear idea of its finer details or its physiological meaning. The phenomena have been most clearly followed in the infusoria by Bütschli, Engelmann, Maupas, and Richard Hertwig, though many valuable observations on the conjugation of unicellular plants have been made by De Bary, Schmitz, Klebahn, and Overton. All these observers have reached the same general result as that attained through study of the fertilisation of the egg; namely, that an essential phenomenon of conjugation is *a union of the nuclei of the conjugating cells*. Among the unicellular plants both the cell-bodies and the nuclei completely fuse. Among animals this may occur; but in many of the infusoria union of the cell-bodies is only temporary, and the conjugation consists of a mutual exchange and fusion of nuclei. . . . We may first consider the conjugation of infusoria. Maupas's beautiful observations have shown that in this group the life-history of the species runs in cycles, a long period of multiplication by cell-division being succeeded by an 'epidemic of con-

jugation,' which inaugurates a new cycle, and is obviously comparable in its physiological aspect with the period of sexual maturity in the metazoa. If conjugation does not occur, the race rapidly degenerates and dies out; and Maupas believes himself justified in the conclusion that conjugation counteracts the tendency to senile degeneration and causes rejuvenescence, as maintained by Bütschli and Minot."

Wilson then goes on to describe the essential phenomena occurring during conjugation. They are extremely significant:—

"The infusoria possess two kinds of nuclei, a large *macronucleus* and one or more small *micronuclei*. During conjugation the macronucleus degenerates and disappears, and the micronucleus alone is concerned in the essential part of the process. The latter divides several times, one of the products, the *germ-nucleus*, conjugating with a corresponding germ-nucleus from the other individual, while the others degenerate as 'corpuscules de rebut.' The dual nucleus thus formed, which corresponds to the cleavage-nucleus of the ovum, then gives rise by division to both macronuclei and micronuclei of the offspring of the conjugating animals."

Here, then, we have an epitome of the processes by one or other of which all living beings increase and multiply and people the earth.

Herbert Spencer propounded an ingenious theory to account for the primal necessity of subdivision. Food, he said, must be absorbed through the surface of the cell. When the diameter of a cell is doubled, its surface becomes four times as great as before, but its volume becomes eight times as great. The food-traffic will therefore be twice as heavy as before, and may unduly strain the consistency of the surface. If the eight-fold volume were subdivided into eight separate cells, the surface per volume would be the same as before, and the customary process of food-supply could be maintained.

This argument supposes, of course, that enlargement of volume is in itself an object towards which the natural processes tend. In view of the governing activity of the nuclear matter it is more reasonable to suppose that the *multiplication of nuclei* is the governing tendency.

Each nucleus is a *centre of life*, the seat of some intelligent activity which we, being so far removed from it in the scale of intelligence, can only dimly appreciate. This intelligence, we may well believe, is fitted for dealing with certain kinds of influences and impulses, provided by the medium in which it lives. It can deal with them *at a certain rate*. If the impulses become too rapid, life becomes too "strenuous," and the working capacity of the "central exchange" is overstrained. An undue

increase in volume not only increases the points of contact with the outer world beyond a certain limit. It also, and much more largely, increases the amount of second-class matter to be superintended. If, then, the food-supply becomes too abundant, and growth too rapid, the nucleus divides, and the line of cleavage, after beginning among the innermost *arcana* of vitality, runs through the outer courts of life, emerging into the visible day and taking the remaining matter in the lump, much as two heirs, after having carefully sorted and divided the jewelry and family heirlooms, might lump the remaining property together and take their halves at random.

Life and experience are thereby multiplied and varied. But a danger then arises, and has to be guarded against. It is that in the extreme variation of life thus produced there may be a deviation from the best tradition, that inherited tradition of customary processes which is the outcome of long ages of ancestral experience. This danger is minimised by the converse process of conjugation. In this process, certain vital parts of each cell combine together and give rise to new nuclei, and thus to new individuals.

From the point of view advanced in this book, it is evident that we have to deal with what, in short, we might style the division and combination of *souls*. For, according to our view, all cells are

living beings, which may or may not combine to form beings of a higher order. And the most essential, vital, directive parts of each cell constitute its soul. This soul is withdrawn from the cell when it "dies," and its subsequent fate is what we have to determine, if we can.

Now the question arises: Can a soul split in two? And this is matched by the converse question: Can two souls become merged into one?

If, as we have all along assumed, all living things are linked together through some superior centre (or, in the last resort, through the universal centre), if, in fact, all life is ultimately One, then there is no difficulty in assuming any number and variety of different combinations and dispersals of the ultimate infinitesimal units of life. But we have really nothing to do with these. We have in practice to deal with very complex combinations of them, with very highly organised and differentiated systems, and must ask ourselves whether such duplication of contents of consciousness as we actually observe is deducible from our general premises, or, at least, not inconsistent with them.

Reverting to our diagram of an individual (Fig. 3, p. 104), we need only suppose that the central lines of each plastid bundle are capable of splitting along their lengths, beginning at the "infinitesimal" end. The result in a simple case is represented by Fig. 4, where B and C are two similar individuals formed

by simple fission. Conjugation would then be represented by the converse process. The more central lines would coalesce, and liberate the remainder from their allegiance. The knot at A would mean that there is a unifying principle which tends to keep the species moving along the same general lines of development. This unifying knot

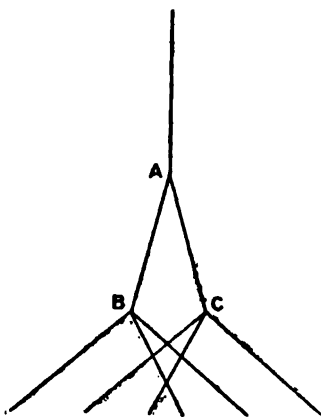


FIG. 4.

at A also brings about the "epidemic of conjugation" periodically. In a multicellular individual it represents the soul, not of the cell or the species, but of the whole organism. In the metazoa or higher organisms generally, the process is more complex. It is a process of fission, conjugation, and a second fission. Briefly, it consists in this.

Specially equipped cells (called germ-cells) are developed by each organism, whose function it is to hand on the inherited tradition. These germ-cells are of two kinds, male and female, and while in most plants and in some of the lower animals both kinds are developed in the same individual, in the higher animals each kind is only developed by its appropriate *sex*. Millions of these are constantly produced, and only an insignificant proportion of them ever fulfil their appropriate function. To do this, it is necessary that a male germ-cell should reach a female germ-cell, that their nuclei should fuse, and give rise to a new nucleus capable of cleavage. When this happens, a new individual of the same species is gradually developed by the subdivision and multiplication of the original cell and the differentiation of the different groups of cells into *organs*.

The process thus briefly sketched raises quite a number of important questions. Have the germ-cells, male or female, any souls? And if so, of what order? What relation have these souls to that of the individual? What becomes of the souls of the germ-cells when they die without fulfilling their function? What happens when they *do* fulfil their appropriate function?

The simplest way of dealing with these questions will be to answer them, so to speak, dogmatically, and then to proceed at leisure

to justify the answers given. These, then, are the answers:—

All germ-cells, like other cells, have souls. Their souls differ materially, but not fundamentally, from other cells of the body, in two main particulars. They are composed of infinitesimal monads derived from the whole of the body, instead of being chiefly associated with a single organ (they are, so to speak, condensed extracts of the whole individual). And, secondly, they are one-sided, asymmetrical, or incomplete. They are incomplete structurally, as shown by their possessing only half the usual number of chromosomes (see p. 72). They are, therefore, incapable of spontaneous division or of separate growth.

When the germ-cells die, with their mission unfulfilled, their souls return to the organism whence they came.

When two germ-cells meet and merge, their souls are liberated from their parent organisms. The "lines" which constitute them intertwine, swing loose from the two parent groups, and form a new knot on a level with the souls of the parent individuals. At that moment, in a flash of rapture, a new soul is conceived and enters the world in which its two parents move.

This view brings out the essential similarity of the process of reproduction in all forms of life. In both protozoa and metazoa there is an alternation

of division and conjugation. The only difference is that whereas in the protozoa fission or cell-division implies an actual separation of the cells, in the metazoa the divided cells continue in contact, and support each other by a division of labour and by mutual service.

This mutual service is the governing principle of the life of the metazoon from its earliest stages. What exactly is the guiding principle of the development of the embryonic being into its state of maturity is the most profound problem of biology. After reviewing the various theories hitherto propounded, Wilson says¹:—

“The truth is that an explanation of development is at present beyond our reach. The controversy between pre-formation and epigenesis has now arrived at a stage where it has little meaning apart from the general problem of physical causality. What we know is that a specific kind of living substance, derived from the parent, tends to run through a specific cycle of changes during which it transforms itself into a body like that of which it formed a part; and we are able to study with greater or less precision the mechanism by which that transformation is effected and the conditions under which it takes place. But despite all our theories we no more know how the organisation of the germ-cell involves the properties of the adult body than we know how the properties

¹ “The Cell,” p. 433.

of hydrogen and oxygen involve those of water. So long as the chemist and physicist are unable to solve so simple a problem of physical causality as this, the embryologist may well be content to reserve his judgment on a problem a hundred-fold more complex."

Our view of the problem is that it is not a question of "physical causality" at all, and that no physical theory can, in the nature of things, ever shed any light on the real problem of development. The course of development is so evidently governed by psychological rather than physical factors that only the prevailing materialism of biology can account for this not being acknowledged long ago. We have all along been driven to suppose that some part of the memory of the individual is embodied in every cell of the body, and we may well assume that such a crisis as the merging of two germ-cells stimulates and exalts the memories of both, and throws into strong relief all that they have in common. This common ground will be a closer approach to the *average* memory of the species than each memory would be when taken separately. For lack of an insight into the true cause of development, biologists have invented a word which, at all events, embodies the unknown factor determining the idiosyncrasies of each species. The word is "idioplasm," and it means "the substance, now generally identified with chromatin, which by

its inherent organisation involves the characteristics of the species." ¹ In short, it is the cause which, by some inherent cause, causes—the effect observed. Wilson says: ²—

"The second question, regarding the historical origin of the idioplasm, brings us to the side of the evolutionists. The idioplasm of every species has been derived, as we must believe, by the modification of a pre-existing idioplasm through variation, and the survival of the fittest. Whether these variations first arise in the idioplasm of the germ-cells, as Weismann maintains, or whether they may arise in the body-cells and then be reflected back upon the idioplasm, is a question to which the study of the cell has thus far given no certain answer. Whatever position we take on this question, the same difficulty is encountered; namely, the origin of that co-ordinated *fitness*, that power of active adjustment between internal and external relations, which, as so many eminent biological thinkers have insisted, overshadows every manifestation of life. The nature and origin of this power is the fundamental problem of biology. When, after removing the lens of the eye in the larval salamander, we see it restored in perfect and typical form by regeneration from the posterior layer of the iris, we behold an adaptive response to changed conditions of which the organism can have had no antecedent experience

¹ Wilson's Glossary in "The Cell."

² Ibid., p. 433.

either ontogenetic or phylogenetic, and one of so marvellous a character that we are made to realise, as by a flash of light, how far we still are from a solution of this problem."

Without attempting or pretending to give a complete solution of this difficult problem, we may point out that there is nothing inconceivable in a profound stirring of ancestral infra-world memories at the union of two germ-cells. As at the moment of death, so at the moment of conception, there is an exaltation of memory which surveys, with lightning rapidity, a vast course of previous evolution. That memory becomes a directive influence, pointing out the future path, which must be parallel with the path already trodden. And so the incipient being rehearses during its early existence the stages through which the species passed in the course of its age-long evolution, and that remarkable correspondence between ontogenetic and phylogenetic development arises, that agreement between the life-history of the individual and that of the species, which Haeckel has done so much to make known, and from which he has drawn so many unwarranted conclusions.

CHAPTER II

LIFE AFTER DEATH

ARE we prepared for a rational theory of the life after death?

The question seems a strange one. Is not this rational theory what the world has been striving for ages to attain to? Does not this question of the after-life confront us whenever we think a few years or scores of years beyond our present life? Is not the truth the best, the greatest, the most welcome?

What is the actual present-day attitude on the question? Let us examine it dispassionately, with sole regard for accuracy and impartiality.

In Europe and America we have two main attitudes, the (more or less orthodox) Christian attitude and the Materialistic attitude. The former controls most of those who are emotional rather than intellectual; the latter controls the quasi-intellectual classes and a considerable proportion of the highly cultured.

The Christian attitude towards immortality is difficult to state succinctly. It depends partly upon the form of Christianity professed, and partly

upon personal disposition and the "private judgment."

Broadly speaking, there is an assurance of personal survival, largely centred about the personality of the Founder of Christianity and based upon His resurrection after crucifixion. There is a general belief in a moral retribution, which in many cases takes the form of places of bliss and of punishment, as well as an intermediate place of purification. A final resurrection of all flesh and Judgment Day are also looked forward to, and in the more extreme forms we have the doctrines of eternal bliss and eternal punishment.

Details of the life immediately following death are of the vaguest. In fact, the prevailing tendency is to avoid them carefully, to screen them from the play of reason, to veil them from the prying intellect, so as to avoid a conflict between the heart and the understanding, between faith and reason. The next world is peopled with angels and devils, among whom the departed soul finds it hard to hold its own, and cannot hope to do so unfortified by a fervent belief in the truths revealed by religion and the record of a good life on earth.

To all this the materialistic attitude offers a blank negation. It professes to point out all the impossibilities and absurdities of the Christian attitude, and shows that the possibility of a future life without the brain is contradicted by every fact of nature.

It asserts the supreme right of the intellect to decide these questions, and attributes the contrary teachings of the religious bodies to a species of intellectual quackery, to the misuse of intellectual powers for the misguidance of the unintelligent masses. To this sweeping condemnation the Churches reply by denouncing the materialistic doctrines as immoral and anti-moral, as dangerous to the welfare of the community. This again is met by the plea of "material prosperity," of improvements in sanitation and public health and the survival of infants—pleas which are met by pointing out a corresponding increase in criminal statistics.

And so this controversy, which originated in a dispute concerning the future life, draws its trail across the whole field of social and civil activity. But the outcome of it all has been to drive the question of survival more and more into the backwaters of "practical politics." In the tussle between the emotions and the intellect the latter has proved the stronger, and to-day the world is governed precisely as it would be if no future life existed, except that care is taken to respect the feelings of people who have strong convictions to the contrary, just as some people have strong convictions concerning vaccination. It is not the *fact* of a future life that is thus acknowledged, but solely the *opinion* of those who believe in it.

That being the actual state of things, the advent

of a scientific demonstration of a future life may be expected to effect a very radical alteration in our public policy. But that alteration will never take place unless there is a scientific demonstration. Humanity is not, after toiling wearily up the hill into the sunlight, going to sink back into a dark and misty valley. After ousting all the hierarchies from every civilised government, after depriving them of nearly every shred of control over the affairs of this world, it is not going to take their word on any subject as final. If the future world is to be recognised in this it will have to be more properly accredited. It will have to give an account of itself, and submit to cross-examination. If it fails to do so it will not get a hearing, and matters will go on as they are. Humanity is too busy with its appointed tasks to trouble about chimeras. After all, what can you do to a man who gives up all hope of a future life? He is quite impervious to threats of future retribution, and will put his simple denial in the balance against your simple assertion that such awaits him. Or if, instead of your simple assertion, you quote your revealed Scriptures, your authorities, your edicts, and dogmas, he will answer you with his universal experience, his scientific method, his canons of induction, and point out countless cases where the latter have prevailed over the former.

History will repeat itself. Inductive science

found theology in possession of this world, governing all things, interpreting nature in accordance with revelation, and manipulating the facts of geology, astronomy, botany, zoology, and chronology to make them fit into a traditional scheme which was not even consistent with itself.

From this territory theology has been ruthlessly evicted. The visible world being henceforth closed to it, it has taken refuge in the invisible world, where it feels free to make what declarations it likes. And that invisible world continues to be the "home" towards which the weary heart turns from a world that has become indeed clean and bright and sanitary, but utterly hopeless and empty, if not unjust and cruel.

For the things of this world are not enough. From the corpse and the chamber of death we turn with loathing, unless reverence or affection or the expectation of future reunion enable us to overcome the natural feeling of repugnance. We refuse to recognise our likeness in that which lies there motionless before us. We repudiate it and disown it. We feel instinctively that that cannot be the end, though a thousand sciences may thunder it into our ear. For those whom the sweet solace of religion can reach in that hour of doubt and bereavement it is well. Let us tenderly respect their self-abandonment and rejoice in their child-like trust in an Almighty Father who governs everything for the

best and will wipe away the tears from their eyes.

It is not for such that this book is written. It is written for those who *think*, for that increasing majority of the human race in whom the claims of the intellect have become supreme, in whom the cravings of the heart are subordinate to that general sense of fairness and fitness which, for lack of a better word, we call Reason. They do not expect a special and individual Providence for themselves. If there is such, they want to share it with the whole human race. They want to balance their own good against that of their neighbour, and ascertain that the law they recognise, if extended over all humanity, will be fair and equitable to all. They will not allow any living man, or collection of men, to prescribe or dictate to them, out of some alleged authority, what is or is not true, knowing as they do that truth is a relative term, which varies from age to age, that truth is a function of two variables, reality and symbol, and that it changes as much with the latter as with the former. In other words, a truth which cannot be revised is no truth, just as an antiquated map is not a true map. A reality is expressed in certain symbols, chosen from the intellectual currency of the time of utterance. The strict correspondence between the reality and the symbolism is truth. The symbols may be words, written or spoken; they may be

pictures, tracings, images, or allegories. Their strict correspondence to the reality is only approximate, just as even a plaster cast ceases to represent the outline *precisely* once we come down to molecular dimensions. The symbols, only approximate at best, change in the course of time. What the Ancients called the *Orbis Terrarum* we call the globe. We have discarded their empyreans and epicycles as symbols which have lost all intelligible meaning, *i.e.* all relation to reality. The very firmament has become the most infirm and changeable of things, the most subtle and mobile realm of ether. There is hardly a word in our present-day language whose precise use and meaning are more than four or five centuries old. And even if two people use the same word, and give it the same synonyms, we have no criterion which would enable us to tell whether they attached to it precisely the same meaning.

No, in present-day thought there is no room for dogma, except as a useful temporary assumption. Every truth must be regarded, not as a thing to stand *in æternum*, but as a challenge, an obstacle to freedom, at best a solid prop capable of withstanding a strain not to exceed a certain maximum.

It is in this spirit that science will, if at all, approach the problem of immortality. And whatever ground it effectively occupies will therewith be irre-

vocably and finally withdrawn from the control of dogmatism.

The masterful hand of the conqueror will immediately make itself felt. There will be no room for parleys and reticences and obscurities, any more than in physiology or surgery. Everything must be faced, and the examination must be as thorough as a serious medical examination. The task may be far from agreeable. It may have its own dangers and disillusionments and pitfalls. But it *must* be faced some time, and can only be faced in the spirit of candid, fearless, painstaking inquiry, to which everything is equally clean and holy and worthy of respect, every detail of equal interest, and only one thing unclean and abominable—falsehood.

In the pursuit of that inquiry it may happen—and most likely will happen—that the problem appears the more complex the further we pursue it. Before the days of the microscope, the hair on the leaf and the grain of pollen on the stamen were about the smallest things we knew, and the simplest. To-day, both of these are great and complicated structures, capable of analysis into a thousand smaller elements, and still we are far from having attained to simple elements from which everything may be theoretically or practically reconstructed. Moreover, in those early days things appeared simpler than they do now. Meat was either clean or unclean, men were righteous or unrighteous,

gentle or simple, born to everlasting bliss or eternal damnation; there were but seven planets and a few thousand stars fixed in a crystal vault. Science has found the reality to be quite different. Animal species are more difficult to classify now than in the days of Deuteronomy. Man's righteousness is judged largely by his bail and his counsel; his gentility is a matter of money or education; his future fate has ceased to interest any but himself, and even himself it preoccupies little. The list of planets has expanded to many hundreds, and the approximate number of fixed stars to a hundred million, contained within a vast space beyond which other and vaster spaces stretch into infinity, harbouring infinite possibilities of further existence.

When the scouts of science advance into the unseen world of our future life, they will in all probability meet with a similar expansion of detail and enrichment of experience. Actual facts of that world will refuse to fit themselves into our home-made schemes of things. Our schemes will have to be revised and made more elastic. What appears to us utter simplicity may turn out to be a bewildering complexity, just as a drop of stagnant water is seen to be the battle-ground of innumerable forms of life.

We must not expect simplicity, neither must we expect finality. Even if we could survey the fate of a man we knew in this life for twenty years after

his death, we might be no nearer to the solution of the problem of immortality properly so called, *i.e.* final or absolute immortality. The man himself might be in the same kind of doubt as to his *ultimate* fate as he was on this earth. It is quite conceivable that the date of annihilation might be simply adjourned, that the future life we are looking for is but a reprieve. And yet we cannot but think that the safe crossing of one River of Death may raise our courage for all subsequent crossings, if such be in store for us.

If we admit the possibility of eventual annihilation, we must face another possibility also: it is what we might call the Greek idea of Hades, peopled by bloodless shades, capable of nothing but an aimless re-enactment of the chief scenes of their earth-life. It is the "poor ghost" idea, the larva, the shell, the helpless, haunting phantom, which restlessly seeks rest, and welcomes annihilation at the last.

All these various possibilities confront us, and how shall we choose between them? What Castor and Pollux shall be our guiding-stars, what magnetic needle shall point to a changeless pole?

The answer is this: We shall follow up each clue, each alternative possibility, and follow farthest along the likeliest path. We shall make as little breaking-away as possible from "the solid ground of nature." One of our guides shall be the observed

continuity of natural phenomena, expressed in the generalisation, *Natura non facit saltum*. We have really more material at hand than is currently realised. We have a number of "curves" (expressing natural laws) which admit of "extrapolation," of prolongation into the unknown. Also, science deals already with several invisible worlds, any one of which may become visible to us in our next life. Besides the principle of continuity, we have also what may be called the principle of value. It is that the present, the facts of to-day, the world we live in, have a permanent and definite value in the whole scheme of the universe; that they are interconnected with every other event or fact, past, present, and to come; that nowhere is there a boundary-wall beyond which no ripple or echo of our events can penetrate. This means much. Among other things, it means that we are *here* and *now* in touch with the conditions of the future life, and that the future world and its denizens are *here* and *now* in touch with us, consciously or unconsciously. That being so, we have one supreme test of the truth of any theory we may formulate. It must be extended to the whole world as far as we know it, to every geological era, to every form of life, and must not lead to absurdities and inconsistencies. In fact, it must be *thought out to the end*, in accordance with all the knowledge hitherto accumulated. This, it may be safely said, has never been done before, nor

can it here be attempted, except in general outline. But the way is clearly marked out for us. The light is not so dim but that we can see it, and it only remains to tread the path courageously, and advance as far as our strength will carry us.

Let us examine some of the popular notions of a future life, and see at what point their absurdity or inconsistency arises.

Many of these regard the future life as a mere continuation of this. The Red Indian hunting in his familiar prairies, the Goth fighting his battles daily in Valhalla give us examples of such conceptions. If they are consistently thought out, they mean organisms resembling those of the earth-life, with clothes and weapons to match. But these, be it remembered, are adapted to life on the surface of this earth, and to *nothing else*. Transplanted into any other place, they will fit as ill as a key in the wrong lock.

Other beliefs adopt the idea of a glorified earthly existence on a glorified earth, or in a place resembling something on earth to which a special glory or majesty is attached. Thus we get the Elysian fields, the Mohammedan paradise, the New Jerusalem. All these fall to pieces on the slightest touch of analysis. None of them bear thinking out. Either they are framed on the laws which govern this world (as regards cohesion, gravitation, and the various other natural forces), in which case they become mere

repetitions of the earth; or these laws are only partially observed, in which case they become quite unthinkable monstrosities; or the laws are quite different, in which case we can apply no human standards of existence or pursuits whatever. Yet human or semi-human forms are postulated in each case.

Nearly all the "higher" views of future existence assume a much greater effect of divine ruling in the next world than in this. God is more visible, more approachable, more supreme there than here. For this, again, we have no warrant of any kind. A world outside of God is unthinkable. It would simply be another God, and there is no room for two Universal Centres in a thinkable universe.

Our views, vague as they have hitherto been, have been largely coloured by anthropomorphic images. The pagan idea of celestial potentates, who must be praised and conciliated, finds no room in a more enlightened theology. What we can reasonably postulate is just this: that the next world will be under the same beneficent Absolute Rule as this—no more and no less—and that its type of existence will be one which admits of the utilisation of experiences acquired in this life, and the further development of faculties which are only nascent in the highest types evolved in earth-life.

CHAPTER III

THE SOUL-BODY

THE self-determining action of the human individual does not contradict the law of the conservation of energy, as Sir Oliver Lodge has shown in "Life and Matter."¹ The will exerts a *directive* action, and such directive action involves little or no expenditure of energy. The cushion of the billiard-table expends no energy in deflecting a billiard-ball, nor does the grass expend energy on making a foot-ball rebound. On the contrary, it absorbs energy from the ball.

When, however, we come to a "voluntary" determination of direction, there arises the necessity of an expenditure of energy on the instrument by which this direction is effected. By slightly turning a bat or a tennis-racquet this way or that we can produce a large difference in the direction in which a ball will travel after impact. By pulling a trigger, we can liberate a large amount of energy, from which, if we please, we can recover the energy we spent on pulling the trigger. We can make the ratio of the two amounts of energy as great as we please. We can make the energy necessary to

¹ Published by Williams & Norgate, London, 1905.

liberate the store of energy one-millionth of the latter, or one-billionth, or infinitesimal. Every act of our muscles is some "pulling of the trigger," some influence of the will upon nerve structures, or other structures will govern the storing and liberation of energy. If these "triggers" were removed from the body, the body would be as "dead" and defenceless as an army from whose guns all the triggers had been removed.

Whether these triggers form a visible structure of the cell we may leave, for the present, an open question. For ought we know, they may be Darwin's "gemmules," which, however, are supposed to be ultra-visible. Also, they may be contained, perhaps, in nerve cells only. We know that these are among the most important structures of the body, and that they are the first to lose their power of subdivision in the adult. But whatever they are, they must, according to our fundamental assumptions, be *material particles or structures, i.e.* living beings of a low dimensional scale, trained, perhaps, for joint and harmonious action through a prolonged period of co-operation. These particles constitute the soul-body, or, briefly, the soul of the individual. Their structure is further differentiated, some parts being as much more vital than the rest as the particle as a whole is more vital than the rest of the body. These most vital of particles we may take as constituting the "spirit."

It will be convenient to have a name for the constituent particles of the soul-body. By analogy with a number of biological terms (such as *chromomere*) we will call them *psychomeres* (soul-particles). They may be somewhat analogous, or possibly identical, with Weismann's "biophores." Wilson says¹: "The starting point of his [Weismann's] theory is the hypothesis of De Vries that the chromatin is a congeries or colony of invisible self-propagating vital units or *biophores* somewhat like Darwin's 'gemmules,' each of which has the power of determining the development of a particular quality. Weismann conceives these units as aggregated to form units of a higher order known as 'determinants,' which in turn are grouped to form 'ids,' each of which, for reasons that need not here be specified, is assumed to possess the complete architecture of the germ-plasm characteristic of the species. The 'ids' finally, which are identified with the visible chromatin granules, are arranged in linear series to form 'idants' or chromosomes. It is assumed further that the 'ids' differ slightly in a manner corresponding with the individual variations of the species, each chromosome therefore being a particular group of slightly different germ-plasms, and differing qualitatively from all the others."

This view of the great German biologist is a good

¹ "The Cell," p. 245.

instance of the tendency towards almost indefinite subdivision and grouping. There would be no objection to identifying our "psychomeres" with his "invisible self-propagating vital units called *biophores*" but for the fact that the chromatin of the nucleus is almost certainly not the *only* really vital part of the cell. The "cytoplasm" or outer substance most likely contains vital centres also, though these may be incapable of "self-propagation," and our psychomeres, though somewhat concentrated in the chromatin, must be diffusely disseminated all through the cell.

Another observation which somewhat discredits the chromatin as the sole bearer of vitality is that "centrosomes" may arise *de novo* from either the cytoplasmic or the nuclear substance, and may play the usual rôle (whatever that may be) in mitosis.¹ Now this means, not that the new centre of aggregation arises out of an undifferentiated mass by spontaneous generation, but that the existing centre, instead of being capable of demonstration by means of dyes, is *invisible*. The obvious lesson is that we cannot reasonably expect to *see* the psychomeres. They may possibly be discovered sometime, and the quest for them should prove extremely fascinating, but for the present we must leave the question of their visibility open.

Failing an ocular examination, we must endeavour

¹ Wilson, "The Cell," p. 309.

in some other way to arrive at a rough idea of their physical properties. Let us place their total weight, at a guess, at one-millionth of the entire body. The nuclear matter is about one-thousandth, so that we are well below that proportion, as we ought to be, after all that has been said. Each cell contains, on the average, 1,000,000,000 atoms, so that 1000 atoms, on the average, of each cell, would go to make up psychomeres, and the total number of atoms in these psychomeres would be something like 10^{19} (ten trillions). Their aggregate weight would be 50 milligrams, or about $\frac{1}{4}$ ths of a grain, or the weight of ten postage-stamps. That would be the weight of a human soul!

We must next inquire about their state of aggregation. In the physical theory of ionisation and condensation we have become familiar with the fact that the smallest charged particles are the most effective promoters of condensation. In fact, it would suffice to extract a very small proportion of the innumerable electrons within the body to bring about a vigorous condensation in the moist air around it. Now growth is, to some extent, a phenomenon of condensation. It is eminently so in the case of plants, which derive the bulk of their tissue from the carbon dioxide gas of the air. We have reason, therefore, to expect that some, at least, of the psychomeres will resemble electrons, or groups of electrons, rather than atoms. But others may be

complex molecular groups with abnormal electric properties. That their electric properties are abnormal, *i.e.* somewhat different from those of the molecules of "dead" matter, is rendered probable by the peculiar chemical reactions to which many of them give rise, reactions which are at the root of the formation of the more complex "organic" compounds.

Could we extract all the psychomeres from an adult human body, and leave them in the same mutual positions as before, we should have a kind of gaseous body filling the familiar outline. But the tenuity of the gaseous body would be a thousand times greater than that of air. It would, in fact, represent a moderate vacuum. If now its size were reduced so that, instead of some five feet, it were only six inches high, and the other dimensions in proportion, it would have just the density of air, and would float freely in it, without any tendency to either rise or fall.

In its ordinary form, at which it represents a vacuum of $\frac{3}{4}$ mm. of mercury, it would float upwards like a balloon, and would not attain its proper level until it had risen some 35 miles into the air, and arrived at or near the upper limit of the atmosphere.

These calculations suppose, of course, that the air is excluded from the space between the psychomeres. There is, as a matter of fact, no valid reason why it should not be. What prevents the

free passage of air through our physical bodies? Nothing but the cohesion of the tissues. And what is this cohesion? We do not know, but as everything consists of discrete particles, it must be some action between these particles, exerted across intervening space. We only know of three such actions: gravitational, electrostatic, and magnetic (electrodynamic). Of these three, gravitational and magnetic force are too feeble to account for the actual cohesive force observed. There remains electrostatic attraction as the only explanation, and that is the very force with which our psychomeres are, *ex hypothesi*, most richly endowed. If, therefore, the soul-body has a suitable distribution of electrons, it may possess any desired amount of cohesion and defensive power, without the necessity of having the solidity of our physical bodies.

Now suppose that what we call death consists in just this: the psychomeres are withdrawn from the body; the soul which they constitute continues its life without the ballast it has just discarded.

What should we naturally expect to follow?

The physical body will be deprived of its directive elements. Each cell will fall a victim to whatever other directive influences are most powerful. The processes of transpiration and evaporation will go on unchecked. The cell-life will continue for a little while on the lower planes, but the cell-community will break up. The power of

growth and nutrition will be lost. Expenditure will exceed income a thousand-fold. There will be an aimless running down of the machinery, unbalanced by a new winding up. Then there will be stagnation and disintegration. If the body is hermetically sealed up, there will be a very gradual chemical and physical disintegration. If the corpse is embalmed, much of that will be prevented. If it is cremated, the inevitable process of disintegration will be accelerated very considerably. And lastly, if the body is buried, "earth to earth," the work of disintegration will be taken in hand largely by micro-organisms, ever ready and eager to utilise cast-off organic material and perform the necessary work of disinfection and sanitation. Whatever the process may be, the end is the same. The cast-off organism goes the way of all the material which the soul pressed into its service in the course of its earthly life, and cast off again. It becomes of no more value than cast-off clothing, and hair and nails, and air breathed out from the lungs, and all the other *débris* and wastage of the complex organic machine.

Not so the soul. Liberated from a slow and clumsy engine of physical activity, it finds itself free, unharnessed, unembarrassed. The most vital parts of the organism are intact. The memories and faculties are keen and alert. There is a sense of adventure, of expectancy, of possibilities but

vaguely felt, of new faculties hardly yet awakened. The community of intelligences is more closely knit than ever. Diseased or deformed conditions can be immediately rectified through the greater power of readjustment of part to part. But the soul will soon learn to adapt itself to the new conditions of its existence. What these conditions are we cannot readily discover, but we can make some guesses likely to be near the truth. In doing so, we must be guided by the known laws of the physical world and by the most authentic information which has yet been obtained with regard to the details of the next life.

And firstly, we must consider a little further the process of the withdrawal of the psychomeres from the organism ; in other words, the separation of the soul from the body at death.

How is this effected ? And what time is required for the process ?

We have assumed, with some reason, that the psychomeres are material aggregates varying from electronic to molecular dimensions, and endowed with a marked electric polarity. These will have to assemble from the interior of every cell, and will have to pass through the cell walls and membranes of all grades of texture and consistency. But that offers no formidable obstacle. It means simply a variation of the process by which all nutrition and metabolism is effected. It proceeds by transpiration

and diffusion. Only the rôles of the chief actors are reversed. The host, instead of receiving his guests, bids them adieu and departs. The whole process need not take more than a few minutes. When chloroform is breathed into the lungs, it is diffused through every cell in the body in about seven minutes. And yet chloroform consists of heavy and bulky molecules, each of which contains one atom of carbon, one of hydrogen, and three of chlorine. That all the psychomeres should act on a common impulse is not surprising. They are doing that all the time, waking and sleeping. The directive agents of our organism are ceaselessly active, and all working towards the same end, the efficiency of the machine at the disposal of the commanding intelligence. The sense of solidarity is strongly developed. In disease especially the co-operation of the various directive agencies or psychomeres is most marked. Their activity is raised throughout the body. They are so busy trying to repair the machine that we feel a sense of oppression, of disturbance, uneasiness, or pain. Little leisure is left for the ordinary activities. In fevers and all diseases which threaten the invasion of a rival power in the shape of some species of hostile microbes, the police and territorial armies go forth to battle for dear life, and the raging battle may be read in the rising mercury of the clinical thermometer. A large proportion of the psycho-

meres, in all likelihood, sally forth from their appropriate cells to fight the enemy, leaving the cells to carry on a vegetative existence until their victorious return.

But it may happen that the fortunes of war go against the gallant defenders, that the strategic positions have to be abandoned one by one. The structures laboriously built up become untenable. The home armies withdraw to the citadels, and when all is lost, prepare to leave with the honours of war. The cells, thus forsaken, indulge perhaps in an ineffectual and blind struggle on their own account, each one for itself, much as the guerilla warriors of a beaten nation might endeavour to harass its conquerors. But the home forces know when the day is lost. They gradually withdraw from the stricken field, knowing that there will be plenty of work for their valour elsewhere. And so they take leave, compact and undiminished and indestructible, to go where their higher destiny awaits them.

Imagine the psychomeres, then, withdrawn from the body, and floating in the air, free to trace out what form they please. If, in the earthy state, the movements were determined by the central will, and movements often repeated became habits, and generated features, how much more will this be the case when the ballast is got rid of! We may imagine some surgings or oscillations before the

new equilibrium is attained. This equilibrium will be governed by the acquired characters of the individual psychomeres and by the requirements of the new world in which the soul is to live. Those groups which before were concerned in producing motion (chiefly the legs) will now tend to produce motion in the new world. Each group of psychomeres will endeavour to carry out its function in the new life on somewhat similar lines as before. Possibly, the outline of the earth-body may be retained for some time, and if there is any acquisition of new matter, that may go towards forming about the soul-body a semblance of drapery, that being, in civilised beings, almost as powerful an instinct as any other. But as time passes, we may well suppose that the earth memories are gradually modified, that the gaze is directed upward instead of downward, and that the soul takes its departure from the earth-scene, never more to return to it.

If, on the other hand, the earth-memories are difficult to shake off, the soul will cling, more or less permanently, to the surface of the earth, will strive to retain its accustomed outline and characteristics, and will attach itself to some object or locality where it is comparatively free from disturbance.

What kinds of disturbance has it to fear? Can a soul be cut, or shot, or split in two, or exploded? These questions are not so difficult to answer as

they seem. Of course a sword or knife can cut through a soul-body, but the soul-body would be little, if any, the worse for it, any more than a swarm of bees would. An explosion might have more of an effect. It might scatter the psychomeres so far apart that they could only with difficulty, and considerable delay, be reassembled. But the telepathic link between them, aided by electrostatic forces, would no doubt heal the wound before long. A soul-body is practically invulnerable by human means.

Another question arises concerning the soul-bodies of cripples, and persons deprived by disease of the use of some organ. The answer here is two-fold. In the first place, the organ or limb thus lost may not be necessary in the new state, in which case it will not be formed. If it is necessary, the superior liberty of configuration possessed by the soul-body will easily supply it. The tradition of the organ is there, at all events, and this can be strengthened in various ways, as will be seen later on.

The natural form best adapted to motion in air will be something resembling a fish rather than a human being. For we must remember that the soul-body is more of the density of air than of that of water or earth. It is, therefore, peculiarly appropriate that the early Christians, profoundly convinced of the immortality of the soul, should have

chosen a fish, IXΘΥΣ, as the symbol of their faith. Recent researches on navigable balloons have brought out the fact that an elongated shape which is broad in front and narrow behind offers the least resistance to motion through a fluid. The shape of birds is also based on this principle, but since they are a good deal heavier than the air they displace, they require wings wherewith to produce the necessary upward impulse.

The fish moves not so much by means of its fins—these are only steadying and steering devices—as by means of its tail and the undulatory motions of its whole body. An eel can move rapidly through water, with practically no fins at all. The principle is somewhat the same as that which governs the motion of a gimlet through a piece of wood. If, therefore, the soul-body, discarding its superfluous habits with its useless ballast-body, adapts itself straightway to its new environment, it will take the shape of a fish, or rather a flame. It will, like the spirit at the Pentecost, become a tongue of fire! If it hovers about a fairy bush, such as the west of Ireland can tell of, that bush will become a burning bush such as Moses saw. If of great size, the soul-body may even appear as a pillar of cloud by day, and a pillar of fire by night. On a smaller scale, it may represent a will-o'-the-wisp and the flitting fairy-lights which so often accompany supernormal phenomena.

Its transit through the air may be extremely rapid. It only depends upon the energy available within it, and, besides the end-on method of propulsion which we utilise in the guidable balloon, it may be endowed with a motion resembling that of vortex rings, which traverse the air rapidly without any risk of losing their coherence or identity.

Whoever watches a swarm of midges dancing in the twilight must have been struck with their cohesion. They attach themselves to some bush or elevated object and, although in rapid motion, appear to keep that connection through many vicissitudes. A gust of wind blows them aside, but the connection with the bush is unbroken, and they collect in its neighbourhood like a flag about a flag-staff. They keep their peculiar evolutions through it all. These evolutions no doubt serve some social purpose. They are made possible by the energy stored up in each midge. But the general effect is that of some busy living organism inhabiting the air, indifferent to the passage of a more ponderable body like our own, and behaving as one, though made up of some 10,000 independent units. Now, instead of 10,000 units, take 25,000,000,000,000,000 units (the cells of our body) and from each of these extract one-millionth of its substance. Is it any stretch of the imagination to suppose that these 25,000,000,000,000,000 extracts may collaborate and behave like a single well-organised being, ani-

mated by a master-impulse or swayed by a master-will? After all, our bodies, even as they stand, are, according to the views now prevailing in physical science, mere swarms of molecules, atoms, and electrons, held together by electric and magnetic forces. If these can tread the earth and stem the water, why should not the ærial soul-body be equally stable in the gaseous state, and equally adapted to the life ærial?

If, for any reason, the earth memories of the soul should be reawakened, and become dominant, it can assume its accustomed earth-form, and any other form, even as in the Homeric poems the gods assumed the guise of various mortals. The psychomeres need only resume their latent function of assimilating matter. The invisible soul-body will become, first, a fine mist, then a cloud, a tall pillar of filmy vapour, from which a complete form, moulded and clothed to suit the character assumed, would then emerge, to walk the earth as before for a little while, and to dissolve again into mist and become once more invisible. The inhabitants of the earth would then see a ghost, and be afraid, although, truth to tell, they would have more reason to be afraid of anything in a permanent earthly shape rather than of the materialised soul venturing back to its old haunts in a state of extremely unstable equilibrium, and ill equipped for any effective action, whether for good or ill.

CHAPTER IV

THE SOUL-WORLD

HAVING arrived at a view of the soul-body which, even if not true, is certainly intelligible and not unreasonable, we must proceed to locate its whereabouts, its abode, its natural element. We have a larger choice of localities, divisible into: (a) Non-Euclidian space; (b) Three-dimensional space, which may be (1) unconnected with the earth; or (2) connected with it. Let us discuss these in order.

(a) *Non-Euclidian Space*.—It has been a favourite speculation in connection with supernormal phenomena to locate their cause in four-dimensional or other non-Euclidian space. Thus, Professor Zöllner¹ explained a number of curious knot-tying experiments by reference to a fourth dimension, pointing out that what would be to us a knot incapable of resolution (such as a knot in a string forming a ring, or in a rubber band, or a ring cut out of a single piece of leather) might be tied and untied through the intermediary of a fourth-dimension movement, just as a flat loop would be unresolvable

¹ See his "Transcendental Physics."

in two-dimensional space, but resolvable in our space.

Now this line of argument, fascinating and alluring though it may be, is contrary to the principle of economy. It is best and safest to make the *minimum* of new assumptions, and to make, if possible, no assumptions contrary to our general experience. An explanation is, or should be, the reduction of an apparently abnormal phenomenon to a group of known phenomena. A wholly novel cause is only assignable when a number of independent phenomena separately points towards it, and when no known cause is available. Now a fourth dimension is not in accordance with any experience elsewhere, and it is much more logical and scientific to assign even a complex cause consisting of known elements rather than a simpler cause containing an entirely new element. Zöllner's experiences are equally explicable on the assumption that one solid can penetrate through the substance of another solid, a possibility which the molecular structure of even the most solid matter renders quite obvious.

To assign supernormal phenomena to a fourth dimension is therefore almost as bad as to assign them to no cause at all, *i.e.* to declare them to be "miracles" pure and simple. Non-Euclidian space must be ruled out. It is the negation of space, and the negation of reason.

(b) *Three-dimensional Space*.—In our Euclidian space, with its three dimensions of length, breadth, and thickness, there is room for an infinite series of worlds within worlds, and for all the earths and heavens and hells that have ever been imagined or alleged to exist. We need not go outside it to find room for *our* heaven. If we are idealists of the old school, and regard the whole visible universe as but an illusion, a “veil of Maya,” we may even abrogate the actuality of matter, and have an infinite three-dimensional vacuum wherein to locate what beings we please. But such an assumption is contrary to the principle of continuity and the principle of value, which maintain that there is an absolute reality (a living reality) behind what we perceive as matter, a reality with which we can never, in any state of existence, quite lose touch.

In three-dimensional space, we have again to take our choice between space which is, and space which is not, connected with our earth. If the earth is ignored, we have at least three orders of universes to select from. These are—

1. The terrene world, in which the planets as we know them act as such;
2. The infra-world, whose planets are what we call electrons;
3. The supra-world, in which our galactic universe probably plays the part of a minute organism.¹

¹ See the author's “Two New Worlds.”

The supra-world and infra-world are immediately excluded from our measurable future by their scale of dimensions. The beings which inhabit them enter into our lives, it is true, but not in a determining manner. We utilise the social laws of the infra-world to compass our own ends, and our social laws are no doubt similarly utilised by the supra-beings. But that arrangement leaves us a large margin of liberty, and that liberty we are during our earth-life training ourselves to acquire and enlarge.

We find the abode of the soul thus narrowed down to our own planetary dimensions. Even then we have plenty of choice. We have all the starry universe open to us, as well as a number of planets of a size comparable to our earth. Then there is the moon, or the moons of other planets. There are the comets, there is open space, there is the sun itself. Which of all these is the heaven we are looking for?

It is little use looking to the far-off stars, or beyond them, for the abode of the blest. Astronomy has taught us that there is nothing very peculiar about far-away stars. They are much like our own sun. There is more of a strange world to be encountered 30 miles up in the atmosphere than 50,000,000 miles away, on the surface of Mars. If we want strange forms of existence, let us try to imagine the inner consciousness of a fish

or a tree. It is difficult enough, surely. No, we must resolutely combat the tendency to look for the unseen beyond the seen. The unseen is all about us. But for the accident which gave us eyes, everything about us would be "unseen." As it is, a single octave in the gamut of light-waves impresses our retina, revealing a very small proportion of what would be visible to a more completely equipped intelligence.

And then, why look to the moon and the planets? For aught we know, they may be already in possession of intelligences not far removed from our own, who might well resent our intrusion. Why not seek our heaven on earth? The earth is practically unknown to us. Six miles above sea-level clears the highest mountain. Ten miles below it reaches the lowest ocean-bottom. One mile underground touches bottom in the deepest pit. It is at the most one-eighth per cent. of the total thickness of the earth, the thickness of a thin scalp compared with the total stature of the body, the paper which covers the terrestrial globe compared with the globe itself! And the layer which supports "life" on our earth would be less than the thickness of the varnish on the paper.

The known portion of the earth is comparable to a thin soap-bubble. All within and without the liquid layer is unknown. The conditions of our existence give us no direct access to the regions

outside, and whatever information we can accumulate is obtained indirectly by reasoning from analogy.

There is, therefore, no necessity to go beyond the earth to seek new worlds in which the soul may dwell. The earth offers boundless variety and endless possibilities of existence. Even Socrates, with his limited resources, could enlarge upon the possible delights of the upper regions of the air for beings fitted to dwell in them.¹ We have only to choose a region where our soul-bodies shall have reasonable space and liberty, free from overcrowding, and from interference from (and with) our earth-life.

Such a region is, most appropriately, the *atmosphere*. I hope to show in what follows that *the earth's atmosphere is a possible and exceedingly probable physical location for the soul-bodies of departed men*. It may look like a return to ancient superstition, but that the ancients, and people at all times, looked *upward* for their future abode is no argument *against* that abode being actually located there. It may be taken, on the contrary, as an indication of a correct instinct, unconsciously evolved perhaps from slight but gradually accumulated impulses in that direction. We shall not use the popular view as an argument in our favour, but base our case on quite other considerations.

The atmosphere extends for at least 100 miles

¹ See Plato's "Phædo."

above the earth's surface. Its lower surface (that which rests upon the ground) has an area of 800,000,000 square miles, and its upper surface has an area of 840,000,000 square miles. Its volume is at least 80,000,000,000 cubic miles. This means that if the souls of all human beings that have lived and died for the last twelve centuries were distributed at equal intervals throughout the atmosphere, they would be a mile apart! They would, indeed, be very lonely and isolated. If we made the distance half a mile, we could find room for the human population of the last 10,000 years, with plenty of open space in which to move about. The average distance between living human beings on the land surface at the present time is one-third of a mile. If this density of population were extended to the atmosphere, the latter would be able to accommodate the human souls that lived on earth for the last 32,000 years.

We see, therefore, that no quantitative difficulty is encountered by our hypothesis so far. We can hold out a prospect of at least 30,000 years' occupation of a place within the atmosphere after the surface life of threescore years and ten—surely a term well worth accepting as a substantial installment of immortality. When that term has expired, we may well suppose that the individual is prepared to "move on" into interplanetary space, and leave the earth behind.

But what kind of existence would this aerial existence be? Can we determine, even if only provisionally, some of its conditions?

As already stated, we know very little of the higher strata of the atmosphere. The highest man-bearing balloon voyage is 6 miles, and that is also the height of the highest mountain-peak. Recently, some attempts have been made to explore the higher strata of the atmosphere by means of test balloons (*ballons-sondes*), notably at the Trappes Observatory, near Paris. One of the most interesting results is the discovery of a comparatively warm stratum some distance above the earth. This is referred to by a recent writer as follows:¹—

“While not presuming to offer an explanation of the isothermal or relatively warm stratum in the high atmosphere, which the recent letters in *Nature* have made known to others than meteorologists, I desire to point out that it is probably a universal phenomenon, existing at some height all around the globe. This inversion of temperature was first discovered by M. Teisserenc de Bort with the *ballons-sondes* sent up from his observatory at Trappes, near Paris, in 1901, and almost simultaneously by Professor Assmann from similar German observations. Since then almost all the balloons which have risen more than 40,000 feet above Central Europe (that is, near latitude 50°)

¹ A. L. Rotch, in *Nature* for May 7, 1908.

have penetrated this stratum, without, however, determining its upper limit. Teisserenc de Bort early showed that its height above the earth, to the extent of 8000 feet, varied directly with the barometric pressure at the ground. Mr. Dines (*Nature*, p. 390) gives the average height of the isothermal layer above England as 35,000 feet, with extremes of nearly 50 per cent. of the mean. Observations conducted last March by our indefatigable French colleague, Teisserenc de Bort, in Sweden, just within the Arctic circle, showed that the minimum temperature occurred at nearly the same height as at Trappes, namely, 36,000 feet, although Professor Hergesell, who made use of *ballons-sondes* over the Arctic Ocean, near latitude 75° N., during the summer of 1906, concluded that the isothermal stratum there sank as low as 23,000 feet.

"During the past three years the writer has despatched seventy-seven *ballons-sondes* from St. Louis, U.S.A., latitude 38° N., and most of those which rose higher than 43,000 feet entered the inverted stratum of temperature. This was found to be somewhat lower in summer, but the following marked inversions were noted last autumn: October 8, the minimum temperature of -90° Fahr. occurred at 47,600 feet, whereas at the maximum altitude of 54,100 feet the temperature had risen to -72°; October 10, the lowest tempera-

ture of -80° was found at 39,700 feet, while -69° was recorded at 42,200 feet, showing a descent of nearly 8000 feet in the temperature-inversion within two days. The expedition sent out jointly by M. Teisserenc de Bort and the writer, on the former's steam yacht *Otaria*, to sound the atmosphere over the tropical Atlantic during the summer of 1906, launched *ballons-sondes* both north and south of the equator within the tropics, and although some of these balloons rose to nearly 50,000 feet, they gave no indication of an isothermal stratum. In fact, the paradoxical fact was established that in summer it is colder eight miles above the thermal equator than it is in winter at the same height in north temperate regions. This results from the more rapid decrease of temperature in the tropics and the absence of the numerous temporary inversions which, as Mr. Dines has pointed out, are common in our regions below 10,000 feet. If, therefore, as seems probable, the isothermal or relatively warm stratum does exist in the tropical and equatorial regions, it must lie at a height exceeding 50,000 feet, from which height, as the data quoted show, it gradually descends towards the Pole, at least in the northern hemisphere."

We also know that about 30 miles above the ground the air is a comparatively good conductor of electricity. It is this conducting layer of the atmosphere which is probably most effective in

absorbing the ultra-violet rays of the sun. Now what may we conclude from this? That a being specially sensitive to ultra-violet light would have an impression of brightness above that stratum, and of darkness below it. The stratum itself would appear like a dark cloud-bank (although quite transparent to us) and would make a pretty sharp boundary between the upper and lower regions of the atmosphere.

The regular succession of day and night would be the same as with us, and this succession would no doubt bring about a periodical change of activity just as it does in our case. Clouds in our sense are confined to the lower strata of the atmosphere, but storms are not. Indeed, the modern theory maintains that all storms originate in the higher strata of the atmosphere, and are of solar or interstellar origin. It is just possible that some one may propound the theory that they are of psychic origin, and that all atmospheric precipitations, governed as they are by wind and by the ionisation of the atmosphere, are intimately associated with the distribution and motion of the psychic entities of the upper air, whether they be conscious of it or not. In that case we may look for a revival, if not of Jupiter Pluvius, at least of the practice of praying for rain, or for fine weather.

Although the atmosphere has no permanent features, like the earth, the landscape of the latter

has a decided influence upon the state of the lower strata. The deflecting action of a hill upon a horizontal current of air may be felt as high as 30,000 feet, as the *ballons-sondes* observations have shown. Hills have also a decided influence upon the electric potential gradient, and peaks sometimes acquire a negative potential many thousand volts higher than the surrounding air.

The extreme cold of the upper air has no terrors for a being which has no liquid in its constitution. And after all, the minimum of -90° Fahr. is not below the coldest temperature observed on the ground within the north polar circle. If human beings in the flesh have survived that, a disembodied spirit need have no anxiety on the matter.

Life in the atmosphere, "on the wing," so to speak, is not quite like anything we are familiar with. The body of a fish is of the same density as water. A slight change in its density would send the fish right up to the surface or right down to the bottom. If the density of a fish body were increased by as little as one part in 10,000, it would sink at least 60 feet below the surface, and a compression of 1 per cent. would send it down a mile. A similar change in density, taking place in a balloon, or in any object floating in the air, would alter its altitude by not more than 300 feet. This is because air is very much more compressible than water. If a body kept its density constant, it

would float at a nearly constant level in the air, much like a vessel rocked on the waves. The observed reversal of the temperature gradient in the upper air referred to on p. 168 would have the effect of increasing the buoyancy of the air above the plane of reversal by making the density gradient steeper. If, however, a body ever fell below the coldest stratum it would get into a region of very shallow density gradients, where the density increased only slowly with decreasing height, and might have to fall a considerable distance before regaining its equilibrium. If we wanted to indulge in a somewhat wild guess, we might say that this region of maximum cold, the region where the temperature gradient is reversed, is a true and effective division which separates two distinct portions of the atmosphere, and therefore also two distinct soul-worlds. To attain the upper region, it would be necessary for any soul to have a small weight per volume, *i.e.* a low density, which might either mean a great tenuity and lightness of the psychomeres, or sufficient energy to fill out and "effectively occupy" an exceptionally large space.

Hitherto we have only investigated the conditions of rest and motion in the atmospheric world, as far as our very rough and incomplete methods will allow. But there are, of course, a great many other problems pressing for solution. Life does not consist solely in motion. Plant-life, indeed, dispenses with

all locomotion. In animals, locomotion is a primary necessity. But that is largely because they are incapable of absorbing energy direct from sunlight, and have to move about to acquire it at second-hand as best they can. With us, the necessity for motion has not ceased, but its main object is not nutrition, but social activity. Some people, indeed, are never stationary in one place unless they are either eating or sleeping. In a more refined state of existence this distinction may become still more marked. The slight energy required for motion may possibly be derived from the ultra-violet light of the sun direct, and the main object of motion may be social rather than physiological. This would do away with all necessity for digestion and respiration and circulation, and would simplify anatomy very considerably. It would then remain to be seen whether any muscles, nerves, and special sense organs were required. As regards muscles we might reply in the affirmative. For since the sun is not always shining, and there is no other equally powerful supply to take its place, there must be some way of storing the energy for use when required. Our muscles are such stores of energy, and we can well imagine groups of psychomeres set apart with the special object of acting as stores of energy.

As regards sense organs, it is evident that eyes like our own would be very nearly useless. The chief object of organs of vision would be the per-

ception of neighbouring soul-bodies. These are invisible to mortal eyes, and therefore the eyes of the soul must be of quite a different structure. The ordinary laws of refraction cannot apply to them since they are transparent to our light waves. There may be specialised organs based on a different principle, or there may be just the generalised sensibility which we find in the infusoria. The latter is rendered probable by certain experiences of ecstasy, as well as the curious locations of sight in the knee-joint, &c., exhibited by some hysteric patients.

Life in the soul-world thus probably consists in a greatly vivified intercourse of "kindred souls." We can imagine that what we call a "play of features" is generalised into an expressiveness of the soul-body as a whole, which excludes all deceit and falsehood and enables souls to group themselves readily according to their sense of kinship. Such groupings, of course, may, like their earthly counterparts, be only temporary. Whether there is any amalgamation or true fusion of souls must, of course, remain an open question. If there is, the question of the "over-production" of individuals finds an easy solution. We need only assume that for every individual that becomes two (as in birth), two individuals become one. Thus the number of individuals on the planet might remain sensibly the same.

CHAPTER V

INTERCOMMUNICATION

HAVING arrived at a consistent and coherent conception of the soul-body and the soul-world, we must next examine the relations which exist between our earth-world and the soul-world. Strictly speaking, the soul-world is also an earth-world, as it belongs to our planet. But we will use the term "earth-world" to denote that thin layer of the earth's surface which supports organic life, and which is supposed by materialists to be the only seat of life in the universe.

The soul-world, by our hypothesis, is the atmosphere, and more especially the upper atmosphere, which is illuminated by ultra-violet light from the sun in the daytime, and by a faint glow of ultra-violet light from the unveiled stars at night.

How do these two worlds appear to each other?

To us, the soul-world is a wide flat dome overhead, blue in the daytime and nearly black at night, often obscured by clouds of fantastic shapes, which diffuse the sunlight and intercept the light of the stars. We observe the enterprising tribe of birds traversing the air at some distance above the

ground, and hope to follow in their tracks in the near future. On a cloudless day the sky hangs over us like a vast blue crystalline globe, without a trace of structure or differentiation, and we look longingly, but in vain, for any sign of recognition, any familiar face or object, in that vast and apparently vacant expanse. True, a polariscope shows us that the light from the sky is not uniform in all directions, and reveals some kind of a "structure" in the various parts of it. But our unaided eyes see nothing but uniformity, sameness, the symbol of peace, of eternity, of nothingness, of Nirvana, the end and consummation of all things.

And now look at the reverse of the medal. A soul floating some 30 or 40 miles above the ground, above a summer-hot landscape, would see nothing but clouds below, even though to us the sky be cloudless. The clouds would consist of masses of ionised air which absorb or reflect the ultra-violet light to which alone the soul's vision is attuned. Below these clouds there would be a dim light resembling what we would call moonlight, consisting of the small proportion of ultra-violet light transmitted to the earth, and this again would be all but lost in the denser atmosphere and clouds of ionisation nearer the earth's surface. The sunlit landscape would appear to the soul much as the bottom of a rather muddy pond would appear to us.

The proportion of people who care to dip into muddy pools and investigate their aquatic life is not large among mortals. And so we may imagine that it is not usual among souls to haunt the haunts of men in the earth-world, and if any of them do, they will be the exception rather than the rule, and will do so under some very powerful impulse which overrides their natural disposition and takes them out of their natural element.

On our side, the temptation to penetrate into the upper regions of the soul-world is not great either. Our bodies are quite unadapted to life in the upper air. If we got there, we should see nothing, and would find ourselves as uncomfortable as a fish out of water.

Intercourse between the earth-world and the soul-world requires a modification in the denizens of either the one or the other before it is practicable. That is to say, souls must become like men, or men must become like souls, before they can commune on anything like equal terms. As matters stand, the vast majority of disembodied souls are inaccessible to us, and we to them. It is not a question of superiority. If the souls have a superior kind of existence, if they are more free and unfettered, more mobile, better able to express and embody their inmost thoughts, they are not therefore superior to *us*, who surpass them, most probably,

in power over the solid and liquid states of matter, and reign supreme on the crust of the globe. Our spheres of influence are separate. Our interests and pursuits are different. There is not necessarily more sympathy between us and them than there is between different animal species. Look at the human race on earth! Do not rivalry, competition, mutual envy, and hostility have more to say to our daily conduct than sympathy and compassion? Is there always love between brothers, or even between parents and children? Is not love the exception rather than the rule? Then how shall we feel a love for beings in another world with whom we may have even less in common? We can quite imagine a state of feeling amounting to an "armed peace" between the earth-world and the soul-world, each world guarding its frontiers from aggression and from the immigration of "undesirable aliens." What complicates matters is that we are pouring a ceaseless stream of very mixed entities—some 50,000,000 per annum—into the soul-world every year. Some of these are not fit to be received there, and are possibly sent back to prowl about the earth until they find a more auspicious opportunity of rising. But this pressure from below may be a valuable incentive towards further development for the higher strata of entities, just as the encroachments of bacilli and insects are to us. We find a teeming life below us, which will

overcome us unless we make our position solid and impregnable, and carefully and vigilantly guard the sphere we wish to reserve for our own use. Something like the same state of things may prevail as between our earth-world and the soul-world. It may be a question, less of hostility or sympathy than of "live and let live," of mutual adjustment and toleration. If, in addition, certain bonds of affection apparently severed by death are strong enough to withstand the tension across the gulf, there may be a constant stream of thought-communication passing between inhabitants of this world and the next, and even an exchange of visits in special cases.

That there is no absolute separation between the inhabitants of the two worlds is clear from our hypothesis, which regards all intelligences as rays from the same centre. But that kind of connection also links us with the most "malignant" fiend, and does not exclude fierce hostility. An intermediate linkage would be a surer bond of friendship. This ought to be provided by the continuity that exists between the human race extant and those that have "gone before." But blood-relationship is no sure guarantee against parricide and fratricide, and a link of close sympathy is often forged of quite different elements, such as community of interest and of work.

We may put it down as a pretty safe rule that

wherever communication is desirable and *mutually* profitable, there it will sooner or later be established. We may treat with the soul-world as "a sovereign State with a sovereign State." Our earth-world has its own dignity, and its own responsibilities, which no other world, high or low, can deprive or relieve us of. We must solve our own problems in our own manner, by the light of our own intellectual resources. We are constantly asserting that right here, ruthlessly and pitilessly in many ways, as, for instance, with regard to many animal species less powerful than ourselves. We by no means agree as a race upon any single policy. Within the human race there are many independent communities, largely in a state of rivalry or hostility towards each other. Each evolves, by long experience, its own principles of conduct, its own ethics, its own ideal of good. It endeavours to carry out those ideals, deeming them the best, or even the only good. The hostile community evolves different ideals, which, in the conflict between the two, prevail or go under. The better survives, and mankind at large is the richer by a valuable experience, a valuable addition to its ethical evolution. If we are the vanquished, we say that it is a triumph of evil. If we are the victors, we call it a triumph of good. After a lapse of time, mankind recognises that that was not a Manichean struggle between good and

evil, but between good and better. Whether a thing is to be ranked as good or as better depends upon the area to which it applies. A thief pursues his own good only. His ideal, applied all round, would mean anarchy and universal poverty. Therefore his ideal is "bad," and the community sees to it that a better ideal prevails.

Let us apply this line of reasoning to the question of our relations with the soul-world. We have certain ideals which we are steadily realising here on earth. They include such things as safety, liberty, self-development, increase of knowledge, facility of motion, avoidance of pain and disease, general stability, encouragement of the arts and all that makes life beautiful. We comprise all this in the single word civilisation. It is our highest earthly good. All education, all reform, all public policies are judged by the manner in which they affect this good, favourably or unfavourably.

If any one wishes to bring about a reform, a new departure, he must persuade the community that it would be for the public good. If it is already in force elsewhere, he must point out its good results, and prove that its adoption would prove equally beneficial at home. If he proves insufficiently persuasive, he can try other methods. He can adopt the reform himself, and persuade his friends to do the same. He will then be judged by the number and the determination of his friends. The good he

and his friends experience will be tested by the amount of their unwillingness to give up the reform. If they are willing to go to prison for it, they may carry the day. What was judged bad or even criminal may then be judged good and commendable, and worthy of imitation. It may be adopted by the entire community. The reform will become a betterment, and will vanquish the antecedent good.

All ethics thus resolves itself into a competition, a race. All evil is comparative. We must take care that we can stand comparison. In so far as we cannot, we shall be condemned.

What is the safest guide towards this end? It is love, it is sympathy. By it we enlarge the area of our own good, and make it include our neighbour's good. Love is a higher linkage, a knotting of rays above our own plane. Love bars out cruelty and treachery. It does not bar out a good straight fight.

How will any possible intercourse with the soul-world affect our public policies? It will be judged by its effect on civilisation. In fact, we might say it *has* been judged by that, and has heretofore been found wanting, and *has accordingly been abolished*. In the days of Troy, the gods fought hand to hand with mortals. The gods of Persia prevailed over those of Babylon, the gods of Greece over Persia. All ancient records are full of apparitions of gods

and angels, of wizards and soothsayers, of demons of the air and goblins of the deep. Men go out of their bodies and devils enter them. Apollo appears out of a cloud

Nube candentes umeros amictus

and disappears as he came. Signs and wonders appear in the sky. People go about who possess all kinds of uncanny powers and occult lore.

This goes on for centuries, until the days of the Press and the national school. Learning becomes general, the voice of the learned reaches farther than the university lecture hall. It is heard all over the land, it is heard throughout the masses of the population. The nation becomes of one mind, and bears the imprint of its own master-minds. These master-minds ponder over the uncertainty, the havoc wrought by those demons and witches and apparitions. They conclude that they ought to be stamped out. The population, in a mad frenzy, goes and stamps them out. The next generation know them no more. The young devotees of science grow up unaware of their existence. The young devotees grow up, and become master-minds. These master-minds proclaim aloud that such things do not exist, do not occur. Nay, more, they never did exist, they never took place. It was all a delusion, due to well-known laws of popular fallacy. All present-day reports of apparitions are instances

of these well-known laws of popular fallacy. Being such, they must not be taken seriously, or, if any one *does* take them seriously, the proper place for him is the lunatic asylum.

And thus it comes about that all the fairies, pixies, sylphs, and gnomes fly before the flaring light of science. They are not so much sent away as explained away, and that, in a large and well-organised community, is very nearly as good, and suffices for all practical purposes.

The absence of all recognised forms of communication with the soul-world in recent times is due to the *concentration of attention* on the things of our earth-world. The effect of such concentration of attention in obscuring other things is a commonplace of psychology.

Nevertheless, we cannot be certain that both the possibility and desirability of communication with the soul-world may not again very prominently occupy the attention of mankind. A small beginning (if it is a beginning) has been made within the last fifty years, first in America, then in England, and lately in Italy and elsewhere. The results, broadly speaking, have made out a strong case for the possibility of such communication. The general desirability of it may still be a moot point, but in any case, no disasters, and no inconveniences worth speaking of, have occurred through the tentative efforts so far made; and that is saying more in its

favour than can be alleged in many new departures of, say, surgery or bacteriology.

Without entering into the discussion of any communications, real or alleged, between this world and the next, we can arrive at some general principles which most probably regulate such communications. The method of communication which we adopt among ourselves consists chiefly in certain audible or visible signals and symbols, each of which we are *educated* to associate with a certain idea or experience of our own. That is language. The method of communication between souls is probably more direct, owing to the greater mobility and expressiveness of the soul-bodies themselves. It consists in what we would call thought-reading and face-reading, or their equivalents. To communicate with the soul-world, either of these methods must be used. The souls must use our sign-language, or we must acquire their thought-transference. There is evidence to show, with a high degree of probability, that *both methods are in force*. In religious ecstasy, in inspiration and illumination, in the bursts of genius, in moments of crisis, in the moment of death, we have glimpses of this direct receptivity, this filling of the whole being with a flood of thought or emotion, which most probably characterises life in the soul-world. On the other hand, we have the records of trance-speaking, automatic writing, and the percussive motion of objects to show that some

intelligence other than human is working along the customary human channels. When a soul attempts to do this, the obvious plan would be for it to throw itself into a kind of "trance" in which it would recall the conditions of its earth-life. This would be most easily accomplished by entering into close *rapport* with some suitable living person whose organism might be controlled by the visitor from the soul-world for temporary purposes of communication. This *rapport*, for aught we know, may take the form of a temporary physical amalgamation of the embodied and disembodied souls, which would correspond to what the ancients called "possession." Or the embodied soul might even be temporarily disembodied, and lend its organism for a time to the stranger. The latter would, under favourable conditions, find no difficulty in controlling the borrowed organism for a time. This control might take the form of speaking or writing under control, perhaps the readiest and most satisfactory method of communication. If the controlling soul wishes for a temporary return to earth-life, the natural thing would be to exert its old condensing and organising powers on earthly matter. The matter so used must be specially adapted to this purpose, just as animal and vegetable tissues are specially adapted to our own growth and nutrition, and such a supply of matter would most readily be found within the borrowed organism. A partially or

wholly "materialised" organism might thus be temporarily produced, and be afterwards as rapidly dematerialised. It goes without saying that a process of this kind would expose the borrowed organism to unknown dangers, and might be a matter of very great difficulty and delicacy. In any case, the "apparition" would derive its characteristics from the earth-memories of the "controlled" person or medium, and from any traces of earth-memories which might be possessed or temporarily recalled by the visiting soul. It would be strongly influenced by the general character of those present and by the surroundings. Its *conditio sine quâ non* would be a recollection, a *familiarity* with the temporary earthly surroundings, and nothing *unusual* in word or action need be looked for.

The control of an earthly organism by a being from the soul-world requires a state of passivity in the former. This state is naturally greater in the night than in the daytime, greater in the dark than in the light. We might therefore expect better conditions in the dark than in a bright light.

We need not expect much intelligible information from any such communications. In the first place, they would naturally be made under conditions anything but favourable to intelligent communication. The spheres of life are more different than those of men and of fishes, and whatever connection is established is biassed and strongly coloured by the

human medium. And further, we cannot reasonably expect anything new or valuable about our own world from beings who naturally belong to another. It would be as reasonable to expect from my next-door neighbour new information concerning the state of my coal-supply or the pickles in my pantry. If an attempt is made to inform us concerning life in the soul-world, such information will be found extremely difficult to impart and to translate, so to speak, into the language of the recipients, who may have no equivalent experience to appeal to.

Yet with patience and the taking of pains we might enter into the life of the soul-world to the extent, at all events, to which we have entered into the life of ancient Egypt since we began to decipher the hieroglyphs. But, taking all the circumstances into consideration, we cannot expect to obtain satisfactory results without taking very much more trouble about it than Egyptologist ever took. And who is there at present prepared to face such a task, even for the immense reward it offers?

The inevitable communication between the two worlds which takes place at the death of one of us remains to be considered. May we not think that perhaps some loving welcome awaits us at death, similar to the welcome which greeted us at birth? Is there not, perhaps, an instinct for the increase of soul-life which rules the soul-world, just as the

silent impulse towards child-life rules this? Does not the divine impulse towards the cherishing and protecting of inexperience extend also into the soul-world, and urge its wise and beautiful inhabitants to minister to the newly born soul-body with the keen delight which parents feel in ministering to their earthly offspring? Of this I am certain, that if any terror awaited us beyond, if the soul-world were not at least as fair and as good to live in as this, there would long ago have been such a steady backward pressure of fear and repugnance as would have sufficed to counterbalance the forward pressure of the human race. The race, in its horror of death, would have had a horror of life, and a horror of generating life, which would ages ago have dried up the springs of fertility and made an end of the human race. The race would have been like a vast crowd surging towards an abyss, and warned of it by the vague disturbance ahead, the cries of distress, the straining backward, the gathering panic.

No, we may be certain that nothing worse awaits us than the worst we experience in this earthly life. And for aught we can dimly foresee, most of our familiar terrors will be eliminated. Falsehood and uncertainty are two of our greatest curses, and these will almost certainly become very much mitigated. The conditions of the new life are such as to reduce them to a minimum.

Of the elimination of disease and death I need

not speak. The former may possibly be eliminated from earth-life before very long, or reduced to a single form, that of a prolonged and healing sleep. And as regards death, we shall then know that what we formerly understood by that is non-existent.

CHAPTER VI

THE WIDER PROBLEMS OF IMMORTALITY

HITHERTO we have only dealt with the human aspect of immortality, or rather, of this world and the next. The general problem of immortality is immeasurably wider. It includes questions as to the fate of lower organisms, the existence of organisms far beyond the human scale, of inhabitants of other stars and planets, and of inter-stellar space.

We can only touch the fringe of these vast problems, and need only deal with them in so far as they affect our present state and our immediate prospects hereafter.

Do animals possess souls? According to the general lines of our argument, we must answer most decidedly: they do. Their organisms are as complex as our own. They require similar directing centres or psychomeres. Their mental faculties are, as a rule, greatly underrated, largely on account of the difficulty we experience in "putting ourselves in their place." Indeed, we may seriously doubt whether ants and bees, for instance, are, in their own sphere, *in any way* inferior to ourselves, or, if they

are, whether their partial inferiority in some things is not compensated by a superiority in others.

Do they survive then, also? Are they, too, immortal, like ourselves?

We can allege no sufficient reason why they should not be! The idea that noxious insects, for instance, may accompany us and confront us in the soul-world is enough to fill some sensitive minds with horror and loathing. They would, at that price, rather not have immortality. They would prefer annihilation.

But let us look at this question rationally and coolly. In the first place, we may possibly never come near them. They may be thoroughly "earth-bound," and passing through a cycle of rapid reincarnations, they may, if they people the atmosphere at all, be confined to its lowest strata. If they inhabit the soul-world itself, they may fulfil a useful function there, something like horses and cows and pet canaries in this. For the practices and pursuits which make them objectionable here will be necessarily modified by the change of world and of state of aggregation.

With plants the case is somewhat different, though not fundamentally different. A plant is a much looser aggregation of cell communities than an animal. A flower, plucked from the stem, is capable of blooming for some time in a flower-glass. When it dies, it is quite possible that the knot

which bound its cells together is dissolved also, that the cell-knots are loosened, and that certain organic molecules, or even the atoms which composed them, may be the only permanent units of consciousness which remain.

We may take it for granted that the more the self-consciousness and the will are developed, the more permanent is the individuality. The individuals of the human race have therefore the best chances of real (*i.e.* permanent) immortality. The development of the individual goes hand in hand with his training in altruistic activity. Both factors make for permanent survival. He is made strong, and he is made useful—strong to defend himself, useful in forwarding the interests of the community. Permanent survival thus depends upon two factors, each of them of independent value, but both together forming an irresistible combination.

If I would have my life-knot strong and secure, I must see to it that all the psychomeres which obey my will feel thoroughly at one, and firmly bound together in a common cause. "Union is strength." I must fill their lives with a common inspiration. They will strengthen me, and I, in turn, shall strengthen them.

If, for any reason, I am personally unable to give them that firm government and vital inspiration which they need, I must get it from above, *i.e.* by

attaching myself closely to a larger organism, entering its service with loyalty and glad devotion, and hand that loyalty and gladness down to them that serve me. I must be wise in my choice of that higher organism, that Master whom I will serve. He must be able to command my unswerving love and devotion. He must be strong, and His strength must be permanent too, and for the same reason, *i.e.* because it is in accordance with the greatest good. Thus I can safely defy the immeasurable eternities before me.

Immortality thus presents itself to us in several new aspects. It is possible, though not inevitable. It is, so to speak, optional. The alternative to immortality is the disintegration of the individual, which is the only real death, and is not in any way connected with the laying aside of the ballast organism which is popularly known as death. The latter should, if anything, lead to a closer tying of the vital knot, a more vivid and energetic co-operation between the psychomeres, and to that "sense of immense power" testified to by those who have been half-way across the gulf and returned.

Nor can the possible amalgamation or fusion of two or more personalities be taken to imply the death of the individual. It should be, of all things, the moment of the most supreme rapture and ineffable bliss, a bliss of which we catch a faint glimpse in the transports of human love, and more especially in

those exquisite refinements of love between the sexes which have been sung by poets of every age.

Again, the disintegration of an individuality admits of several gradations. We have seen that there are infinite gradations of life-communities and planes of life-knots. The dissolving of a knot on one plane need not imply the dissolving of the knots immediately below it. Sometimes it certainly does not. Thus, those infusoria which, after conjugation, become cysts and give rise to numberless independent spores, show a disintegration of individuality which but slightly lowers the plane of life, and does not hinder the re-attainment of the original level by the independent individuals. In the human body, after physical "death," the disintegration is much more complex. The life-knots of the cells are dissolved, and also those of the biophores or "pangens" which build up the various contents of the cell. These are probably destroyed by the withdrawal of the controlling psychomeres. Disintegration remains latent so long as there is no active agent of destruction, and may remain undiscoverable when such agents are wanting (as under extreme cold). But under ordinary circumstances those useful scavengers, the bacteria, make short work of the outworn machine. They convert it into amines and amino-acids, which again give rise to ammonia. The latter is either absorbed by plants direct, or "nitrified" into nitrates, or "denitrified"

into nitrogen. The nitrates are absorbed by plants, and the nitrogen is fixed in the soil by the nitrogen-fixing bacteria, so that it also becomes suitable for that most essential link between the animal and inorganic worlds, the plant. It is thus that nitrogen, that chemical species which of all species produces the most unstable and delicately poised compounds, circles the round of nature, descending into the "hell" of the infra-world before it again rises to the level of the animal.

The view here adopted gives also a rational interpretation of blood-relationship as affecting life in the soul-world. It is just here that the inconceivabilities of the ordinary loose notions of survival become most glaring. Imagine a soul-world in which ancestors and grandsires and great-grandchildren are indiscriminately herded together. If any earthly traditions remained among them there would be an intolerable tyranny of age over youth, tempered perhaps by a perennial and ever-increasing recalcitrance of the latter. There would not be, as with us, a reasonable progress tempered by a reasonable conservatism. On our view, on the other hand, there is a gradual ascent of man towards higher and higher levels, represented, not symbolically, but really, by higher strata of the atmosphere. It is like the smoke of incense ascending towards the Most High.

A view such as this is opposed to what is known

as metempsychosis or reincarnation, or the return of the soul to earth-life after a certain interval, and its passage through successive lives in the course of its gradual perfectioning. But our general experience of nature in such departments as those of natural history precludes us from pronouncing such a return as impossible, or even unlikely. Whenever we have a choice of two alternative processes, the safest conclusion to arrive at is that *both* are true, and are sometimes chosen. For nature loves variety, not only of individuals, but of ways and means. Putting it grossly, we might call it a matter of statistics, and ask the question: What percentage of souls go through repeated incarnations on earth?

Reincarnation itself may take place in a variety of ways. There are well-authenticated cases of double or "duplex" personality, in which the character of a person suddenly changes, exactly as if the person's body were in possession of another entity. The former personality suddenly returns, and sometimes there is a more or less rapid alternation of the two selves.¹ By careful treatment, the two personalities may even be amalgamated and fused into one.

If we assume the "spiritistic" explanation, the invading spirit must obviously be taken as temporarily incarnated, and as enjoying the powers con-

¹ See Sidis and Goodhart, "Multiple Personality" (Appleton, London, 1905).

ferred upon it by the possession of a physical organism. If that is possible, then such invasion is also conceivable in infancy or at the moment of birth, or even during gestation, in which case we should have to postulate the physical death or disembodiment, temporary or permanent, of the soul previously in possession of the organism invaded. This would appear to be rather a purposeless procedure. And even if we go right back to the moment of conception, the difficulties by no means disappear. For although the presence of a crowd of souls desiring re-embodiment might explain not only the readiness with which new-comers are welcomed, but also the rapidity of their prenatal development, it fails when we take the most primitive type of birth, viz. simple fission. For when a cell divides into two equal parts, it would be absurd to suppose that one of them is henceforth to harbour an invading soul, while the other remains in possession of its original occupier.

And as regards the problem of development, even if we explained it by the memories of previous incarnations, which facilitate the formation of the well-remembered organs, the explanation would hardly cover the equally rapid formation of an organ by regeneration in an earth-worm or a lizard.

Again, the doctrine of Karma (the accumulated record of character in the Indian philosophy) is already sufficiently contained in the formation of

the soul-body, which is much more lasting than the physical body, and bears with it the impress and record of all past actions and experiences.

The question of immortality can hardly be discussed without some reference to the higher commanding entities which may possibly exist or be gradually evolved in the soul-world, and whose existence might conceivably produce some marked effect upon this earth-world. Even here there is an enormous difference between the power of the highest intellect and the power of the lowest. If there is anything certain in human development, it is that men are not born "free and equal." Their degree of freedom varies within very wide limits, and no two individuals are equally endowed except as regards, perhaps, their physical organism in its general outlines. Yet the desire for freedom and equality is not without its proper satisfaction. For, if anything is clear from the line of reasoning we have followed, it is that man has a certain definite freedom of choice within narrow limits imposed by the worlds next above and next below his own. Within those limits he is absolutely *free*, and his power is *equal* to that of *any* other entity, however much higher in the scale of being than himself. We have seen that each plane of being carries on its own type of life independently of all others, within the limits already referred to. The tree lives its own life, and the birds on its boughs live

theirs. The supra-entity in whose blood our galactic system is a single corpuscle effects his mighty purpose independently of our puny will, and we in turn effect ours in utter indifference to his.

That there are kingly souls in the soul-world, just as there are on earth, we must naturally expect. For aught we know, their ascendancy may be more pronounced than any ascendancy we find on earth. And if any large invasion of the earth-world is ever carried out from above, we may well assume it to be planned and carried out by some commander-in-chief of the soul-world. But such organised invasions would naturally be rare, and would become rarer as civilisation proceeded and as we obtained a firmer grip upon our own earth-conditions.

This world of ours is "worth fighting for," as Cromwell said of Ireland. It is one of many worlds. It may not be the best of all possible worlds, but it is ours, and *we* are to blame for any lack of perfection. It is our business so to order it that it may reach our highest conceivable ideal of perfection. Since that task cannot be accomplished in a life-time, we must see that those who come after us have that ideal always before them, and have the strength to work towards it. The earth-world is lying there before us, ready to be moulded to our will. We are given powers of life and death over the animal and plant worlds. We can, and do,

alter the face of the land and the sweep of the coast. There is no limit to our mechanical powers, to our organisations, to the amount of matter, living or dead, which we may press into service. Surely such liberty brings with it tremendous responsibilities. And how can we put the blame on any shoulders but our own when anything is amiss? If there is pain, is not the world full of anodynes? If there is poverty, is there not untold wealth lying unclaimed; is there not the delight of service which relieves distress? If there is death, where is its terror? For death is but the transition to a more subtle and intense life, in which again we have the choice between serving and governing, with its attendant alternatives of a light-hearted loyalty and sombre responsibility. Even if we are weary of life, and of all the struggle and the turmoil of it, we have the option of a surrender of our individuality, of a sinking into the bosom of the All and One, of the merging of all that makes up our Selves in the ocean of life, where it will assume a myriad new forms, each guarding some echo and faint tradition of that Ego which once walked this earth through storm and stress.

A fair world is ours now, and a fairer world awaits us beyond. Here on earth the flowers bloom for us, the trees wave their branches, the winds sigh, and the birds sing. A soul dwells in every tree, a mystic and dreamy soul, a soul half merged in that

ocean of life whither many of us may tread our weary way as a last refuge some day. The green republic of the leaves lift up their faces towards the upper air and the sun, whence they have their sustenance and strength. The wide expanse of plain and mountain harbours endless forms of life, a thin film of existence emerging from the solid ground and merging imperceptibly into the ether above. In all this fulness of life the joy outweighs the sorrow, the progress surpasses the decay.

Then whither have our terrors fled? We find them neither in this world nor the next. In this world we have the comradeship of man to fight our battles with us and for us. In the next we have the comradeship of all mankind that went before us to prepare the way, and the same friends, perhaps, who welcomed us into this world will greet us on our transition thither. In all worlds present or to come, we have the sustaining power of the great Centre and Origin of all life, of God the Father Almighty, Maker of heaven and earth, who never more will appear as an angry Judge, half repentant of having created us, but as the source of all life and all joy, the equally loving cherisher of all that lives and all that exists, in whom and through whom we are, and by whose strength and warrant we, too, have almighty powers.

PART III

CHAPTER I

THE NEW PSYCHOLOGY

THE recent history of psychology has marked a gradual extension of the science into regions formerly regarded as non-scientific, or as unworthy of the name of science. The old introspective school has been powerfully affected by the recent science of experimental psychology on the one hand and by mental pathology on the other. The psycho-physiological laboratory and the lunatic asylum have been the mines from which the richest treasures of psychological science have recently been obtained. The galvanometer and the chronograph have converted psychology to some extent into a quantitative science, and, on the other hand, the human mind, studied in its more abnormal and aberrant aspects, has revealed properties of which the older psychology was entirely unaware. The discredited art of "mesmerism" has been revived and codified, if not sanctified, under the new and more respectable name of "hypnotism" by Braid at Manchester and Charcot at the Paris Salpêtrière, who conclusively

established the extraordinary sway which one mind may obtain over the mind of another, and even over the body of another, down to its most elementary and essential organic functions. Hypnotism is now part of the regular curriculum of the medical profession, and has almost completely disappeared from the popular stage. Its dangers are well recognised and guarded against, and its curative powers are being more and more extensively utilised.

We may anticipate that the fate of hypnotism will be shared in the near future by many other "occult" realms of knowledge, such as animal "magnetism," telepathy, and spiritism. These comprise a large body of real or alleged observations of a particularly obscure and difficult nature, which are not yet accepted by the bulk of representatives of official science, but are gradually being sifted and ranged in order, and will no doubt be the commonplaces of science by the middle of this century.

In the present work we are moving necessarily so much on the borderland of the Known that it would be more than foolish to ignore these new facts simply because they do not yet form legitimate subjects for discussion, say, at the meetings of the British Association for the Advancement of Science. Moreover, this book does not work under the limitations of a college text-book. It is not bound to give only that which is generally accepted.

It has to take its facts wherever it can find them, and the less "accepted" they are, the more light are they calculated to shed on the obscure problems here dealt with—problems whose very obscurity shows how far official science is from furnishing a solution for them.

There is also another consideration. The facts which have been sufficiently authenticated to be here utilised are, as a rule, not officially accepted, *simply because they fit into no accepted theory*. If the facts *are* facts, the obvious conclusion is not that we must ignore them, but that we must alter our theories to suit them. Now the theory sketched out in what has been already written contains all the modifications necessary, not only to fit in the facts of the "new psychology," but also a host of traditions of bygone times which have been discredited solely by being out of harmony with the prevailing trend of modern thought.

Let us briefly resume the theory of the human individual developed in the preceding chapters:—

1. An individual is a permanent *organisation* consisting of an infinite number of living entities, graded in a "hierarchy" ranging from the most vital and essential to the least vital and least indispensable.

2. The most vital entities in this hierarchy are those which have the most powerful determining action upon the life processes. They are also

those which are most permanently essential to the organisation.

3. At death, the most vital entities, down to a certain order of vitality, are detached from the body, which then falls a prey to other entities. The entities thus disembodied are here termed *psychomeres* or soul-particles. Together they make up the soul-body, or, in short, the soul.

4. The psychomeres are estimated to weigh not more than one-thousandth, nor less than one-millionth, of the total weight of the body.

5. Their disembodiment is undiscoverable by weighing the body in air, as their weight in air is zero.

6. The soul-body contains all the memories, organic and social, of the individual. It is more mobile and plastic than the physical body, and therefore capable of a more exalted and vivid type of existence.

7. The soul-body is probably held together by electrostatic forces.

8. The soul-body retains its power of assuming any shape desired, and may, under exceptional conditions, reconstruct for itself a physical body.

9. The abode of the departed souls is the earth's atmosphere.

10. The normal shape of the soul-body somewhat resembles a flame, and is of about the same tenuity.

11. The number of psychomeres constituting an individual may be roughly estimated at a trillion (10^{12}).

12. A certain proportion of the psychomeres are temporarily detachable from the physical body even during the life-time of the latter.

13. The psychomeres of a lost limb, &c., return to the organism of the individual on the death of the limb.

14. The birth of a new human being is due to the conjunction of two psychomeres derived from opposite sexes. These psychomeres are then lost to the parent individuals.

15. Death is necessitated by the overcharging of the psychomeres with permanent structures, formed for the purpose of simplifying life processes.

16. The immortality of the individual is not absolute, but depends upon the development of his individual consciousness and upon his utility to a superior organisation. Death in general does not tend to destroy the individual, but to enhance his individuality.

17. All individuals of any order are organisations of individuals of lower orders, down to the infinitesimal. Individuals of all orders below the range of our analysis are regarded by us as "dead matter."

18. The laws of "matter" (the laws of Nature) are the aggregate of the social or organic laws of all individuals of orders below our range of analysis.

19. All individuals of whatever order are connected with the Universal Centre of Life, and are thus ultimately connected with each other.

This scheme, which contains no very startling assumptions, accounts in a simple manner for the phenomena of both normal and abnormal psychology. It puts psychology on a sound logical basis, beyond the reach of destructive materialism. It abolishes the dualism of mind and matter, putting in its place what might be called a spiritual monism. It makes life the fundamental reality of the universe, and reduces physical death to a kind of "moult," a freeing of the individual from a worn-out piece of machinery built up by himself. It vitalises biology by reducing life processes to the known (*viz.* the phenomena of consciousness) instead of putting them back into the unknown recesses of atomic matter. Finally, it gives a reasonable working hypothesis of a future life, based upon well-known physical and physiological principles, which enables us not only to classify and explain a large number of hitherto isolated observations, but also to predict new ones capable of future verification.

We shall, in what follows, attempt to bring within our range the following abnormal or super-normal phenomena, variously classified as hypnotic, "magnetic," magic, subliminal, spiritualistic, metetherial, mediumistic, or occult:—

- a. The temporary withdrawal of the soul-body ("double," or "astral" body) during earth-life.
- b. The temporary duplication of parts of the body (*cf.* Davenport Brothers, Stainton Moses, Eusapia Paladino).
- c. Observations of withdrawal at or near death.
- d. Materialised spirit-forms.
- e. Luminous metapsychic phenomena.
- f. Mechanical phenomena of modern spiritualism (telekinesis).
- g. Phenomena of control and possession (automatism).
- h. Externalisation of sensation (telesthesia).
- i. Thought-transference (telepathy).
- j. Psychological exaltation (ecstasy, prophecy, genius).
- k. Retrocognition ("psychometry") and haunting (apparitions).
- l. Hypnotism (animal "magnetism") and suggestion (psycho-therapeutics).

These phenomena are classified in a different manner by Rector Boirac of Dijon.¹ He distinguishes three orders of phenomena:—

1. *Hypnoid*.—Phenomena which are apparently explained by the forces already known, if we suppose that under certain conditions these forces act according to laws which we do not know yet,

¹ See *La Psychologie Inconnue*, par Émile Boirac. Félix Alcan: Paris, 1908.

and which may be very different from the known laws.

2. *Magnetoid*.—Phenomena apparently explicable by hitherto unknown forces or agents distinct from those which science has already discovered and studied, but which, we may add, belong normally to our world, and are comprised within that permanent set of forces and agents which we call "nature."

3. *Spiritoid*.—Phenomena which seem to imply the intervention of forces which, though not indeed "supernatural," are extra-natural, not belonging normally to our world, but making in some way sudden incursions into the realms of nature from some plane of existence foreign to the plane in which we move.

Boirac himself admits that this classification must be regarded as provisional only, and that there is a likelihood of class 3 being reduced to a special case of class 1 or class 2.

We are not disposed to postulate any supernatural or even extra-natural forces. It is, in fact, unscientific to postulate these except as a last resort, when all other attempts at explanation fail.

Besides, the term "force" has been greatly abused in this connection. It is a term belonging to physics, and means that which produces a displacement or acceleration of matter. It is not a satisfactory term. It is so vague and "meta-

physical" that physicists have lately used it very sparingly, or have even attempted to discard it altogether. As a rule, one can distinguish a good work on physics from a bad one partly by the frequency with which the word "force" is used, and its use in books on psychology is often a sign of faulty reasoning or a loose terminology. To talk about the "conduction of magnetic force" is quite meaningless, and has no analogy anywhere in physics, and when we find the same force described as a "fluid," we reach the height of absurdity. Neither electricity nor magnetism are "forces." The former is, indeed, a fluid, and can be conducted. The latter is not a fluid, but a mode of motion of electricity, and can not be conducted. There is, of course, electrostatic force, and magnetic force, and electrodynamic force, but these can only be propagated across space (with the velocity of light), and cannot be conducted. Their nature is quite unknown; and there is nothing to indicate any "fluidic" constitution for them.

The forces governing biological processes are just as unknown as those which produce, say, the levitation of a table. Cohesion, chemical affinity, and the forces governing crystalline and colloid aggregations are on the very borderland of physical science as far as their "explanation" is concerned. We can only state that such and such changes take place under suitable conditions. We have not got

even so far as to explain why a stretched wire holds together. We cannot yet reduce its cohesion to known "forces," though there is every probability that cohesive force is electrostatic rather than magnetic or gravitational. If that must be admitted concerning such a familiar thing as a copper wire, what shall we say about the much more mysterious forces of chemistry and biology? We may guess that chemical affinities are matters of electrostatics, but if we remember that the very structure of electricity has only been elucidated within the last ten years, we shall understand that we are only arguing from the altogether unknown to the very imperfectly known.

And as regards the form or structure of atoms, we can only indulge in the very wildest guess-work. They may be, for aught we know, living species of a very low order, whose birth-rate and death-rate are too rapid to enable us to perceive anything but an apparent uniformity and lifelessness.

If two such highly developed sciences as physics and chemistry utterly forsake us in investigating the small-scale phenomena of matter, what must be said of biology, which has hitherto relied for all its ultimate explanations upon those very sciences, two broken reeds in the dismal swamp of the unknown!

Known Forces! There are no such things. We know that certain effects as a rule are observable under certain conditions. What produces those

effects? Such and such forces. What are these forces? They are that which produces such and such effects. We argue in a circle, and believe we are scientific.

It is more legitimate to study, describe, and classify the effects, the uniformities observed in nature, to trace any observable analogies between physical and psychic occurrences, to deal as far as possible with simple facts and conditions, and to remain in the region of the known. Above all, we must refrain from "explaining" unusual phenomena with the help of highly speculative theories which happen to hold the field in any circumscribed science. The specialisation of modern research is such that every discipline has its own type of theory. The physicist deals in molecules or electrons, the chemist in atoms and stereochemical structures, the mineralogist in crystalline aggregates, solid or liquid, the physiologist in biogens and colloid substances, the astronomer in gravitating bodies. Those who can survey all these fields and unify them are few, and are becoming fewer. There is no inducement to generalise since the "specialist" holds the market. The wide sweep of a Newton is nowadays well-nigh impossible.

It is safest, therefore, to take from every science its facts, and to look upon its theories as working hypotheses of very limited application. In psychology it would be folly to reduce anything to matter

and motion. Psychology must have its own fundamental conceptions, its own units. And when we consider that psychology deals with more intimate and immediately knowable phenomena than any other science, it becomes evident that its reduction to physics or physiology is nothing but an abject and unworthy surrender.

That mistake has not been committed by F. W. H. Myers, or by the other leaders and founders of the "new psychology."

Myers, in his epoch-making work,¹ laid the foundation of a new psychological philosophy in which human faculties are presented to us in a wide perspective, ranging from the ordinary waking consciousness through the "subliminal" consciousness (the consciousness below the threshold) out to the universal or cosmic consciousness, the mind of the world-soul.

In this scheme, ordinary waking ("supra-liminal") memory comprises only a small fraction of the memory-tract really inherent in the individual. It is surrounded by regions of hypermnnesia or exalted memory on one side, and by organic memory on the other, with a background of memories inherent in higher or lower orders of organisms. Sensation has similar annexes of hyperesthesia and telesthesia. Volition is flanked by self-suggestion and the

¹ "The Human Personality, and its Survival of Bodily Death." Longmans, London.

superior control of matter, and ordinary foresight works on a background of subliminal or "instinctive" anticipations on the other hand, and suggestions and premonitions inflowing from the sea of life on the other. The past and future, imperfectly surveyed by the individual, are clear and present to the world-soul, to which we are destined further and further to approximate.

This magnificent scheme of human faculties is not based upon biological data, but upon the material accumulated by the Society for Psychical Research, and forms the most authoritative exposition and summary of the valuable data hitherto rendered available. The scheme as it stands represents a minimum of new assumptions, and must be therefore described as possessing to an exceptional degree the scientific virtues of economy and continuity.

Our own scheme, while embodying that of Myers, will go a step farther. It will furnish a physical interpretation of the strata of consciousness. Instead of leaving them afloat in non-Euclidean space, it will locate them and bring them down to earth.

Such a modification is, of course, exposed to the risk of refutation. It is more vulnerable than a purely psychological scheme. But that disadvantage is amply compensated by the very living and graphic manner in which the various facts may be dealt with. Above all, it allows us to utilise the

facts and laws of physics and physiology, so far as they have been determined. We can come down to figures, and estimate and predict. Thus we are in a position to test our theory in the only manner which is finally convincing.

We have already had occasion to distinguish between the "organic" and the "social" memory. The latter may be identified with the supraliminal memory of Myers. The subliminal strata will then be composed of the organic memory on the one hand (including the racial memory), and those illuminated memories which, in occasional flashes, pervade the whole structure of the individual. Du Prel¹ regards the organism itself as the "threshold," and, in accordance with this nomenclature, Professor Barrett² uses the word "supra-liminal" to denote those supernormal faculties which we have referred to as only exercised in earth-life in occasional flashes. Such faculties comprise the hyperboulia, hypermnesia, and hyperesthesia of Myers. They are implied in our view of the organic connection of the individual with individuals of higher planes, and with the Universal Centre of Life.

The subliminal self is probably paramount in the phenomena of suggestion and curative hypnotism,

¹ "Philosophy of Mysticism," translated by C. C. Massey. Redway, London, 1889.

² "On the Threshold of a New World of Thought." Kegan Paul, London, 1906.

in faith-healing, and in some forms of automatism. But in some directions the conception of the subliminal has been overworked. It has been made to do duty in many cases where it by no means offers the simplest explanation of the phenomena. That, of course, was natural so long as the old materialistic prejudice against human survival and the existence of extra-mundane intelligences remained in force. But now that we have arrived at a rational and intelligible view of death and survival, nothing would be gained by leaving out of consideration the manifold possibilities of disembodied intelligences acting upon our own world. We shall therefore be free to assume such action wherever it offers the "least resistance," and *only* if it does that. Our physical and quantitative data will enable us to discriminate in doubtful cases between the various probabilities, and if in any given case the "spirit hypothesis" is the simplest, we shall have no hesitation in applying it and working out its consequences.

CHAPTER II

THE STORY OF "KATIE KING"

It will be useful at this stage to enter somewhat fully into the details of one of the most remarkable and best authenticated manifestations of supernatural activity on record. The story is thirty-four years old, but can be completely reconstructed from contemporary records, and its chief recorder, Sir William Crookes, F.R.S., is, happily, still alive, and ready, if necessary, to bear witness to its accuracy.

It is the story of the frequent appearance of a materialised "spirit form" in various places in London, most usually in the presence of a "medium" of the name of Florence Cook, a girl of fourteen. The appearances took place from May 21, 1871, to May 21, 1874, a period of just three years. During the latter portion of this period the appearances were minutely studied by Mr. William Crookes, Mr. Cromwell Varley, F.R.S., Mr. S. C. Hall, Mr. J. C. Luxmoore, J.P., "Florence Marryat," Mr. W. H. Harrison, Editor of the *Spiritualist*, and other prominent people, who exhausted all their ingenuity in devising tests for the supernatural character of the phenomena.

Some details of a biographical nature are given concerning Miss Florence Cook in *Light* of December 15, 1894. She was at that time married to a Mr. Elgie Corner, and had several children. She died on April 22, 1904.

We are told that her grandmother was given to seeing visions, and once lay in a trance which lasted for three weeks. Florence herself fell into occasional trances. Her first acquaintance with the physical phenomena of spiritualism was made during some table-tilting experiments with a school-fellow at Hackney, in which the table rose a clear four feet from the ground. At another sitting she was carried about on her chair by some abnormal means. Continuing the *stances* at home, she was instructed by raps to proceed to the house of Thomas Blyton, at Dalston, the secretary of a small group of spiritualists, through whom she was introduced to a number of people interested in the phenomena, which were at that time attracting considerable attention in London. Acting on their advice, she had regular sittings in her own family, the kitchen being curtained off to form a dark "cabinet" for her, while the family sat outside on the stairs. Under these circumstances she was "controlled" by an entity who called herself Katie King, and later on "Annie Morgan," and who endeavoured to peep out through the curtain while Florence was lying in a trance inside. As no such

control took place when the medium sat in the light, the arrangements were improved by constructing a wooden cabinet large enough to hold Florence seated on a chair, with a window near the top through which faces could be shown.

These *séances* went on for some time, gradually developing in elaboration and the degree of illumination, the form of Katie King eventually gaining sufficient power to emerge completely from the cabinet. After all precautions had been taken to prevent Miss Cook impersonating the figure, it remained to be shown that its appearance was not due to a collective hallucination of the company. This was done on May 7, 1873, by photographing the figure by magnesium light. The following is the full account of this achievement, as published in the *Spiritualist* of May 15, 1873:—

“PHOTOGRAPHING A SPIRIT BY THE MAGNESIUM LIGHT

“A series of sittings has been held recently in the presence of responsible witnesses, to photograph the spirit ‘Katie King,’ who of late has been temporarily materialising herself so frequently through the non-professional mediumship of Miss Florence Cook. The efforts of the experimentalists have been successful, and the large engraving on

the next page is about as faithful a copy as wood-cutting can give, of one of the photographs obtained on Wednesday night, last week. In the photograph itself the features are more detailed and beautiful, and there is an expression of dignity and etheriality in the face, which is not fully represented in the engraving, which, however, has been executed as nearly as possible with scientific accuracy, by an artist of great professional skill.

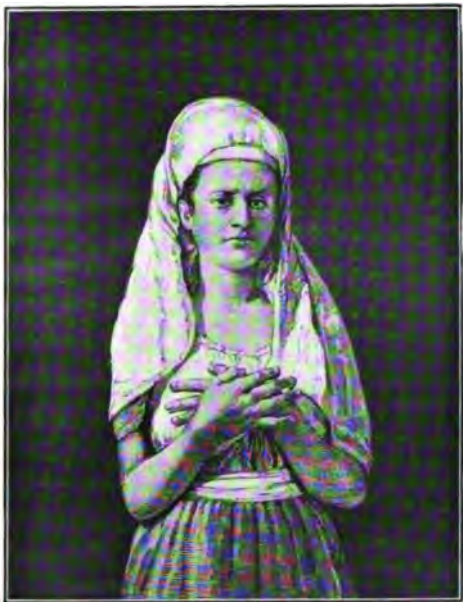
“The following account of the principal *seance*, signed by all the witnesses, is rather more lengthy than the average of such documents, as it was thought that the extreme novelty and interest of the operations made it desirable that the particulars should be given somewhat in detail:—

“We, the undersigned, have attended a series of four special *séances* recently held at the residence of Mr. Henry Cook, of Hackney, for the purpose of obtaining photographs of the materialised form of the spirit, ‘Annie Morgan,’ commonly known as Katie King, who manifests through the mediumship of Miss Florence Cook. The most successful sitting was held on the evening of Wednesday, the 7th instant.

“Katie can now manifest in full form by daylight; but it being found that the ordinary light in the *seance* room (descriptions of which, and of the cabinet, have been given in former numbers of

the *Spiritualist*) was not well adapted for photographic purposes, it was resolved by Mr. Harrison, who volunteered to do the photographing, to darken the room, and use the magnesium light. At the earlier *séances* Katie could only come out of the cabinet and bear the glare of the magnesium light for a few seconds at a time, once or twice during the *séance*; she had to go back quickly into the cabinet to gather fresh power from her medium, saying that the strong and unaccustomed brilliancy of the light made her 'melt quite away.' But gradually she became more and more used to it, and at the *séance* now referred to, no less than four photographs were taken. It is from one of the best of these that the engraving is copied.

"The cabinet doors were placed open, and shawls hung across, as on previous occasions already described. The *séance* commenced at six P.M., and lasted about two hours, with an interval of half-an-hour. The medium was entranced almost directly she was placed in the cabinet, and in a few minutes Katie stepped out into the room. The circle being most harmonious, conditions were exceptionally good. The sitters, in addition to the undersigned, were Mrs. Cook and their two youngest children, whose delight at Katie's familiarity with them was most amusing. Katie was dressed in pure white, as previously described in the *Spiritualist*, except that her robe was cut low, with short sleeves,



PORTRAIT OF "KATIE KING"

Taken May 7, 1873, by magnesium light. Reproduced
from a woodcut in the *Spiritualist* of May 15, 1873

allowing her beautiful neck and arms to be seen. Her head-dress was occasionally pushed back so as to allow her hair (which was brown) to be distinctly visible. Her eyes were large and bright, of a dark blue or grey colour. Her countenance was animated and lifelike, her cheeks and lips ruddy and clear. Our expressions of pleasure at seeing her thus before us seemed to encourage her to redouble her efforts to give a good *séance*. By the light of a candle and a small lamp, during the intervals of photography, she stood or moved about, and chattered to us all, keeping up a lively conversation, in which she criticised the sitters, and the literary photographer and his arrangements very freely. By degrees she walked away from the cabinet and came boldly out into the room. A camera slide being overlooked, she walked up to a table where it was some distance away, and placed her hand on it. The door of the *séance* room was open all the while, in order that the plates might be taken out and developed in the adjoining kitchen. The window was opened several times to admit fresh air (and with it the twilight) after each ignition of the magnesium. The photographer and some of the circle were occasionally moving about, but nothing seemed to interfere with the good conditions, or stop the manifestations in any way. Mr. Cook (who arrived late from the City) and the servant Mary, having called out from the kitchen that they would like to see what was

going on, Katie bade them stand outside the door and look in, which they did nearly the whole of the *seance*. Katie usually leaned on the shoulder of Mr. Luxmoore, and stood up to be focussed several times; on one occasion holding the hand lamp to illuminate her face. Once she looked at the sitters through that gentleman's eye-glass, patted his head and pulled his hair, allowed him and Mrs. Corner to pass their hands over her dress, in order that they might satisfy themselves that she wore only one robe. As one of the plates was taken out of the room for development, she ran a few feet out of the cabinet after Mr. Harrison, saying she wished to see it; and on his return it was shown to her, he standing close to and touching her at this time. While he was absent, she walked up to the camera, and inspected 'that queer machine,' as she termed it. Just before one of the plates was taken, as Katie was reposing herself outside the cabinet, a long, sturdy, masculine right arm, bare to the shoulder, and moving its fingers, was thrust out of the opening at the top of the cabinet through which the faces are shown. Katie turned round and upbraided the intruder; saying, that 'it was a shame for another spirit to interpose while she stood for her likeness,' and she bade him 'get out.' Towards the close of the *seance*, Katie said her power was going, and that she was 'really melting away this time.' The power being weak the admission of

light into the cabinet seemed gradually to destroy the lower part of her figure, and she sank down until her neck touched the floor, the rest of her body having apparently vanished, her last words being that we must sing, and sit still for a few minutes, 'for it was a sad thing to have no legs to stand upon.' This was done, and Katie soon came out again entire as at first, and one more photograph was successfully taken. Katie then shook hands with Mr. Luxmoore, went inside her cabinet, and rapped for us to take the medium out. The only stipulation Katie made throughout was, that the sitters would not stare fixedly at her whilst she stood for her photograph.

"The *séance* was given under stringent test conditions. Before commencing, Mrs. and Miss Corner took the medium to her bedroom, and having taken off her clothes, and thoroughly searched them, dressed her without a gown, but simply with a cloak of dark grey waterproof cloth over her under-clothing, and at once led her to the *séance* room, where her wrists were tied tightly together with tape. The knots were examined by the sitters respectively, and sealed with a signet ring. She was then seated in the cabinet, which had been previously examined. The tape was passed through a brass bracket in the floor, brought under the shawl, and tied securely to a chair outside the cabinet, so that the slightest movement on the

part of the medium would have been at once detected.

"During the interval of half-an-hour Mrs. Corner took charge of the medium whilst she was out of the cabinet, and did not lose sight of her for one minute. The tying and sealing were repeated before the second part of the *séance*, and on each occasion of the medium leaving the cabinet, the knots, and seals, and tape, were duly examined by all the sitters before the tape was cut, and were found intact. The medium was tied and sealed by Mr. Luxmoore, whose signet ring was used.

"AMELIA CORNER, 3 St. Thomas's Square, Hackney.

CAROLINE CORNER, 3 St. Thomas's Square, Hackney.

J. C. LUXMOORE, 16 Gloucester Square, Hyde Park.

G. R. TAPP, 18 Queen Margaret's Grove, Mildmay Park, London, N.

WILLIAM H. HARRISON, Wilmin Villa, Chaucer Road, Herne Hill.

"Mr. Luxmoore has favoured us with the following letter:—

"TO THE EDITOR OF THE 'SPIRITUALIST'

"SIR,—In the communication which you were good enough to publish on the 1st inst., I hinted that I was not without hope that in your next number I should be able to relate 'some additional

facts which our opponents will find a little difficult to digest,' and I am happy to say that hope, in this instance, has not been blighted by disappointment. We have long had the wish to get a photograph of Katie, she having promised to do all in her power to assist us. On Monday, the 5th inst., we had what Katie facetiously called 'a dress rehearsal,' for the purpose of photographing her while she was materialised. The difficulties attending the photographic process were very great, but these *you* will, I am quite sure, explain much better than I can. I will only mention that we were entirely dependent on magnesium powder for light. On this first occasion the funnel through which the magnesium powder had to pass, had too small an orifice, and it was consequently choked. We obtained faint pictures, which, perhaps, were as much as we could expect on a first trial.

"On Wednesday, the 7th, having gained much experience from the rehearsal, our efforts were rewarded by what I may venture to call a great success, as I think will be admitted by all who see the engraving which I hope you will be able to publish in the number of the 15th instant.

"The sitting was under strict test conditions. Miss Cook was, just before the *séance* commenced, taken into her bedroom and carefully searched by Mrs. and Miss Corner, in order to ascertain that she had

nothing concealed about her, and from that time, to the *final* close of the photographing, she was not, for one minute, out of Mrs. Corner's sight, except while in the cabinet. Miss Cook's hands, A, Fig. 2, were firmly tied together with tape, which was then passed through a piece of brass, B, fixed with two screws to the floor (the heads of these screws, D D, were sealed so that no screw-driver could be used), and then, round my chair, beyond E. To make doubly sure, I tied the tape in a knot at B, before passing it out of the cabinet to my



FIG. 2.

chair. All knots, except the last (B), were sealed, that being unnecessary, as the tape was not severed at this point. To those who know how these *stances* are conducted, I need scarcely add that on this and all other occasions when tests are used, the seals are, when Miss Cook comes out of the cabinet, found to be quite perfect. The distance from her hands to the floor, when tied, was eighteen inches, so that it was absolutely impossible that she could stand upright, or, indeed, lift herself more than a very small distance from the *low* chair in which she sat. Katie stood perfectly erect, and is taller than Miss Cook—indeed, altogether, a much larger figure. She rested her elbow on my shoulder while some of the photographs were being taken.

This was done to insure her keeping quite still (no little difficulty for any one to do, when, suddenly, such a light as that produced by magnesium, is thrown on them). I, perhaps, should have stated that Katie was in her usual white robe, with a portion of her neck bare. If the above are not test conditions, I confess myself unable to say what would be considered satisfactory. This *seance* is certainly the best I have ever seen. Katie walked in full light some feet out of the cabinet, turned round, and allowed us to see her back. Her arms, hands, and feet were bare, and, certainly, no *tape* was to be seen. The tests were in accordance with Katie's strict orders. She refused to be photographed unless her directions were obeyed; and I must add that I think she was quite right, knowing, as I do, the unfair (I might use stronger language) treatment mediums are subjected to. Evidence which would be deemed sufficient to prove anything else is often utterly ignored where Spiritualism is concerned.

"On reperusal, I find I have omitted to state that I carefully examined every part of the cabinet while Miss Cook was being searched by Mrs. and Miss Corner. Nothing could possibly have been concealed there without my discovering it. I should also mention, that soon after one of the photographs had been taken, Katie pulled back the curtain, or rather rug, which hangs in front, and requested us

to look at her, when she appeared to have lost all her body. She had a most curious appearance; she seemed to be resting on nothing but her neck, her head being close to the floor. Her white robe was under her.

“J. C. LUXMOORE.

“16 GLOUCESTER SQUARE,

“HYDE PARK, W.

“Mr. Luxmoore's tying and sealing is efficient and secure; as a nautical man, who spends much of his time annually in his yacht, he knows how to tie knots. After tying Miss Cook's wrists together with tape, he seals the knots between the wrists, very close to the skin, with his signet ring. On Wednesday, May 7, the tape was sufficiently tight about the wrists to leave marks all round.

“Mr. Harrison makes the following statement about the photographic operations:—

“Many conditions had to be complied with to secure successful results. A harmonious circle was necessary, that the medium might be at ease, free from all care and anxiety, in order that the manifestations should be given with the greater power. It was necessary that the medium should not sit too frequently, and have little to do at other times so as to reserve power and vital energy for the *stances*. In short, all the conditions which Spiritual-

ists know to favour good manifestations were supplied as nearly as possible.

"The cabinet being in one of the corners of a room in the basement of the house, the light is too weak, and not in the best direction for photographic purposes. For the same reason that spirits can always handle old musical instruments better than new ones, and that the manifestations are usually stronger after a medium has lived for some time in the house, it was not desirable to make a new cabinet, the old one being well charged with those imponderable emanations from the medium, of which science at present knows nothing. It was, therefore, thought desirable to use the old cabinet, and to do the photographing by the magnesium light.

"Magnesium ribbon will not ignite readily at a desired moment, and sometimes goes out unexpectedly, so would be liable to cause many failures. As both materialised spirit forms and photographic plates, deteriorate rapidly after they are prepared in perfection, it was necessary to have a light which should not fail at a critical moment.

"Accordingly magnesium powder mixed with sand was used, on the principle devised by Mr. Henry Larkins. A narrow deal board A B, Fig. 3, three feet long, was nailed to the base-board D E, and firmly held in a vertical position by the support H. A Bunsen's burner, K N, to consume gas

mixed with common air, was fixed horizontally through the vertical board, and an india-rubber tube, D K, supplied the burner with common gas. The end of the funnel, W, was thus in the gas-flame F. When some magnesium powder and sand were poured into W they fell in a great stream, which caught fire at N, and burnt between N and B, in a great flame of dazzling brilliancy. The larger the proportion of magnesium in the powder, the longer was the flame, and the best results were obtained with a

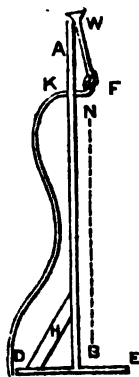


FIG. 3.

flame averaging two feet in length, and lasting for five or six seconds. Sometimes the flame was so long as to scorch the base-board at B, and it set fire to it there once or twice.

"As might be expected, there has been more success as yet in obtaining positives than negatives, as a shorter exposure will do for the former. The ordinary processes were used—namely, a thirty-five grain nitrate of silver bath, and proto-sulphate of iron development. Mawson's collodion. A half-plate camera and lens were used, with a stop rather less than an inch in diameter, between the front and back combinations of the lens.

"Materialised spirits always complain that the



A PHOTOGRAPH OF "KATIE KING"

Taken in the presence of Dr. Gully

gaze of observers pains them, and so does a strong light; this is one reason why we have so much of musical instruments playing under instead of over tables, at *seances*, and why direct spirit writing is rarely obtained under the direct gaze of observers. Consequently, after Katie had 'posed' herself by ordinary light, she insisted that all the observers should turn their eyes from her during the few seconds the magnesium was burning."

On May 12, four more positives were taken under similar circumstances.

The question of the identity of Florence Cook and Katie King was repeatedly raised in the ensuing newspaper controversies, and was put to a somewhat extraordinary test on December 9, 1873, at Mr. Cook's house. A Mr. Volckman grasped the apparition round the waist and tried to throw her down with his feet. "Katie" extricated herself and went back to the cabinet, and Volckman was seized and ejected. The occurrence, which has since often been repeated on similar occasions, threw grave doubts on the *bona fides* of the medium, in spite of the precautions of tying, &c. A few days afterwards, Miss Cook requested Mr. William Crookes to examine the phenomena under more strictly scientific conditions. An elaborate investigation was then undertaken by Crookes, which extended over five months, and which completely established

the separate identity of the medium and the materialised form.

One method of doing this was an electrical one, described by Mr. Varley as follows:¹—

**“ELECTRICAL EXPERIMENTS WITH
MISS COOK WHEN ENTRANCED.**

“BY CROMWELL F. VARLEY, F.R.S.

“The experiments in question were made at the house of Mr. J. C. Luxmoore, J.P., 16 Gloucester Square, Hyde Park, W. The back drawing-room was separated from the front by a thick curtain, to exclude the light of the front room from the back room, which was used as a dark cabinet. The doors of the dark room were locked, and the room searched before the *séance* began. The front room was illuminated by a shaded paraffin lamp turned low. The galvanometer used in the experiment was placed on the mantelpiece ten or eleven feet from the curtains. The following observers were present: Mr. Luxmoore, Mr. William Crookes, F.R.S., Mrs. Crookes, Mrs. Cook, Mr. G. R. Tapp, Mr. Harrison, and myself. Mr. Crookes sat close to the curtain on one side, and Mr. Luxmoore on the other.

“Miss Cook was placed in an arm-chair, in the room which was subsequently to serve as a darkened cabinet. Two sovereigns, to which platinum wires

¹ The *Spiritualist*, March 20, 1874.

had been soldered, were attached one to each of her arms a little above her wrists, by means of elastic rings. Between the sovereigns and the skin three layers of thick white blotting paper, moistened with solution of nitrate of ammonia, were placed. The platinum wires were attached to her arms, and led up to her shoulders, so as to allow of the free movement of her limbs. To each platinum wire was attached a thin cotton-covered copper wire, which led into the light room, where the sitters were to be located. Thick curtains separated the two rooms, so as to leave Miss Cook in the dark when the curtains were down.

"The conducting wires were connected with the two cells of a Daniell's battery, and a regular cable-testing apparatus. When all was ready the back room was darkened, the current passing through the body of the medium the whole evening.

"The batteries had been newly charged, and by tests made before and after the *séance*, they were found not to have varied more than 1 per cent. The current through the medium diminished gradually, excepting at certain times stated further on, in consequence of the drying of the blotting paper, which increased the resistance between the sovereigns and the skin.

"Mr. W. H. Harrison, who was present, recorded the readings and my remarks, and timed them with a chronometer, as I, from time to time, dictated.

The current from the two cells flowed through the galvanometer, the resistance cells, and Miss Cook, then back to the battery. The electrical resistance of the body of the medium produced 220 divisions on the scale of the reflecting galvanometer at seven o'clock, and when the two sovereigns were united, it gave a deflection of 300 divisions. The blotting paper dried gradually, and at 7.17 P.M. the deflection had fallen to 197 divisions.

"Prior to the medium being entranced, she was requested to move her hands about, which, by varying the amount of metallic surface in actual contact with the paper and skin, produced deflections of from 15 to 30 divisions, and sometimes more; consequently, if, during the *séance*, she moved her hands at all, the fact was instantly rendered visible by the galvanometer. In fact, Miss Cook took the place of a telegraph cable under electrical test.

"In the course of the evening, the following readings were obtained and remarks recorded. The current was not interrupted an instant during the whole *séance*. Had the circuit been broken for only one-tenth of a second, the galvanometer would have moved over 200 divisions.

"I was placed at the end of the table ten or eleven feet from the curtain, and only once was I allowed to go nearer, viz., a minute or two before the *séance* was over.

"Our room being dimly illuminated, my eyes

were rendered less sensitive than those of the other observers, because I was for the greater part of the time closely watching the bright reflected image from the galvanometer, but when I looked at Katie the lamp was for a few seconds turned up to let me have a better view. Katie was much like the medium, Miss Cook, and I said to her, 'You look exactly like your medium.' She said, 'Yeth, yeth!' I was therefore very anxious to see if, when she moved her hands and arms, any variation took place in the strength of the electric current; sometimes there was a variation; at others, viz., when she opened and closed her fist, and also when she was writing there was no variation.

"Towards the close of the *seance* the room was darkened, and Katie allowed me to approach her. She then let me grasp her hand; it was a long one, very cold and clammy. A minute or two afterwards, Katie told me to go into the dark chamber to detrance Miss Cook. I found her in a deep trance, huddled together in her easy-chair, her head lying upon her left shoulder, her right hand hanging down. Her hand was small, warm, and dry, and not long, cold, and clammy like Katie's.

"In the course of two or three minutes she came out of the trance, when Messrs. Luxmoore and Crookes came in with a light.

"The sovereigns, blotting paper, and wires were

exactly as I had left them, viz., attached to her arms by pieces of elastic.

"I was so much exhausted after this *séance* that I was obliged to discontinue the experiments. [I have lent my apparatus to Mr. Crookes, and have been to his house and tested the apparatus before Mr. Crookes, using his son (who is not a medium) in place of Miss Cook, who was not present.]

"Mr. Crookes is unaffected by physical *séances*, but I always am very much exhausted by them. Notwithstanding so much vital power is taken from me, my presence very often weakens, or altogether stops the production of the phenomena.

"The following table gives the readings and the phenomena as they were noted down:—

Battery power two cells Daniell's; resistance about four
Ohms per cell.

Resistance of Galvanometer	.	.	39,000 Ohms.
" " Coils	.	.	10,000 "

Total resistance before the medium			
was put in circuit	.	.	<u>49,000</u> "

TABLE.

Battery through 49,000 Ohms produced on the Galvanometer 300 divisions on the scale ; when Miss Cook in circuit also, 220.

Time.	Deflection.	Remarks.
P.M.		
7.10	220	{ Miss Cook in circuit, 23,000 Ohms when wrists and fists moved.
	200 to 250	
7.12	220	<i>Séances</i> beginning.
7.13	220	
7.14	210	The medium has shifted her position.
7.15	220	
7.16	200	Ditto Ditto.
	197	
	197	
	195	
	196	
	195	
7.18	194	
	195	
	194	
	195	
7.19	193	
	196	
	195	
	193	
7.20	191	
	190	
	189	
7.21	191	
	191	{ Katie whispered, her voice being re- cognised by Mr. and Mrs. Crookes, Mr. Luxmoore, Mrs. Cook, Mrs. Harrison, and Mr. Tapp.
7.22	192	
	192	
	193	{ Fluctuating. Medium apparently uneasy, and moving about.
7.23	191 to 195	
	193	
	192	
7.24	193	
	189	

Time.	Deflection.	Remarks.
P.M. 7.25	191 186 176	{ A fall of 36 divisions in one minute. Miss Cook has evidently shifted her position and has probably moved the sovereigns a little in so doing. No break of circuit, however. See note A.
	174	
	171	
7.26	155	
	155	
	151	
7.27	148	{ "Katie" looked out from under the curtain on the side next to Mr. Luxmoore, who was on her left; this movement on her part required a motion of her hands. Galvanometer moved five divisions.
	153	
	151	
7.28	154	
	157	
7.29	155	{ Katie showed herself again as before for a few seconds, lifting curtain as before. Galvanometer did not move more than three divisions.
	154	
7.29½	156	
	154	Ditto Ditto.
	153	Ditto Ditto.
7.30	157	
	154	{ Katie showed her hands; I did not see them; all the others did: I was too far away and watching Galvanometer. Showed herself again for a moment.
7.31	155	
7.32	152	
7.33	152	
7.34	151	
7.35	152	
7.36	135	{ Katie showed her hand and arm, Galvanometer fell 17 divisions!!! Note B.

Time.	Deflection.	Remarks.
P.M.		
7.36½	150	{ Katie showed both arms which she freely moved about. Galvanometer rose 15, then 6, in all 21 divisions!!!
7.37	156	
	156	
7.37	155	
	157	
7.38	155 to 157	{ Katie appeared on the other side of the curtain close to Mr. Crookes. Showed both of her arms. I saw this.
	157	
7.39	155	{ Katie put her hand on Mr. Crookes's head, who said it felt cold. I saw this. No movement of Galvanometer. <i>Excellent test.</i> Note C.
7.40	156	
7.41	156	
	155	
7.42	157	{ Katie put her arm out full length, and asked for pencil and paper. Katie now began writing in sight of observers. I watched Galvanometer closely the whole time she was writing, and it did not vary one division. EXCELLENT TEST. After the manifestation, Katie threw the paper at Mrs. Cook (the medium's mother). Katie then at my request moved her wrists, opened and closed her fingers, but the Galvanometer was steady the whole time. I was watching the Galvanometer while asking the questions, and Crookes and Harrison, and others, told me that she moved her hands again and again in the manner requested by me. While Katie was moving her wrists about and opening and closing her fingers, we all distinctly heard Miss Cook moaning like a person in a troubled dream. The opening and closing of her fingers did not cause any variation exceeding one division on the scale; had it been Miss Cook's hand, the Galvanometer would have varied at least 10 divisions.
7.43	156	
7.44	158	
7.45	146	

Time.	Deflection.	Remarks.
P.M.		
7.46	149	
	150	
7.47	147	
	150	
7.48	146	I here tested the sensitiveness of Galvanometer, and found that with 49,000 Ohms resistance, the deflection was $297\frac{1}{2}$ as against 300 degs. at the commencement of the experiment.

"At 7.48 Katie let me grasp her hand, and asked me to wake up the medium.

"*Note A.*—(7.25 to 7.26 P.M.)—Galvanometer rapidly fell from 191 to 155; in another minute Katie appeared; the galvanometer never rose higher than 157 or 158 after this sudden drop. (This is worthy of careful note.)

"*Note B.*—(7.35 to 7.36½ P.M.)—Galvanometer fell from 152 to 135, and rose again to 150; and at 7.37 to 156. The medium seems to have moved much. Here Katie showed both her arms, and moved them freely about. This looked very suspicious; but

"*Note C.*—At 7.39 P.M. Katie moved her arms about freely, and touched Mr. Crookes on the head, the galvanometer being quite steady: it did not vary more than one division; this neutralises the doubt just expressed.

"At 7.42 she was actively writing, but the galva-

nometer did not vary one division. This, I maintain, clearly proves that Miss Cook was not only in the dark chamber while Katie was in sight, but also perfectly quiescent.

"At 7.45 P.M. she repeated this experiment with the same result; and while Katie was moving her fingers and wrists I watched her, Mr. Harrison watching the galvanometer. Mr. Crookes drew our attention to the fact that Miss Cook was moaning like a person suffering from an uneasy dream, and Katie was at the same time standing before us, and moving her hands as desired.

"C. F. VARLEY."

Some curious and interesting details were contributed to the *Spiritualist* of February 6, 1874, by Mr. G. R. Tapp, in the following letter:—

"SPIRIT FORMS

"SIR,—I was much pleased with the intelligent letter in your last number from 'M. R. S.,' on the subject of the late outrage at a spirit circle.

"Having been privileged to attend more than thirty *séances*, at which Miss Cook has been the medium, and having made notes of many, if not nearly all of them, it may interest 'M. R. S.,' and those of your readers who have not witnessed these most remarkable manifestations, if I state the result of some of my own observations with regard to the much disputed question of the identity

of the spirit 'Katie,' apart from that of the medium at these *séances*.

"I have, in common with others, been struck with the *occasional* resemblance of the features of 'Katie,' when materialised, to those of her medium, but the points of difference between the two, are to me—who have watched very closely at all times—still more remarkable, not only as regards features, but as regards height, bulk, &c. When the circle is small and harmonious, and the medium in good health and good humour, the resemblance is scarcely perceptible between 'Katie' and Miss Cook.

"I was the first visitor who saw 'Katie' in the full form. There was scarcely any resemblance on that occasion. 'Katie,' with her naked feet flat on the floor, stood five feet six inches high. She was stout and broad across the waist and shoulders, quite a contrast to her medium, who is much shorter and *petite* in figure. For a detailed description of this then extraordinary manifestation, I will refer your readers to my letter in the *Spiritualist* of 1st March last.

"'Katie' has frequently stood by me, and leaned against me, at *séances*, for several minutes together, permitting me to thoroughly scan her face and figure in a good light. I have also been permitted often to touch (but never to grasp) her. At one sitting, she laid her right arm in my outstretched hands, and allowed me to closely examine it. It

was plump and shapely, longer than that of the medium. The hands, too, were much larger, with beautifully shaped nails. I may here state that Miss Cook, ever since I have known her, has had a bad habit of biting her nails almost to the roots. I then held the arm lightly in one hand, and passed my other hand along it from the shoulder. The skin was beautifully—I might say, unnaturally—smooth, like wax or marble; yet the temperature was that of the healthy human body. *There was, however, no bone in the wrist.* I lightly felt round the wrist again, to make sure of this beyond doubt, and then told ‘Katie’ that the bone was wanting. She laughed, and said, ‘wait a bit,’ and after going about to the other sitters, came round and placed her arm in my hand, as before. Sure enough, *the bone was then there!* I joked her on this point, and also said what fine finger-nails she had got. She took hold of my hand, and turned it quickly round, and gave a vigorous scratch on the back of it that raised the skin and drew blood. This excellent test has also been given to other sitters. I have had it on two occasions.

“In two instances I have seen Katie with long ringlets reaching to her waist, the hair being of a light brown colour. The medium’s hair is cut short, it is not curled,¹ and its colour is very dark brown, almost black.

¹ This must be an error.—E. E. F.

"Katie's eyes are sometimes a light blue colour, sometimes dark brown. This difference has been noticed very frequently.

"On one occasion Katie, on coming out of her cabinet, held up her right arm, which was of a dusky black colour. Letting it fall by her side, and raising it again almost instantaneously, it was the usual flesh colour like the other arm.

"One evening, recently, I made some jesting remark to Katie, who stood near me, when she suddenly struck me heavily on the chest with her clenched fist. I was startled and, indeed, hurt by the unexpected blow; so much so, that I inadvertently caught hold of her right arm by the wrist. Her wrist crumpled in my grasp like a piece of paper or thin cardboard, my fingers meeting together through it. I let go at once, and expressed my regret that I had forgotten the conditions, fearing that harm to the medium might ensue, but Katie reassured me, saying, that as my act *was not intentional*, she could avert any untoward result.

"I could give many other curious instances, but will not further occupy your space, except to state, that when these manifestations first commenced, I seriously questioned Katie as to what the result would be if the conditions were broken. She affirmed that her medium would probably be killed or much hurt. Not quite satisfied, I put a similar question to a well-known trance medium (who had

never sat with Miss Cook), and got a like reply. At the close of one of the Wednesday discourses at Gower Street, I asked the spirit controlling Mrs. Tappan, 'What would be the result to the medium and the sitters, if the materialised form were grasped at or detained?' The answer was, '*Death or serious injury to the medium, possibly harm to yourselves.*'

"In conclusion, I cheerfully take this opportunity of testifying my firm belief, based upon close and repeated observation at these *séances*, in the good faith and integrity of Miss Cook and her family, and I heartily thank them and their friends for permitting me, without fee or reward, to enjoy the privilege of constant attendance at their circle, whereby I have been greatly aided in my study and investigation of that most extraordinary phenomenon of this our day, modern Spiritualism.

"GEORGE ROBERT TAPP.

"DALSTON ASSOCIATION OF ENQUIRERS
INTO SPIRITUALISM,
74 NAVARINO ROAD, DALSTON, E."

The last appearances of "Katie King" took place on May 9, 13, 16, and 21, 1874. The following accounts were contributed to the *Spiritualist* by Mr. Benjamin Coleman (May 15), Mr. W. H. Harrison, and Mrs. Ross-Church ("Florence Marryat").¹

¹ Sir William Crookes also contributed accounts of the phenomena to the same journal, but as these are to be reproduced in a separate work, they are not included here.

"A FAREWELL VISIT TO KATIE KING,
THE SPIRIT.

"BY BENJAMIN COLEMAN.

"I cheerfully accepted an invitation to attend on Saturday, May 9, one of Miss Cook's *séances*, at which the well-known materialised spirit of Katie King was expected to appear, and, having been requested to give my account of what transpired on this eventful evening, I now do so, merely premising that the readers of this journal are no doubt aware that this spirit, who calls herself Katie King, first made her presence known to the family of Mr. Cook, of Hackney, just three years ago, by controlling their eldest daughter, Florence, promising that, if surrounded by suitable influences, she would prove one of the greatest mediums known. Happily for the cause of science, Mr. Charles Blackburn, of Manchester, became interested in this young lady's career, and at once made such arrangements as should render it unnecessary for her to become a professional medium. Those who have been readers of the *Spiritualist* newspaper have been from time to time informed of the growing interest which has attended this young girl's progress; and how for more than two years the materialised form of the spirit has appeared palpably to some hundreds of invited guests who have attended Miss Cook's *séances*. And now that the

spirit has accomplished her mission, as she avers, she is about to leave the scenes of earth punctually on the day she originally announced, viz., the 21st of May 1874, three years from the date she first controlled Florence Cook. All those who have closely followed up these meetings, and heard from the lips of the spirit what she would accomplish at various times, if suitable conditions could be secured, and who all say she has never failed to realise a promise once made by her, feel sure that she means to take her departure on the day she has fixed, but only to make way for other manifestations of a still higher form—that of recognisable faces of the spirits, and probably the persons of our departed friends.

“The *séance* I am about to describe was conducted, as all the later ones have been, by Mr. William Crookes, F.R.S., and there were present a party of eight or ten ladies and gentlemen known to Miss Cook and her family, who formed a congenial and harmonious circle, best calculated to secure the most perfect results, and we were not disappointed.

“Miss Cook's bedroom, which is of small size, was made to answer the purpose of a cabinet, and the audience sat in a parlour adjoining the bedroom, which was screened by a heavy dark curtain to obscure the light. The parlour was lighted by gas which was not put out, but partially raised and

lowered at intervals by Mr. Crookes. My chair and those who sat on each side of me were placed opposite to the curtain, so that when it was withdrawn I could see directly into the entire length of the cabinet. Mr. Crookes invited me in the first instance to inspect the arrangements, which were very simple. They had become afraid to put the medium to sleep upon the bed as they had been accustomed to do, for fear she should roll off during the uneasy state in which she sometimes gets during a long trance, and now there were but two pillows placed on the floor for Miss Cook to lie upon, and in this position I saw her with nothing but her ordinary clothing and a red worsted shawl thrown over her head.

"She is of small figure, handsome countenance, *brunette complexion, with dark eyes and very dark brown hair.*

"Her dress was of light blue merino, trimmed with black velvet, fitting high up in the neck, with just space enough to show a glittering necklet suspended round her throat by a band of black velvet. *Her ears are pierced,* and she wore earrings. On her feet were ordinary spring boots.

"This is the result of my observations of her appearance and dress, the moment before she laid her head on the pillows and entered the trance state.

"Mr. Crookes stood by the entrance and listened



MISS FLORENCE COOK IN 1874

(Photo by B. J. Edwards, Hackney)

1

7

4

1

1

for any sound from within. In about ten or fifteen minutes we heard Katie's voice, and then saw her draw aside a small portion of the curtain timidly and show her head. Encouraged by Mr. Crookes, she stepped out into the room, and at once saluted the ladies and gentlemen present, and in turn I came in for recognition with an arch, 'How do *you* do, Mr. Ben?' In contrast to the dress of the medium, the entire appearance of Katie was singularly striking. I have given up, as I explained in my last letter on this subject, my former hypothesis of the 'double' in this particular case, in deference to the proofs given by Mr. Crookes and Mr. Varley, which establish in the most satisfactory and conclusive manner that this figure and the medium, though doubtless connected in some mysterious way, and much alike in features, are two distinct individualities, and I am now about to add my testimony in support of the opinion of those distinguished members of the Royal Society.

"The dress of Katie was, as I had seen before, of pure white, differing only from my former description of it by having in this instance short sleeves; it was as nearly as possible like that presented in the photograph, with Dr. Gully holding her hand. Her feet were naked, and I am told they always are so presented. How is this? Can they not materialise leather? Her movements were extremely agile, and singularly graceful. By the

way in which she took the arm of Mr. Crookes and stooped to pick up a fan she had dropped, which she had been using in the most natural manner, and the way in which she stepped across the room (not gliding, as I had seen before), and at one time resting her head on her hand with her elbow leaning against the door; then seating herself on the floor, resting her elbow on the chair, all gave one the idea of a supple, flexible-limbed young woman of graceful and child-like habits. When she inquired whether any of us wished to ask her questions, I took out of my pocket an envelope containing a cabinet-sized photograph, and holding it for her to take, she stepped across the room and took it from me and exclaimed, 'This is Dr. Gully¹ and my likeness! What do you want me to do with it?' 'Write,' I said, 'your name, and any message you have to give me on the back of it that I may keep it in remembrance of this evening.' Borrowing my pencil she wrote: 'Annie Morgan, usually known as Katie King. To her dear friend, Mr. Ben., May 9th, 1874.' When it was read aloud some one said that was too familiar, and she was reminded that there were others of the same name known to her, upon which she asked for the card to be returned, and wrote: 'Mr. Ben is B. Coleman, Esq.'

"During the evening she frequently went behind

¹ Father of Mr. Speaker Gully. See photo. facing p. 232.—E. E. F.



**A LATER PORTRAIT OF MISS FLORENCE COOK
(MRS. ELGIE CORNER)**

(Photo by H. Dunning, Usk, Mon.)

the curtain, near which Mr. Crookes was seated, and he and I and four others who sat by me saw at one and the same time the figure of Katie, clad in *her white dress*, bending over the sleeping form of the medium, whose dress *was blue*, with a red shawl over her head. This incident was repeated with an increased amount of gas-light, which went streaming into the inner room, and thus the fact is at length established that both the living form of Miss Cook and the spirit form of the materialised Katie were seen by Mr. Crookes, myself, and others, twice on the evening of 9th day of May last.¹

"I believe, too, that Mr. Crookes will yet get a photograph on one plate of both the medium and Katie, and thus all objectors outside these circles will be answered.

"But whether this additional evidence occurs or not we had in this particular evening the most satisfactory proof of the distinct individuality of Katie, who is taller than the medium, is a *blonde with blue eyes, ears that are not pierced*, well-formed finger-nails, which Miss Cook has not, and hair of a *golden hue*.

"As her hair during the first part of the evening was banded and showed too little for those sitting at a distance, I asked Mr. Crookes to decide upon

"As the face of the medium was not visible on this occasion, we do not see that this was a test manifestation, although it seems *stance after stance* to be developing into one.—ED.

its colour; he said 'Her hair is light.' Katie interrupting, said, 'Oh, I will show you my hair,' and in a few moments she presented her head with the most luxuriant golden curls hanging over her shoulders; and turning her head, we saw that the ringlets were equally long and beautiful at her back; and to give Mr. Crookes proof of its reality, Katie asked him to take hold of it at the back and pull it, which he did, and pronounced that it was apparently human hair growing on her head.

"Indeed, the natural life-like character of the surroundings of this living form puzzles all who witness it.

"It would be much better for all who oppose and have pinned their faith to the cry of imposture, 'delusion,' or 'psychic force,' to stick to their guns rather than admit the facts which I assert are true. For if they surrender, the slanderous tongue of some and the sceptical thoughts of many would be hushed at once.

"But happily Mr. Crookes, whose boldness in the cause of truth all men must approve, has cut the ground from under his own pet theory of 'psychic force,' unless, indeed, he has some yet unrevealed metaphysical hypothesis to make the discoveries he has recently promulgated fit in with that force to the exclusion of Spiritualism. And from what I think I know of his feelings I recommend the Tyndalls, Huxleys, and Carpenters, his associates

in the Royal Society, not to be alarmed for the present. He has not run away from science to adopt what they believe to be a delusion. He has not got so far as that yet, they may be assured. He has only given a staggering blow to the gross calumny which some Spiritualists have ventured to promulgate against the character of a young girl, carefully nurtured and well educated, whose only crime in their eyes is that she proved to be, in the naturally progressive character of the Spiritual unfolding, a greater medium than any who have gone before her.

"Two other incidents followed, which closed the *séance*, after more than two hours' duration.

"Katie likes admiration, and as all present could say without flattery that her flowing curls were beautiful, several asked her for a portion of them as a *souvenir*. She took her hair playfully in her fingers, as if disposed to grant the request, but did not do it. She ultimately, however, did what was quite as strange; she consented to part with portions of her dress, and, taking up her skirt in a double fold, Mr. Crookes having lent her his scissors, she cut two pieces out of the front part, leaving the holes, one about an inch, and the other two or three inches in circumference, visible to our eyes, and then, as if by magic, but without the conjuror's double boxes or any attempt at concealment, she held that portion of the dress in her

closed hand for a minute or two, and showed that the holes had disappeared, and that the dress was again entire.

"The pieces, a portion of which I have, are apparently strong ordinary white calico. Finally, I asked Katie if she would allow me to kiss her, and I walked across the room with her consent, and gave her a kiss, on a cheek that was warm, smooth, and yielding to the pressure."

"THE FAREWELL SÉANCE OF KATIE KING,
THE SPIRIT.

BY W. H. HARRISON.

"From the beginning of Miss Cook's mediumship, the spirit Katie King, or Annie Morgan, who produced most of the physical manifestations, announced that she had power only to stay with her medium for three years, when she would take her final departure. Her time was up on Thursday last week, and before leaving she gave three farewell *séances* to her friends. At the first of these, held on Wednesday, May 13, the visitors present were Mr. William Crookes, F.R.S.; Mrs. Makdougall-Gregory, Miss Douglas, Mr. Henry M. Dunphy, Barrister-at-Law; Mrs. Ross-Church, Mr. and Mrs. James Mankiewicz, Miss Katherine Poyntz, Mr. and Mrs. Walter Crookes, Mr. S. C. Hall, F.S.A.; Mrs. A.

Corner, Mr. G. R. Tapp, and Mr. W. H. Harrison. At the second *séance*, held on Saturday evening, May 16, the observers were Mr. William Crookes, Miss Alice Crookes, M. Gustave de Veh (a friend of Prince Wittgenstein, and one of the leading Spiritualists in Paris), M. E. Boulland, LL.D.; Mr. Henry Bielfield, Mr. Enmore Jones, his sons Rupert and Arthur, his daughters Alice and Emily, and his mother, Mrs. Jane Jones; Mr. and Mrs. Thomas Blyton and Miss Florence M. Blyton, Mr. G. R. Tapp, Mrs. A. Corner, Mr. H. M. Dunphy, and Mr. W. H. Harrison. Mr. and Mrs. Cook and family were also present at both the *séances*.

"The farewell *séance* was held on Thursday last week, and Katie had emphatically stated that she intended to give it only to the few tried friends now in London, who for a long time had been fighting her medium's battles with the public; and, notwithstanding many solicitations, she made but one exception, by inviting Mrs. Florence Marryat Ross-Church. The other spectators were Mr. William Crookes, Mrs. Corner, Mr. W. H. Harrison, Mr. G. R. Tapp, Mr. and Mrs. Cook and family, and the servant Mary.

"Mr. Crookes, at 7.25, conducted Miss Cook into the dark room used as a cabinet, where she laid herself down upon the floor, with her head resting on a pillow; at 7.28 P.M. Katie first spoke, and at 7.30 P.M. came outside the curtain in full form.

She was dressed in pure white, with low neck and short sleeves. She had long hair of a light auburn or golden colour, which hung in ringlets down her back and each side of her head, reaching nearly to her waist. She wore a long white veil, but this was only drawn over her face once or twice during the *séance*.

"The medium was dressed in a high gown of light blue merino. During nearly the whole of the *séance* while Katie was before us, the curtain was drawn back and all could clearly see the sleeping medium, who did not stir from her original position, but lay quite still, her face being covered with a red shawl to keep light from it. There was a good light during the entire *séance*.

"Katie talked about her approaching departure, and accepted a bouquet which Mr. Tapp brought her, also some bunches of lilies from Mr. Crookes.

"All the sitters in the circle clustered closely round her. Katie asked Mr. Tapp to take the bouquet to pieces, and lay the flowers out before her on the floor; she then sat down, Eastern fashion, and asked all to draw round her, which was done, most of those present sitting on the floor at her feet. She then divided the flowers into bunches for each, tying them up with blue ribbon. She also wrote parting notes to some of her friends, signed, 'Annie Owen Morgan,' which she stated was her real name when in earth life. She wrote a note

for her medium, and selected a fine rosebud for her as a parting gift.

"Katie then took a pair of scissors and cut off a quantity of her hair, giving everybody present a liberal portion. She then took the arm of Mr. Crookes and walked all round the room, shaking hands with each. She again sat down, and distributed some of her hair; and also cut off and presented several pieces of her robe and veil. After she had thus cut several great holes in her dress as she sat between Mr. Crookes and Mr. Tapp, she was asked if she could mend it as she had done on other occasions; she then held up the dilapidated portion in a good light, gave it one flap and it was instantly as perfect as at first. Those near the door of the cabinet examined it and handled it immediately, with her permission, and testified there was no hole, seam, or joint of any kind, where a moment before had been large holes several inches in diameter.

"Then she gave parting instructions to Mr. Crookes and other friends, as to the course which was to be taken in the future for the further developments that are promised to be given through her mediumship. These instructions were very carefully recorded and given to Mr. Crookes.

"She then appeared tired and said reluctantly that she must go, as the power was failing, and bade farewell in the most affectionate way; the sitters all

wished her God speed, and thanked her for the wonderful manifestations she had given. Looking once more earnestly at her friends she let the curtain fall and she was seen no more. She was heard to wake up the medium, who tearfully entreated her to stay a little longer, but Katie said, 'My dear, I can't. My work is done; God bless you,' and we heard the sound of her parting kiss. The medium then came out among us, looking much exhausted and deeply troubled.

"Katie said that she should never be able to speak or show her face again; that she had had a weary and sad three years' life 'working off her sins' in producing these physical manifestations, and that she was about to rise higher in spirit life. At long intervals she might be able to communicate with her medium by writing, but at any time her medium might be enabled to see her clairvoyantly by being mesmerised.

"We have received the following letter on the subject from Mrs. Ross-Church:—

"TO THE EDITOR OF THE 'SPIRITUALIST.'

"SIR,—As the genuineness of Miss Cook's mediumship has been so publicly called in question lately, I think it but a just return for the kindness which enabled me to be present at three of her last *séances* to bear witness to what I experienced there. These

séances took place on the 9th, 13th, and 21st of the present month.

"I will not recapitulate what so many have told of the appearance of the spirit 'Katie King,' nor of the means taken to prevent any imposition on the part of her medium. This has all been repeated again and again, and as often disbelieved. But I find Serjeant Cox, in his late letter on the subject of Miss Showers' mediumship, saying that could such an end be attained as a simultaneous sight of the apparition outside the curtain and the medium within, 'the most wonderful fact the world has ever witnessed would be established beyond controversy.' Perhaps Serjeant Cox would consider a sight of both medium and spirit in the same room and at the same time as convincing a proof of stern truth. I have seen that sight.

"On the evening of the 9th of May, Katie King led me, at my own request, into the room with her beyond the curtain, which was not so dark but that I could distinguish surrounding objects, and then made me kneel down by Miss Cook's prostrate form, and feel her hands and face and head of curls, whilst she (the spirit) held my other hand in hers, and leaned against my shoulder, with one arm round my neck. I have not the slightest doubt that upon that occasion there were present with me two living, breathing intelligences, perfectly distinct from each other, so far at least as their bodies were

concerned. If my senses deceived me ; if I was misled by imagination or mesmeric influence into believing that I touched and felt two bodies, instead of one ; if 'Katie King,' who grasped, and embraced, and spoke to me, is a projection of thought only—a will-power—an instance of unknown force—then it will be no longer possible to know 'Who's who in 1874,' and we shall hesitate to turn up the gas incautiously lest half our friends should be but projections of thought, and melt away beneath its glare.

"Whatever Katie King was on the evening of the 9th of May, she was not Miss Cook. To that fact I am ready to take my most solemn oath. She repeated the same experiment with me on the 13th, and on that occasion we had the benefit of mutual sight also, as the whole company were invited to crowd round the door whilst the curtain was withdrawn and the gas turned up to the full, in order that we might see the medium, in her blue dress and scarlet shawl, lying in a trance on the floor, whilst the white-robed spirit stood beside her.

"On the 21st, however, the occasion of Katie's last appearance amongst us, she was good enough to give me what I consider a still more infallible proof (if one could be needed) of the distinction of her ideality from that of her medium. When she summoned me in my turn to say a few words to

her behind the curtain I again saw and touched the warm breathing body of Florence Cook lying on the floor, and then stood upright by the side of Katie, who desired me to place my hands inside the loose single garment which she wore and feel her nude body. I did so thoroughly. I felt her heart beating rapidly beneath my hand; and passed my fingers through her long hair to satisfy myself that it grew from her head, and can testify that if she be 'of psychic force,' psychic force is very like a woman.

"Katie was very busy that evening. To each of her friends assembled to say good-bye she gave a bouquet of flowers tied up with ribbon, a piece of her dress and veil, and a lock of her hair, and a note which she wrote with her pencil before us. Mine was as follows: 'From Annie Owen de Morgan (alias Katie King) to her friend Florence Marryat Ross-Church, with love. *Pensez à moi.* May 21st, 1874.' I must not forget to relate what appeared to me one of the most convincing proofs of Katie's more than natural power, namely, that when she had cut, before our eyes, twelve or fifteen different pieces of cloth from the front of her white tunic as *souvenirs* for her friends, there was not a hole to be seen in it, examine it which way you would. It was the same with her veil, and I have seen her do the same thing several times.

"I think if in the face of all this testimony that

has been brought before them, the faithless and unbelieving still credit Miss Cook with the super-human agility required to leap from the spirit's dress into her own like a flash of lightning, they will hardly suppose her capable of re-weaving the material of her clothing in the same space of time. If they can believe *that*, they will not find the spiritualistic doctrine so hard a nut to crack afterwards. But I did not take up my pen to argue this point, but simply to relate what has occurred to myself. I could fill pages with an account of these three *séances*, but doubtless you will receive several letters on the subject, and I shall not trespass longer on your space, particularly as I have only written this as a testimony to my complete faith in Miss Cook's mediumship, and my pleasure at having been permitted to judge of it myself.—I am, dear sir, yours faithfully,

“FLORENCE MARRYAT ROSS-CHURCH.”

Thus departed Annie Owen Morgan, alias Katie King, and since that time she has not revisited this terrene world. Upon those with whom she was brought into contact she shed a light which illumined the rest of their lives. If Katie King was a “devil” in the garb of an angel, or rather in that of a merry and tender-hearted and beautiful young woman, it must be acknowledged that either devils have been greatly maligned, or that they must be

sought in a large portion of humanity at its best and brightest. And if the angels (if such there be) are the antithesis of all that, if they are gloomy and severe and ugly, where is the advantage in endeavouring to qualify for their company?

Speaking seriously, an occurrence like this was surely sufficient to fire the imagination of a whole generation, and to inspire thousands with the wish to explore such new possibilities to their utmost!

The publication of the records did attract some attention, but not so much as one would expect. The papers treated the matter lightly. Thus the *Evening Standard* of April 7, 1874:—

“Mr. William Crookes, F.R.S., whose belief in Spiritualism is the result of what he calls scientific examination, announces to the world that with the aid of a six-ounce bottle of phosphorised oil he can see spirits, when, as usual, the gas is turned off. Of course his first ambition was to see Katie; for Katie is the best known, and, if we may use the word, the most sprightly of all the spirits who consent to attend *stances*. It is only when Bishop Colenso and such-like dignitaries have to be convinced that one can ensure the presence of Moses and Aaron to ask conundrums, but for ‘general utility’ purposes Katie is the handiest spirit we have. She has not revealed her surname; perhaps whatever it is, she is open to change it, and such is

her amiability of disposition that she would make any ghost happy, who could gain her hand and heart; for that she has a hand and probably a heart, is what Mr. Crookes has just proved, having seen her in bodily shape, and, as we may reasonably suppose, suitably attired in ghosts of clothes. But there is this peculiarity about Katie—she varies in length. On one occasion Mr. Crookes saw her six inches taller than her medium, and on another occasion not much more than four inches, though always above the medium height. Mr. Crookes need not distress himself about this. It is in strict accordance with all that we know of Spiritualism, and is certainly not more difficult to explain than the preternatural elongations of Mr. Home. The lines from Sir Walter Scott's 'Glenfinlas' will occur to the reader—

“ ‘ Tall waxed the spirit's altering form,
Till to the roof her stature grew,
Then mingling with the rising storm,
With one wild yell, away she flew.’ ”

Other papers contented themselves with pointing out the obvious desirability of phenomena of such stupendous import being fully investigated. But London is a busy place, and soon forgets occurrences which produce no perceptible effect upon the money market. And so this remarkable event gradually faded into oblivion, and the present generation is

ignorant of the fact that Katie King ever breathed the air of London.

Note.—In the current number of the *Annals of Psychical Science* (Aug.-Sept. 1908, p. 376), Professor Lombroso expresses himself in favour of the view that "Katie King" had actually lived on earth under the name of Annie Owen Morgan.

In R. J. Thompson's "Proofs of Life after Death" (Laurie, London, 1906), Charles Richet, Professor of Physiology at Paris University, and editor of the *Revue Scientifique*, makes the following confession: "After reading the astounding statements which Mr. Crookes had published, I allowed myself—and here do I publicly beg his pardon for it!—to laugh at them as heartily as almost every one else was doing. But now I say just what my friend Ochorowicz says in the same matter—I beat my breast and I cry, *Pater, peccavi!* How could I suppose that the savant who has discovered thallium and the radiometer, and foreshadowed the Roentgen rays, could commit gross and inexplicable blunders, and allow himself to be duped for years by tricks which a child could have exposed? . . . The real world which surrounds us, with its prejudices, well or ill-founded, its scheme of habitual opinions, holds us in so strong a grasp that we can scarcely free ourselves completely. Certainty does not follow on demonstration; it follows on habit."

CHAPTER III

INTERPRETATION OF THE PHENOMENA

IN the last chapter we have about as good and trustworthy a record as we can hope to get of the unusual phenomena described. The methods of examination, the various tests and safeguards devised, appear to be amply sufficient. The witnesses are unimpeachable, their skill and veracity are unassailable. Why then, it might be asked, were not these extraordinary occurrences investigated very much more closely since? Why should possibilities of such enormous importance have been left practically unexplored? How is it that the whole civilised world was not convulsed by such astounding occurrences, and why were they not the starting-point of a revolution in all our philosophies?

The answer is not so very difficult to furnish. In the first place, the world is not interested in isolated facts. A fact only becomes of importance when it in some way affects a number of people personally. Now a phenomenon which can only be reproduced under very exceptional conditions, if at all, is not likely to arouse much personal interest. When the world hears of an extraordinary or apparently mira-

culous occurrence, it either smiles in a superior way or politely awaits further confirmation. The amount of such further confirmation required to convince public opinion is in direct proportion to the interests threatened by a general recognition of the occurrences and the conclusions deducible therefrom. The world whose opinion counts in such matters as these is divisible into two camps, those of science and of orthodoxy. Science in 1874 was overwhelmingly materialistic. Anything which threatened the mechanical theory of mind and the supremacy of matter was sure to encounter a violent opposition. According to all scientific theories then in power, the occurrences described in the last chapter were clearly "impossible." True, other things had previously been denounced in that term, but when they could be demonstrated before a Royal Institution audience to any one who chose to attend, they had to be accepted in the end. And this is just what could not be done in the case of "Katie King." It therefore remained a matter of individual conviction for Sir William Crookes and his friends. Less favoured men of science did not see why they should recognise either his superior skill or his better fortune by accepting his facts. These less favoured men were necessarily in an overwhelming majority. They are so even to-day, and thus it has come about that the world of science has not been converted to a recognition of such

phenomena. In reality, Sir William Crookes owed his extraordinary success to a number of auxiliary circumstances. He had an exceptionally gifted medium, a thorough experimental training, a cool judgment, and an infinite tact and patience. This is perceived in all his experiments, and notably in the following, which is quoted from the *Spiritualist* of April 3, 1874 :—

“ I pass on to a *seance* held last night at Hackney. Katie never appeared to greater perfection, and for nearly two hours she walked about the room conversing familiarly with those present. On several occasions she took my arm when walking, and the impression conveyed to my mind that it was a living woman by my side, instead of a visitor from the other world, was so strong, that the temptation to repeat a recent celebrated experiment became almost irresistible.

“ Feeling, however, that if I had not a spirit, I had at all events a *lady* close to me, I asked her permission to clasp her in my arms, so as to be able to verify the interesting observations which a bold experimentalist has recently somewhat verbosely recorded. Permission was graciously given, and I accordingly did—well, as any gentleman would do under the circumstances. Mr. Volekman will be pleased to know that I can corroborate his statement that the ‘ghost’ (not ‘struggling,’ however) was as material a being as Miss Cook herself. But

the sequel shows how wrong it is for an experimentalist, however accurate his observations may be, to venture to draw an important conclusion from an insufficient amount of evidence.

"Katie now said she thought she should be able this time to show herself and Miss Cook together. I was to turn the gas out, and then come with my phosphorus lamp into the room now used as a cabinet. This I did, having previously asked a friend, who was skilful at shorthand, to take down any statement I might make when in the cabinet, knowing the importance attaching to first impressions, and not wishing to leave more to memory than necessary. His notes are now before me.

"I went cautiously into the room, it being dark, and felt about for Miss Cook. I found her crouching on the floor. Kneeling down, I let air enter the lamp, and by its light I saw the young lady, dressed in black velvet, as she had been in the early part of the evening, and to all appearance perfectly senseless. She did not move when I took her hand and held the light close to her face, but continued quietly breathing.

"Raising the lamp, I looked around and saw Katie standing close behind Miss Cook. She was robed in flowing white drapery, as we had seen her previously during the *séance*. Holding one of Miss Cook's hands in mine, and still kneeling, I passed the lamp up and down, so as to illuminate Katie's

whole figure, and satisfy myself thoroughly that I was really looking at the veritable Katie whom I had clasped in my arms a few minutes before, and not at the phantasm of a disordered brain. She did not speak, but moved her head and smiled in recognition. Three separate times did I carefully examine Miss Cook crouching before me, to be sure that the hand I held was that of a living woman, and three separate times did I turn the lamp to Katie and examine her with steadfast scrutiny, until I had no doubt whatever of her objective reality. At last Miss Cook moved slightly, and Katie instantly motioned me to go away. I went to another part of the cabinet, and then ceased to see Katie, but did not leave the room till Miss Cook woke up, and two of the visitors came in with a light."

The ordinary scientific investigator is not at all prepared to treat his "subjects" with anything approaching such chivalrous consideration. He is much more inclined to *brusquer les choses*, and visit all objections with threats of denunciation. It is another instance of the tyranny of the crowd.

On the side of orthodoxy the phenomena were equally unfortunate. Orthodoxy had at that time had so much rough handling from science with its vast array of "facts" that it was very chary of recognising new facts which might conceivably intrude upon its domain. This feeling was enhanced by

the somewhat hasty generalisations of ill-advised spiritualists, who proceeded straightway to found a new religion upon the few supernormal phenomena they had stumbled across. That such phenomena should give rise to a new sect was not surprising, since sects had been established before on a much more doubtful foundation. But this denomination was specially dangerous on account of its semi-scientific character. The phenomena were open to all to investigate, and were extensively investigated. In America, especially, the spread of spiritualism was very rapid, and its present organisation is calculated to number several million adherents. On account of the questionable character of many of its exponents, it has become the fashion for people to preface a declaration of their belief in the phenomena by saying, "I am not a spiritualist." This somewhat pusillanimous attitude is pardonable in people whose public position depends upon the ignorant and prejudiced, but in others it is simply cowardice. Whatever may be said of American spiritualism, in Europe the movement is on the whole clean and wholesome, and associated with an open and wide outlook and a lofty morality. The average spiritualist is not a vulgar spook-hunter, but a man somewhat dazed, perhaps, with the vision of ineffable glories, dimly seen through the veil which hides the Beyond, a man whose faults, if any, arise from the concentration of his attention on the

next world rather than on the cold realities and trickeries and pitfalls of this.

No doubt there are fraudulent pseudo-mediums who carry on an unholy trade, but these are usually exposed by spiritualists themselves. And are we not a little ungrateful to those delicate "instruments of research," those high-strung men and timid women and young girls who have braved the dangers and terrors of the Unknown to extend the bounds of human knowledge? Their reward, instead of being great, has been scanty. Usually it has brought them nothing but suspicion and denunciation. Material rewards are looked upon as direct evidence of fraud, and the poor notoriety is as often a burden as a help. Is it to be wondered at that mediums are rare, or rather, that they decline to come out into the open, to have the innermost secrets of their being exposed to the vulgar curiosity of the public, or the inconsiderate and supercilious scrutiny of the "leading light" of science?

These conditions have not been materially improved since 1874. If anything, they are less favourable, except, perhaps, in Italy. It is therefore not easy to come to a definite conclusion with regard to the proper interpretation of "materialisation" phenomena.

One of the best summaries of facts and conclusions was contributed by W. H. Harrison to the *Spiritualist* of May 1, 1874. It is as follows:—

"SPIRIT FORMS

"During the past two or three years the 'full form' manifestations have been developing in England with considerable rapidity; these important phenomena have been closely watched by us from the first, to the extent of attendance at probably more than a hundred *séances* in all, with different mediums, in whose presence spirit forms are obtained. A useful purpose may therefore be served by occasionally summing up what is known, what is not known, and what it is desirable to know upon this subject.

"PHYSICAL CHARACTERISTICS OF THE SPIRIT FORMS

"Before the manifestation was obtained in England, it was naturally thought that the advent of spirit forms would settle several vexed questions hanging over the subject of spirit identity, but the first result in this respect was disappointment. When we first saw, by the artificial light produced by the spirits, Mr. Williams's Katie King, she had the features of the medium, spiritualised in expression, and paler in colour; when his John King was afterwards seen, he had a large black beard, it was true, but on closely examining his features, as we have several times done in a good light, they were distinctly, to a large extent, the features of Mr. Williams. When Miss Cook's Katie was first seen, she also had

features to a large extent the duplicate of those of the medium. Mr. Allsop, who has seen much of Mr. Hearne's Katie and John King in a good light, testifies also to their features being like those of the medium. Yet the media themselves were not released from the test conditions imposed, and exhibited in the trance by spirits, as they have been frequently held or seen in one place by responsible witnesses, while their duplicate forms, dressed in white drapery, were seen at the same time a few feet distant. Once we sat close by the side of Mr. Williams at a public circle, and had tight hold of his hand and arm, while the massive form of John King, robed in white drapery, was floating high up over the centre of the table; his features were clearly seen by everybody present; they were duplicates of those of Mr. Williams, but paler; his eyes and lips could be seen moving as he talked; the bottom of his bust was inclined towards Mr. Williams, on a level, and a little in front of the natural position of Mr. Williams's head. Mr. Williams, who was held by both hands all through the *seance*, was not visible on this occasion at the same time as John King, the light produced by the spirits illuminating the bust only. Whenever partial forms, such as busts and spirit hands or arms have been produced, we have never seen the end of them next to the medium, the cabinet door, or darkness, or a curtain always cutting off the view. Others may have had different

experience. In the days of early development Miss Cook was not entranced when the manifestations were going on, and she used to complain nervously, from the dark room used as a cabinet, of the unpleasantness of being shut up alone with a 'creature' who was going about with head and arms, but no body or legs. One night recently, while Miss Cook was entranced at Mr. Luxmoore's house, and Katie could only show her head and shoulders, she said that if we could then see her legs they would be found to merge into those of the medium. The effect of entrancement of the medium seems chiefly to be to secure passivity, and to strengthen the manifestations; Miss Cook has seen the materialised full form of Katie only once or twice in her life, and then only for a few seconds, though she often sees her clairvoyantly. Mr. Williams has never seen the materialised full form of John King at all.

"The materialised forms, when felt, are to all intents and purposes just like ordinary human beings. We have never seen an orthodox *shadow* ghost, or part of a shadow ghost, and believe such to be myths so far as normal vision is concerned. A year or more before spirit faces began regularly to show themselves in England, considerable sensation was created by a report in the *Spiritualist* of Mr. Harrison having felt the head of Mr. Hearne's Katie; he felt it all over, and passed his fingers

over her teeth and tongue; these were wet, breath was coming out of the mouth, and the teeth could bite; in short, it was just like a human head, though placed where a human head could by no possibility be.

“As all these things gradually became known, the question of spirit identity was left in as great a fog as ever. These spirits, while materialised, know little or nothing more than the medium, nor do they show more information than a mesmeric sensitive could gain by thought-reading or clairvoyant powers. Are they the spirits of the mediums unconsciously acting a part in a dream, and temporarily clothed afresh with matter? Apparently not, for they are clear headed and sprightly enough; moreover, when the spirit is partly materialised and the medium wide awake, the two will argue or quarrel, or sympathise with each other, and sometimes go to the extent of playfully slapping one another, so that both the material bodies are governed at the same time by intelligence. We have never heard a ‘voice’ or ‘full form’ medium, and the attendant spirit speak at the same time. Sometimes they will speak in very quick succession, and enthusiastic witnesses have remarked—‘There! did you hear them speaking together?’ But after attending some hundreds of voice *séances* we never have heard them speaking together. The spirits say that they draw their power to speak chiefly from

the lungs of the medium, and partly from the lungs of some of the sitters in the circle; we have known the voices of sitters at a circle to be partially weakened by the *séance*, though they have said little or nothing during the sitting; in one instance a clerical gentleman present could only speak in a whisper for two or three days afterwards. Some years ago at Mrs. Mary Marshall's celebrated *séances* at 13 Bristol Gardens, Paddington, we frequently heard John King, and the spirit calling himself Roger Bacon speaking at the same time, but not at the same time as the medium; whether both these spirits were simultaneously drawing voice power from her, or whether one was drawing power from Mr. Marshall, or some other medium present, we do not know.

"The spirit forms themselves, and their various parts, differ considerably in dimensions at different sittings with the same mediums, and when the faces alone instead of the full forms were shown, these variations were far more marked, perhaps because the spirits could concentrate more power upon a smaller surface. To disarm premature criticisms of casual witnesses at bad *séances*, and to avoid the charge of exaggerating, we used to publish that the heads were merely duplicates of that of the medium. The consequence was that one evening at Miss Cook's, when the correspondent of the *Daily Telegraph* and two celebrated photo-

graphers were present, and Katie came up with a bony cadaverous-looking head, half as big again as the head of Miss Cook, though bearing points of resemblance to it, the observers were startled, and said that it was not fair to the medium to publish that there was great similarity in the features. At other *séances* also, on no better foundation than one evening's experience, the opposite fault would be found, and complaints made that statements were published that there was any difference at all. The self-confidence of many of the witnesses, and their perfect satisfaction that what they saw in one visit, and the inferences which they drew in addition, settled the whole question, and outweighed altogether the knowledge and opinions of those who had had months of experience was remarkable, and was as interesting a study almost as the spirit forms themselves. The more intelligent and reliable the witness, the less hasty were the conclusions, and the less self-confident was the individual. Some had the profound conviction that if they saw such and such a test and published it (which they were perfectly ready to do if they could get it), then everybody would believe. There was never a more fatal error. These full form manifestations would never be accepted by the public on the testimony of any one man, and many of those who candidly and modestly enough expressed the opinion that their verdict

would settle everything, were generally those whose fiat would exercise little or no influence at all. Without knowing it, the sitters at *séances* are often passing through as severe a series of moral tests as the medium.

" MENTAL CHARACTERISTICS OF THE SPIRIT FORMS

"Seeing that these material forms gave little evidence of the personal identity of departed spirits, the next question was, 'What are their mental characteristics?' Nearly as much those of the mediums as the physical features, and there are those who have expressed the opinion that the lower mental characteristics of the medium, such as love of flattery, egotism, and so on, are chiefly duplicated in the forms. Although much may be cited in favour of this view, we think that the facts are due chiefly to the flattery and deference frequently expressed by the sitters present; we have sometimes heard high and good teachings given through these forms, when the tone of the circle has been such as to demand the same, though sometimes the utterances have been lower than the average level or desires of the circles. Taking the physical manifestations all the way through, their mental and moral character is decidedly much lower than the average character of spirit messages given through trance and clairvoyant mediums.

"SPIRIT IDENTITY IN CONNECTION WITH FULL
FORM MANIFESTATIONS

"We do not know that any of these voice spirits—any of the John Kings, John Watts, Jack Todds, Peters, Florences, or Katies—have satisfactorily proved their identity; perhaps nobody has taken sufficient pains to search out old documents to verify their statements. The answers they give when questioned on the point of identity are much those which the medium might give when speculating as to who or what the spirit might be. We have some reason to suppose that although at the various *séances* with the same medium, the spirit face or form is physically nearly the same, *the intelligence governing the form is sometimes an entirely different one.* After the recent outrage at Miss Cook's, the medium was very ill for several weeks; bad spirits sometimes controlled her; one of them spoke roughly, demanded brandy, said what circle he habitually frequented, and made her get out of bed and sleep on the cold floor one cold night. The touch of her mother, or of some other member of the family, would sometimes drive off these influences, and she would wake with a haggard look, as if from an uneasy dream. A few full-form *séances* were held during the first week or two afterwards, at which the Katie form appeared, but at later *séances* the intelligence governing what was

to all appearance the same form, said that she knew nothing about the previous *séances*, and that another spirit had been personating her. If the intelligence behind these forms changes often, it explains why Mr. Williams's John King sometimes shows accurate knowledge of events which once took place at Mrs. Marshall's *séances*, but usually knows nothing about them. It will account for Mrs. Perrin's John King once being able at Mrs. Berry's, when we were present, to describe in minute detail to Mr. Peebles a boisterous *séance* Mr. Peebles had had years ago with a John King in America. It will account, also, for these voice spirits saying and doing good things at one time and bad ones at another. The interests and thoughts of the mediums and these spirits are very closely allied, and we know that if the mediums firmly resolve to do wrong, the spirits will not only help them, but adopt subterfuges to attempt to screen them from the consequences of their misdeeds. Sometimes, again, they will strongly warn the medium against doing wrong; if the medium persist, it may be that the higher spirit is then obliged to go, and a lower one, but with the same physical voice and external characteristics, takes its place.

"SENSATIONS OF THE MEDIUM DURING THE
SÉANCES

"Mr. Williams is in a dead trance all through the *séances*, and remembers nothing when he wakes up. It is usually the same with Miss Cook, but sometimes she has a dreamy recollection of having seen the sitters in the circle. Katie says that this is because she (Katie) not only uses matter from the body of the medium, but some of the thoughts and brain of the medium in manifesting, and that if she does not put these back properly, Miss Cook, on waking, finds some of Katie's recollections feebly mingling with her own. The day after the outrage at the circle, Mr. Charles Blackburn called on Miss Cook, and asked her what were her first sensations on coming to afterwards, and he thoughtfully wrote down and sent us her replies. She said she felt as if her brain were on fire, and it was this pain which caused her to give the succession of shrieks; then she thought, 'I hope they have not hurt my Katie!' This would seem to have been reflex mental action, originating in a thought of Katie's, 'I hope they have not hurt my medium.'

"As it is absolutely certain, and scientifically demonstrated, that in these physical manifestations there are two living forms, one inside and one outside the cabinet, it is plain that if a person breaks faith and seizes one of them, the two must amalga-

mate, for it is not conceivable that a human being should be created by the act, and a Katie King brought down or up to live permanently in this world. Therefore, it is also not conceivable that those two forms could be violently and unexpectedly brought together, without killing or seriously injuring the medium. The spirits say that, when fully formed, they are of full weight, half of their weight being taken from members of the circle, and that the medium is half weight, a point which Mr. Crookes might do much good by determining by experiment. If the statement be reliable, it would seem more natural that the half weight should fly to the seized full weight than the reverse, but Katie asserts that she would have melted away from the legs upwards, and the medium been found dead in the cabinet. Whether this is reliable, or whether the deep conviction of the medium governed the utterance of the spirit, we have no means of knowing. Mr. Dunphy and Mr. Bielfield, who were quietly sitting where they could see the back of the form when it was seized, agree in stating that it appeared to begin to go about the legs, but the moment was an exciting one, so that perhaps the observation should for the present be considered to establish a point of possibility rather than of actuality.

"THE DRAPERY OF THE FORMS

"Where does the white drapery come from? In the case of Miss Cook's Katie it is always as white as snow, and the dress varies in shape nearly every evening. It feels material enough. Once she cut a piece off, which she said she had materialised so that it would keep. Miss Douglas took it to Messrs. Howell and James's, and asked them to match it; they said that they could not, and that they believed it to be of Chinese manufacture. Spirits can carry solid things from place to place hundreds of miles apart, as Baron Kirkup has proved over and over again. All the attempts of those who have had experience with different mediums to pierce the mystery of the source whence the drapery comes, are conflicting in their results, and we are unable to give an approximately satisfactory answer or speculation on the point. We can give evidence that in the case of the Davenport Brothers, Mr. Williams, Miss Cook, and Mr. Hearne, the spirits have the power either of duplicating the dress proper of the medium, or of not doing so, as they please.

"A PROVISIONAL HYPOTHESIS TO COVER THE FACTS

"Our general hypothesis of the whole matter is that the manifestations are not produced by the temporarily (wholly or partially) freed spirit of the

medium, but by an independent spirit, who by the mesmeric exercise of will power, and by other methods unknown, can subdue and get control of much of the brain and body and clothes of the medium, and come out and show itself limited in thought, and word, and deed, by these elements which it has again abnormally borrowed from the material world. A strong bond of self-interest unites the spirit and the medium; they appear to share each other's spiritual, mental, and physical pleasures, just as in a lesser degree the fact has been noticed in mesmerism, that the sensitive and the mesmeriser often experience each other's sensations. Perhaps an earth-bound spirit may thus live a partial earth-life over again, through a medium in sympathy with its tastes and pleasures, and sometimes possibly both medium and spirit may be raised or degraded together, by the example or teachings of the mortals around."

We see, then, that in 1874 the question of the independent personality of the "spirit form" could not be satisfactorily decided on the evidence then available. Since that date, materialised forms have been recorded a good deal, but not so fully nor with the same care. Hands and faces are fairly common, though they are usually produced only in the dark, and are therefore less valuable evidentially.

For our purposes (*i.e.* for shedding some new light on the question of immortality) it is not of

fundamental importance whether "Katie King" was a "double" or replica of Florence Cook, or an independent entity manifesting her presence temporarily on earth with the help of material borrowed partly from the medium. The importance of the records lies in the fact that a fully formed human organism could be manifested and apparently "created" in a few minutes, and could disappear as rapidly.

According to our psychophysical theory, this occurrence would take place as follows. We shall distinguish the two alternatives.

(a) "*Katie King*" an *Independent Entity*.—She must then be regarded as inhabiting the atmosphere ordinarily. Finding her medium suitably disposed, she "enters" the medium's body, diffusing her "psychomeres" through it until they fill up its outline. This act places her in touch with mundane conditions. The psychomeres then temporarily take up (or resume?) their mundane function of collecting and arranging the best material available for the formation of the human cell-body. This is most readily abstracted from the medium, but such abstraction must have its limits, imposed by the requirements of the medium's organism, which will naturally resist any excessive drain. The remaining material is then probably abstracted from the other sitters. This mingling of parts of the physical organisms of the sitters accounts for the necessity of a certain minimum of "harmony" in the circle.

The visiting entity is thus provided with a temporary body. Her mind is her own, but it will of course be strongly influenced by the surroundings. The bodily resemblance to the medium will be paralleled by a mental kinship. The visitor will naturally fall in with the language, dialect, and prevailing tone of the assembly. The object of the visit being, so to speak, a social one, everything will be designed accordingly. The conventions or prejudices of the company will be respected. Their ideas will be largely shared. The independence of the "spirit" will be bounded on all sides by the expectations and views of the company, and any irregularity will be promptly checked by the imperative necessity for the harmony of the circle. Hence the "cockney accent," the "triviality," the clothes, the commonplace accomplishments of the visitor, which have so often been ridiculed in this connection.

(b) "*Katie King*" a "double" of *Florence Cook*.—If the "spirit form" is a replica of the medium, it must be regarded either as an externalisation of the medium's own soul, or as a temporary fission of the medium's bodily and psychic personality. The former alternative is suggested by Richet's and other observations of cases of double or multiple personality. There are well-established cases of two distinct psychic personalities alternately inhabiting the same body, but if we accept the spirit

hypothesis in that connection we simply reduce our case *b* to case *a*, and in view of the material hitherto studied, there is very little to say against our doing so.¹

A fission of the medium's soul must not be regarded as *a priori* inadmissible, in view of the known prevalence of fission in the lower organisms. That the two entities thus produced are seemingly independent, and sometimes even in incipient opposition, must not surprise us when we recall the clear antagonism sometimes observed between parents and children. The materialisation process would be, on this view, a kind of birth, in which, however, rapidity takes the place of permanence, and the whole process is reversible!

It is this last characteristic which makes it so difficult to find a parallel in ordinary biological processes. Moreover, there appears to be no evidence of a gradual growth or waning in mental equipment. "Katie King" is as lively and talkative when she has "no legs to stand on" as when she is in full form. It will probably be found here also, as in many other departments of kindred inquiry, that the "spirit hypothesis" is the simplest, and involves the minimum of risky assumptions.

¹ The only objection is based on cases where the two personalities have eventually become fused into one (see the Hanna case in Sidis and Goodhart's "Multiple Personality"). But such fusion of souls is not more difficult to conceive than the division of a soul into two parts, as in protozoic fission.

We, to whom the survival of the soul-body is a reasonable solution of the problem of immortality, cannot find any difficulty in conceiving that a fair proportion of souls may, for various reasons, desire a short spell of human intercourse. The air must be full of them, and although such intercourse is not normal, and may possibly not be altogether desirable, we, who see in our city-life so much undoubted suffering and evil, cannot afford to close the door against anything that offers the slightest prospect of increasing our knowledge of the essential conditions of life, and thus holds out a new hope to the sufferers.

The mechanism of materialisation offers a number of difficult problems for further investigation. Even granting that the psychomeres of a departed spirit can resume their directive functions, it is difficult to see how they can, in a few minutes, produce such comparatively permanent structures as bones and teeth. Yet it must be remembered that the process is simply an acceleration of what we see every day in the growth of infants. The drapery offers a problem of a different kind, though the power that can produce the infinitely complex human organism must find it mere child's play to construct something as coarse as even the finest muslin is in comparison with human tissues. Drapery is usually produced in great abundance.¹

¹ See Mme. d'Espérance's "Shadowland."

If we adopt some such hypothesis as is here sketched out, what shall we say to the attempts to "expose" mediums by seizing or intercepting the materialised forms? To take a rather obvious human parallel, it is an act about as brutal as that of violently tearing a sucking babe off the mother's breast, except that in the medium's case the connection is probably much more intimate. If, however, it could be successfully and completely accomplished, this is what we might expect as the result: the medium would be found to be very much emaciated, weighing, in fact, about half the normal weight. The materialised form, having lost touch with its sustainer, would collapse in a structureless heap and then dissolve into vapour. The medium, if not seriously injured or killed, would take a long time to recover, and the more susceptible sitters might participate in the damage inflicted.

As matters stand, the alleged "exposures" of honest mediums have usually been rendered harmless by the prompt recombination of the two forms. The drapery, being usually the last to disappear, has often been found on the mediums, and thus has given very convincing *prima facie* "evidence" of trickery! This explanation does not, of course, dispose of the few duly authenticated cases of the real exposure of fraudulent mediums. In any case, it is only fair to ask that the evidence of such exposures should be as carefully and impartially

sifted as the evidence in favour of the genuine phenomena, instead of being, as it usually is, accepted without the slightest show of criticism.

A careful study of these most important materialisation phenomena is bound to shed valuable light on physiology and pathology. But enough has been said to make it clear that the phenomena are not only rare, but risky. They should be studied only by duly qualified persons, and then not in the spirit of a kind of psychic vivisection, but with scrupulous regard to the physical, mental, and moral health of the exceptionally endowed being through whom the phenomena are obtained.

CHAPTER IV

SUPERNORMAL PHYSICAL PHENOMENA

THE phenomena of raps and table-tilting were investigated in the years 1869–1871, twenty years after they had first attracted attention in America, by a committee appointed by the London Dialectical Society, under the presidency of the late Sir John Lubbock, Bart., M.P.¹ They reported, among other things :—

“ 1. That sounds of a very varied character, apparently proceeding from articles of furniture, the floor and walls of the room—the vibrations accompanying which sounds are often distinctly perceptible to the touch—occur, without being produced by muscular action or mechanical contrivance.

“ 2. That movements of heavy bodies take place without mechanical contrivance of any kind, or adequate exertion of muscular force by those present, and frequently without contact or connection with any person.

“ 3. That these sounds and movements often occur at the time and in the manner asked for by

¹ See the *Report of the Committee of the Dialectical Society*, published by Longmans, Green & Co.

persons present, and by means of a simple code of signals, answer questions and spell out coherent communications."

One of the sub-committees of the Dialectical Society reported:—

"Your committee studiously avoided the employment of professional or paid mediums. All were members of the committee, persons of social position, of unimpeachable integrity, with no pecuniary object, having nothing to gain by deception, and everything to lose by detection of imposture."

In another part of the report the same committee stated:—

"After a committee of eleven persons had been sitting round a dining-table for forty minutes, and various motions and sounds had occurred, the chairs were turned with *their backs to the table*, at about nine inches from it. All present then knelt upon their chairs, placing their arms upon the backs of the chairs. In this position the feet were of course turned away from the table, and by no possibility could be placed under it or touch the floor. The hands were extended over the table at about four inches from the surface.

"In this position, contact with any part of the table was physically impossible.

"In less than a minute the table, untouched, moved *four* times; at first about *five* inches to one

side, then about *twelve* inches to the opposite side, then about four inches, and then about six inches.

"The hands were next placed on the backs of the chairs and about a foot from the table. In this position, the table again moved *four* times, over spaces varying from four to six inches. Then all the chairs were removed twelve inches from the table. All knelt as before. Each person folded his hands behind his back, his body being about eighteen inches from the table, and having the back of the chair between himself and the table. In this position the table again moved four times, in like manner as before. In the course of this conclusive experiment, and in less than half-an-hour, the table moved, without contact or possibility of contact with any person present, *twelve* times, the movements being in different directions, and some according to the request of different persons present.

"The table was then carefully examined, turned upside down, and taken to pieces, but nothing was discovered. The experiment was conducted throughout in the full light of gas above the table.

"Altogether your committee have witnessed upwards of fifty similar motions without contact on eight different evenings, in the houses of different members of your committee, and with the application of the most careful tests their collective intelligence could devise."

These phenomena have been observed with special care by Dr. J. Maxwell of Bordeaux.¹ As regards the conditions under which they may be obtained, these are well described from the point of view of the spirit hypothesis in the following instructions, quoted from the *Spiritualist* :—

“HOW TO FORM SPIRIT CIRCLES

“An experimental trial at home, among family friends and relatives, often gives the most satisfactory evidence of the reality of spiritual phenomena, and this is the best way for inquirers to begin. At the same time, as no fully developed medium is present among those who have never obtained manifestations before, possibly there may be no results. Nevertheless, it is a very common thing for striking manifestations to be obtained in this way at the first sitting of a family circle; perhaps for every successful new circle thus started without a medium, there are three or four failures, but no accurate statistics on this point have yet been collected. Consequently, to save time, investigators should do as the Dialectical Society did, form several new circles, with no spiritualist or professional medium present, and at one or other of them results will probably be obtained. When once manifesta-

¹ See his “Metapsychical Phenomena,” translated by Laura I. Finch. Duckworth, London, 1905.

tions have been obtained they will gradually increase in power and reliability at successive sittings. The following is a good plan of action:—

“ 1. Let the room be of a comfortable temperature, but cool rather than warm—let arrangements be made that nobody shall enter it, and that there shall be no interruption for one hour during the sitting of the circle.

“ 2. Let the circle consist of four, five, or six individuals, about the same number of each sex. Sit round an uncovered wooden table, with all the palms of the hands in contact with its top surface. Whether the hands touch each other or not is usually of no importance. Any table will do, just large enough to conveniently accommodate the sitters. The removal of a hand from the table for a few seconds does no harm, but when one of the sitters breaks the circle by leaving the table it sometimes, but not always, very considerably delays the manifestations.

“ 3. Before the sitting begins, place some pointed lead-pencils and some sheets of clean writing paper on the table, to write down any communications that may be obtained.

“ 4. People who do not like each other should not sit in the same circle, for such a want of harmony tends to prevent manifestations, except with well-developed physical mediums: it is not yet known why. Belief or unbelief has no influence

on the manifestations, but an acrid feeling against them is a weakening influence.

"5. Before the manifestations begin, it is well to engage in general conversation or in singing, and it is best that neither should be of a frivolous nature. A prayerful, earnest feeling among the members of the circle gives the higher spirits more power to come to the circle, and makes it more difficult for the lower spirits to get near.

"6. The first symptom of the invisible power at work is often a feeling like a cool wind sweeping over the hands. The first manifestations will probably be table-tiltings or raps.

"7. When motions of the table or sounds are produced freely, to avoid confusion, let one person only speak, and talk to the table as to an intelligent being. Let him tell the table that three tilts or raps mean 'Yes,' one means 'No,' and two mean 'Doubtful,' and ask whether the arrangement is understood. If three signals be given in answer, then say, 'If I speak the letters of the alphabet slowly, will you signal every time I come to the letter you want, and spell us out a message?' Should three signals be given, set to work on the plan proposed, and from this time an intelligent system of communication is established.

"8. Afterwards the question should be put, 'Are we sitting in the right order to get the best manifestations?' Probably some members of the circle will

then be told to change seats with each other, and the signals will be afterwards strengthened. Next ask, 'Who is the medium?' When spirits come asserting themselves to be related or known to anybody present, well-chosen questions should be put to test the accuracy of the statements, as spirits out of the body have all the virtues and all the failings of spirits in the body.

"9. A powerful physical medium is usually a person of an impulsive, affectionate, and genial nature, and very sensitive to mesmeric influences. The majority of media are ladies.

"The best manifestations are obtained when the medium and all the members of the circle are strongly bound together by the affections, and are thoroughly comfortable and happy; the manifestations are born of the spirit, and shrink somewhat from the lower mental influences of the earth. Family circles, with no strangers present, are usually the best.

"Possibly at the first sitting of a circle symptoms of other forms of mediumship than tilts or raps may make their appearance."

As regards "raps," Maxwell¹ says:—

"They manifest themselves as the expression of a will distinct from those of the observers. Such is the *appearance* of the phenomenon. A curious

¹ "Metapsychical Phenomena," p. 83.

fact is the result—not only do the raps reveal themselves as the productions of intelligent action, they also manifest intelligence in response to any particular rhythm or code which might be demanded.

“Often the different raps reply to one another; and one of the most interesting experiences one can have is to hear these raps clear and resonant, or soft and muffled, sounding simultaneously on the floor, table, furniture, &c.

“I have had exceptionally good opportunities of studying very closely this curious phenomenon of raps, and I think I have arrived at some conclusions. The first and most certain is their undoubtedly close connection with the muscular movements of the sitters. I may sum up my observations on this point in the three following propositions:—

“1. All muscular movements, however slight, are generally followed by a rap.

“2. The intensity of the raps does not strike me as being in proportion to the movement made.

“3. The intensity of the raps does not seem to me to vary proportionately according to their distance from the medium.”

The synchronism of raps with slight muscular movements of the medium (which themselves may be supernormal in origin) misled a Cambridge committee into declaring that the raps were all *produced* by the medium (Eusapia Paladino). Sir William

Crookes obtained raps in great variety,¹ both with Mr. D. D. Home and with Miss Kate Fox.² Their tonality varied within a wide range. They resembled pin-pricks, sparks from an induction coil, detonations, metallic taps, scratching, percussion, or even the twittering of birds. Almost always they have a vibratory character, like a quickly damped oscillation. Crookes observed them on the trunk of a tree, in a pane of glass, in an iron wire, a tambourine, the roof of a cab, the floor of a theatre, and a sheet of paper suspended in the air.

Crookes classifies the supernormal phenomena observed by him under thirteen different heads, as follows :—

1. Movement of heavy bodies with contact, but without mechanical exertion.
2. Percussive and other allied sounds.
3. Alteration of weight.
4. Movement of heavy substances at a distance.
5. Levitations.
6. Levitation of human beings.
7. Movement of small articles without contact.
8. Luminous appearances.

¹ See his "Researches in the Phenomena of Spiritualism," reprinted from the *Quarterly Journal of Science* by James Burns, 1874.

² Miss Fox and her sister are said to have "confessed" at a later date that they produced the raps by the snapping of their joints! Such "confession" ought to be received with the same amount of philosophic doubt as the records of the phenomena themselves. It is a matter of comparative credibility of witnesses.

9. Appearance of hands, either self-luminous, or visible by ordinary light.

10. Direct writing.

11. Phantom forms and faces.

12. Direct evidence of external intelligence.

13. Miscellaneous, including *apports* of objects and their passage through apparently impassable obstacles.¹

To any one who carefully studies the accounts of the phenomena impartially, who confronts Faraday, Carpenter, Tyndall, and Podmore on the one hand with Crookes, Wallace, Varley, Myers, Lodge, Barrett, Richet, Hare, and Lombroso on the other, the conclusion in favour of the objective and *bond-fide* character of these supernormal occurrences is irresistible. It is quite a different matter when we endeavour to explain them in terms of better known phenomena. We are taken so far out of reach of known forces and forms of energy that the first feeling is one of utter bewilderment. Yet this attitude is not a permanent one to anybody endowed with the true scientific spirit, to whom new phenomena are simply a challenge and an incentive to discover their laws. It is here that the average spiritualist's attitude falls short of the exigencies of

¹ For fuller accounts of these and kindred phenomena see "Miracles and Modern Spiritualism," by Sir Alfred Russell Wallace; Nichols & Co., London, 1901. A hostile account is given by F. Podmore in his "History of Modern Spiritualism" (Methuen, London, 1902).

the situation. He is bewildered and dumbfounded, and expects all other beholders to be the same. He "falls down and worships" heedless of the danger that the object of such worship might be unworthy of so much honour. He simply believes that "the spirits can do anything," and regards the wonderful manifestations referred to as so much evidence of their all but unlimited arbitrary power.

An attitude like this (from which, however, many eminent spiritualists have been free) is not likely to commend itself to the scientifically trained mind. The very *raison d'être* of science is to find out the laws underlying *all* phenomena, however marvellous or extraordinary. If any department of new phenomena should become known which were above the law, and "miraculous" in the usual acceptance of the term, science would have to abdicate. It is therefore bound to deny the possibility of true "miracles," and to search for the causes of all inexplicable events.

This attitude is considerably strengthened by the second article of scientific faith which we have consistently advocated in this book: *That man is supreme in his own world.* Here on the surface of the earth man is in command. His organs and faculties are best adapted to deal with the situation actually confronting him. *He cannot count upon any supernatural help.* He has absolute powers within his own sphere. Whatever improvements can be made in his lot must be made by himself. Whatever

further powers he wants to exert must be evolved from within. This, it will be objected, is insubordination to the higher Power of the universe. It is no such thing. That Power is within us also—

Τοῦ γὰρ καὶ γένος ἐσμέν,

and we hold in our hands a signed blank cheque on the Universal Bank.

If the soul-world makes incursions into our world, it does so because it is akin to ours. But it is less in touch with the actual conditions of terrene life than we are, and we must not expect the intercourse to be of any "practical utility." We must receive the visitors somewhat as a European monarch receives the Ambassador of the United States, a community which has absorbed many of his former subjects. The difference is that we *all* must emigrate by-and-by into the new territory, and that the conditions are more different than they are in crossing the Atlantic.

It is quite conceivable that denizens of the soul-world, kept within our sphere of influence either by natural affection or by the delight in old conditions and surroundings, may make special efforts to master the conditions under which communication becomes possible. What these conditions are we can only surmise. On our new theory, materialisation appears to be more explicable than the

much more frequent and apparently simple physical phenomena.

But we are driven to the conclusion that, just as organisms may be temporarily formed and perform the ordinary acts of social intercourse, so simpler effects may be brought about by accumulating energy at some point outside the bodies of the sitters. The tenuous soul-body with which we have been led to endow our departed friends would not ordinarily be able to produce any visible, audible, or tangible effect, but if it reduced its bulk to a small fraction of its ordinary size it would be able to exert considerable force. Thus, to put it into figures, a gaseous soul-body, reduced in linear size to one-half its former dimensions, would exert a pressure of about 100 lbs. per square inch, which would amply suffice to produce the most violent levitations and disturbances hitherto observed. Crookes says ("Researches," p. 89): "On five separate occasions, a heavy dining-table rose between a few inches and $1\frac{1}{2}$ feet off the floor, under special circumstances, which rendered tricking impossible."

And further: "On one occasion I witnessed a chair, with a lady sitting on it, rise several inches from the ground. On another occasion the lady knelt on the chair in such manner that the four feet were visible to us. It then rose about three inches, remained suspended for about ten seconds,

and then slowly descended. There are at least 100 recorded instances of Mr. Home's rising from the ground, in the presence of as many separate persons."

Such happenings as these require the expenditure of a certain amount of energy. This may be (and no doubt often is) derived from the sitters, but another possible source of supply is the natural heat of the air, which might be extracted by a process analogous to that practised by Maxwell's famous "demon." In this connection a remark by Crookes ("Researches," p. 86) is significant:—

"These movements (and indeed I may say the same of every kind of phenomenon) are generally preceded by a peculiar cold air, sometimes amounting to a decided wind. I have had sheets of paper blown about by it, and a thermometer lowered several degrees. On some occasions, which I will subsequently give more in detail, I have not detected any actual movement of the air, but the cold has been so intense that I could only compare it to that felt when the hand has been within a few inches of frozen mercury."

It is easily imagined why the meeting of a number of people under agreeable social surroundings should be particularly favourable to such phenomena. There is then a vivid interchange of thought and emotion, a certain amount of "extrenalisation" of the soul which is no doubt pro-

vocative of a number of phenomena in which such externalisation assumes extreme forms. Besides, such communion brings the higher link (or "knot") which links up the community into play, and probably has the power of attracting other intelligences of a similar character.

In this connection it is well to say a word about the "demon" theory—a favourite one with clerical opponents of spiritualism. According to them, all the phenomena (whose reality they unhesitatingly admit) are produced by "devils" or even by the Arch-Demon himself! This is hardly the place in which to refute medieval superstitions, and we cannot judge the phenomena on such *a priori* grounds, especially as our point of view has all along been scientific rather than theological. We can only make inductions from the facts as we find them. These may be summarised as follows:—

1. The communicating "spirits" are invariably of the order of development of the average of the sitters.
2. They observe the social conventions of the circle.
3. The communicating intelligences only operate temporarily, and as if with some hesitation and difficulty due to the unaccustomed element.
4. The harm resulting from such communications has been practically *nil*, and the risks are much smaller than in any research promising equally important results.

5. Any "insanity" traceable to spiritism is negligible in comparison with, say, the cases of religious mania.

6. If there is any "devil" in the circle, he is most likely identical with one of the sitters.

It is quite possible that the majority of intelligences who are given to communicate in this manner are no higher than the average human being, neither devil nor angel, but glad to exert some activity redolent of earth-life. There is no reason why the investigator should not always be in full command of the situation. In fact, the probabilities are that the disappearance of many supernormal phenomena before the advance of civilisation is not due to the spread of "enlightenment" and the discrediting of myths, *but to the gradual prevailing of the organised will of the civilised community, which has not much use for supernormal phenomena, and eventually succeeds in banishing them from its fields.*

CHAPTER V

PROOFS OF SURVIVAL

WHAT observations or happenings would be regarded as satisfactory proofs of the survival of physical death?

The question is much more difficult to answer than it appears at first sight, but it can be approached in several different ways.

Even during ordinary earth-life the question of survival is sometimes fraught with almost insuperable difficulties. Only a mother can, as a rule, say whether a baby, not seen since it was a year old, has survived in a young person of eighteen. And even then the proof of identity is usually some peculiar formation or birthmark, in the absence of which identification becomes impossible.

We are often quite unable to recognise a school-fellow whom we have not seen for twenty years, and when we do, we rely more on mental than on physical characteristics. We exchange reminiscences, and probe each other's memories. If we could, at will, throw ourselves into the physical shapes we had at any previous period of our lives, identification might be considerably facilitated. But the physical

organism is often misleading. Clothes are a help sometimes. But these can be put on as a disguise. There may be a striking likeness, and yet it may be quite deceptive. And even if it is identically the same physical organism that is before us, the individuality in possession of it may not be the person we are looking for. There may be a duplex personality, there may be possession or "control."

We rely more upon reminiscences and mental characteristics simply because they are more varied than physical characteristics, and less likely to be unexpectedly duplicated. A man shows nearly the same face every day, but his conversation varies somewhat with every change of company, and the chances of a coincidence—of the repetition of the identical mental exchange—are very remote. Our ultimate test of identity must therefore always be an appeal to some community of memory, some event in which both our minds have participated.

When we admit the possibility of telepathy or thought-transference, the proof of identity becomes exceedingly difficult. If I met a person whom I believed to be a long-lost friend, and asked him, as a test question, whether he remembered the name of a boat in which we used to sail on the lake, he might give the name correctly, but that might first have reached his mind by thought-transference from my own. If he mentioned facts of which I was unaware, and these proved afterwards to be true,

he might have obtained these by thought-transference or clairvoyance or some such abnormal process.

In spite of all these difficulties, questions of identity are usually solved satisfactorily in some way or other.

In establishing the identity of a departed spirit, exactly the same difficulties occur, and exactly the same criteria are used. And finally, we may add that *exactly the same kind of evidence is obtained*. We may deal with the two classes of evidence separately.

1. *Bodily*.—Recognisable drawings, photographs, and phantasms of departed individuals have been obtained again and again. More frequently even, they have been described clairvoyantly. A well-authenticated case of the recognition of a materialised form is quoted in *Light* for August 17, 1907:—

“A RECOGNISED MATERIALISATION

“There are three methods of conducting psychical research which may be taken as typical of various schools of investigators; one of these was recently illustrated by Professor Morselli when he said, after a series of sittings with a single medium of great power, though limited range: ‘When I see that an A. R. Wallace and a Barrett are Spiritists, and that a Hyslop has become one through Mrs. Piper, then

I stop and meditate, and withdraw into the restricted, but positive, circle of *my own* observations, of *my own experience*.' Another method is that of the psychical researchers who raise all kinds of objections which the actual witnesses never thought of meeting in advance, simply because under the circumstances they were manifestly absurd or inapplicable; and the third is that of the patient critic who laboriously sifts the documentary evidence in order to find what circumstances are placed beyond doubt by the unanimous testimony of the observers. A record of this last kind, the result of an investigation by the late Alexander Aksakoff into a remarkable case of materialisation, has just come into our hands, and as no mention of it appears to have been made in *Light* at the time, we give a summary of the chief facts. The account is reprinted from *Psychische Studien* for March to May 1897.

"A lady living in Cologne, Madame Antonie von Bille-Dahl, was told by a medium there that her husband, whom she had lost twenty-one years before, would be able to manifest to her if she could obtain a sitting with Madame d'Espérance at Gothenburg. This sitting took place on November 25, 1895, at the house of Mr. Matthews Fidler, nearly twenty persons being present, among whom were Baroness Peyron, of Stockholm, Kammerherr von Krogh, of Copenhagen, and Herr Otto Ericsson,

all of whom add their written testimony to those of Madame von Bille-Dahl and of the medium herself. From a remark made by M. Aksakoff it would appear that this was probably the last sitting for materialisation ever given by Madame d'Espérance. We summarise the various reports.

"The séance-room was the one ordinarily used in Mr. Fidler's house, having a pane of ground glass through which light came from another room. The cabinet was formed of a folding screen with curtains hung across the front. The medium, who wore a white dress, could be plainly seen against the dark background as she sat in front of the cabinet. Very soon a table, which had been placed in the cabinet, was moved out into the room. Then a luminous appearance to the right of the medium gradually formed itself into a human figure. The sitters who saw the face outlined against the light afterwards described the features to Madame von Bille-Dahl, and she recognised the description as that of her deceased husband. The form was not able to go to Madame von Bille-Dahl, and it was heard to call 'Toni.' Madame d'Espérance and Mr. Fidler asked if there was any one present named 'Toni,' and Madame von Bille-Dahl responded and went up to the figure, which withdrew into the cabinet until it was half hidden by the curtains. Owing to failure of power, the face had by this time become formless and unrecognisable,

and was covered with spirit drapery, which had not been the case when it was first seen. The hands remained perfectly materialised, and were characteristic of the lady's husband; these hands embraced and caressed her, as her husband used to do, and made the motion of kissing her at parting.

"Madame d'Espérance, feeling as though she was being emptied of force, or melting away like a snow-figure in the sun, almost losing her hold on life, made a great effort and called out, 'Take her away!' At the same moment the form disappeared entirely; Madame von Bille-Dahl searched all round the cabinet with her arms, but could find nothing; then Mr. Fidler led her back to her place. Some other good phenomena followed at the same sitting.

"M. Aksakoff observes that the most remarkable points are: (1) that the sitting was the result of an appointment made by the spirit of the deceased through another medium; (2) the form appeared at first with uncovered head, and features sharply defined; (3) it became less definite after endeavouring to reach the sitter for whom it came, and had to retire and cover its head with the usual spirit-veiling; (4) the hands were still distinctly recognisable; (5) the medium felt so exhausted that she had to call out, and after the form had completely disappeared she recovered strength. M. Aksakoff remarks that he had several times urged that

Madame d'Espérance should speak while a materialised form was visible, but the production of the phenomenon exhausted her so completely that she could not speak; in this case, however, with a great effort, she managed to call out; (6) the complete and sudden disappearance of the materialised form; Madame von Bille-Dahl, standing in the opening of the cabinet, searched it with her arms and could find no trace of any person or form. Though she did not see the features, which were described to her by others, Madame von Bille-Dahl was able to recognise her husband by the name by which he called her, by the hands, and by his manner of caressing her. She was a complete stranger to all present, and though she had signed her name 'Antonie' when writing for an appointment, she had said nothing about the pet name by which her husband had called her, and it was not at once recognised as applying to her. M. Aksakoff regarded this case as very striking, both as regards the objective reality of the appearance and the evidence of identity."

Some cases of the recognition of complete forms are described in Madame d'Espérance's autobiographical work, "Shadowland."

But bodily resemblance is really no more evidential in the case of departed friends than it is in the case of living mortals. The real tests must always be mental rather than physical.

2. *Mental*.—Many attempts to establish the survival of departed human beings are recorded in 'Spirit Identity,' by "M.A. Oxon." (Rev. W. Stainton, Moses).¹ Perhaps the longest series of such attempts on record is that carried out by Dr. Hodgson with the American trance-writer, Mrs. Piper, and published at length in the *Proceedings* of the Society for Psychical Research. But the most interesting, and probably the most conclusive, series is that which has just been brought to a close through the mediumship of "Mrs. Holland" and Mrs. Verrall, who received communications and cross-references to each other, from some of their own investigators who are recently deceased. To this evidence, which is to be published by the Society for Psychical Research,² Sir Oliver Lodge referred to as follows, in an address before a meeting of the Society in January last:—

"We find the late Edmund Gurney, and the late Richard Hodgson, and the late F. W. H. Myers, with some other less-known names, constantly purporting to communicate with the express purpose of patiently proving their identity, and giving us correspondence between different mediums. We also find them answering specific questions in a manner characteristic of their known personalities,

¹ Recently reprinted by the London Spiritualist Alliance, 110 St. Martin's Lane, W.C.

² See their *Proceedings* for June 1908.

and giving evidence of knowledge appropriate to them. We require definite and crucial proof—a proof difficult even to imagine as well as difficult to supply. The ostensible communicators realise the need of such proof just as fully as we do, and have done their best to satisfy the rational demand. Some of us think they have succeeded; others are still doubtful. I am one of those who are of opinion that a good case has been made out, and that, as the best working hypothesis at the present time, it is legitimate to grant that lucid moments of intercourse with deceased persons may, in the best cases, supervene, amid a mass of supplementary material, quite natural in the circumstances, but mostly of a presumably subliminal and less evidential kind. The boundary between the present and the future is still substantial, but it is wearing thin in places; and, like excavators engaged in boring a tunnel from opposite ends, amid the roar of water and other noises, we are beginning to hear, now and again, the strokes of the pickaxes of our comrades on the other side. What we have to announce is the reception by old but developing methods of carefully constructed evidence of identity, more exact and more nearly complete than perhaps ever before. The construction can exist quite as much on the other side of the partition as on our side; indeed most, though not all of the inventive ingenuity, has been on that side. There has been distinct

co-operation between those on the material side and those on the immaterial side; and we are at liberty not, indeed, to announce any definite conclusion, but to adopt as a working hypothesis the ancient doctrine of a possible intercourse of intelligence between the material and some other, perhaps, ethereal order of existence."

Light, the leading spiritualist organ, comments upon this as follows (February 15, 1908):—

"Sir Oliver Lodge's obvious but admirable illustration of the excavators, boring a tunnel from opposite ends, exactly describes what is happening—what, in fact, has been happening for a great many years. 'We are beginning,' he says, 'to hear now and again the strokes of the pickaxes of our comrades on the other side.' 'Beginning!' Why, those strokes have been going on for at least three thousand years. The Bible reverberates with them, and, when the Canon was closed, those strokes went on. We are strongly inclined to think that, so far from coming up with something fresh in the world's history, we are only going back with much difficulty to the spot where the excavators on this side grew tired, or turned stupid, and dropped their pickaxes or used them against the excavators who wished to continue the work."

That attempts at identification should be made from the other side can only be attributed to an affectionate solicitude of the departed for those

left behind. For they have the advantage of an acquaintance with both forms of existence. For them the question is solved, and the motives impelling them to aid us in the matter can only be friendly, unless, perchance, they themselves require some evidence that their vanishing earth-memories are aught but the shadows of dreams.

The search after proofs of identity would not be undertaken so laboriously but for the still almost overwhelming presumption against it in the scientific mind. When such views as we have here advocated come to be generally accepted, people will wonder why the survival and identity of individuals was ever seriously questioned. The real obstacle to their acceptance has hitherto been the lack of a rational theory of survival and immortality. That lack must be debited to the unreasonable demands of the various systems of theology, which have ended by driving the thinking portion of mankind into the total denial of a life after death.

CHAPTER VI

CONCLUSIONS

9*

WE have now to survey the ground we have traversed, and sum up the conclusions at which we have been able to arrive.

We found the thinking world practically in the grasp of a materialist view of life, even where it was professedly spiritual. Between the annihilation at death of the thorough materialist and the more grotesque eschatologies of some systems of theology, the only *via media* lay through a reluctant agnosticism which fell back discouraged before a problem so fraught with pitfalls.

We traced this unhappy state of things to a radical evil of modern philosophies,¹ consisting in the duality of mind and matter, which at every turn confronted us with an insoluble problem, that of the nature and significance of "dead matter."

We began by eliminating this difficulty in the only rational way, by substituting a philosophic monism for the prevailing philosophic dualism. We thus arrived at a form of "idealism" which differs from older forms in possessing a new feature. This

¹ Materialism cannot fitly be called a "philosophy."

new feature is the reduction of the "laws of nature" to the laws of life of those universes of dimensionally inferior orders which together we denote by the name of "matter." "Dead matter" is thus completely eliminated from our system, being interpreted in terms of Life, the only reality we are immediately cognisant of.

We then proceeded to investigate those forms of life whose mentality is accessible to us, and which are the only forms hitherto recognised as endowed with "life" at all. We found them all to be aggregates or organisations of life units of all grades inferior to their own, arranged in a kind of hierarchy or system of government, with an infinite gradation from the most vital and essential to the least indispensable. We carried this rule to its furthest limit, in the light of the latest biological data, and found ourselves face to face with the directive elements disseminated through all cells of the body. The aggregate of these elements we identified with the *soul*, and any organised shape consisting of them alone we called the *soul-body*. The directive elements themselves we called by the new name of *psychomeres*.

We investigated the physical properties of the soul-body considered as separated from the physical body, and found it to be of a gaseous nature and a consistency governed by the play of forces we are imperfectly acquainted with, but which may have

some analogy with the unknown (probably electrostatic or magnetic) forces which account for the cohesion of the physical body, or any other physical aggregate.

We found that such a body, in full possession of all the memories of the individual it represented, would naturally inhabit the air, and we provisionally located the abode of such soul-bodies of departed human individuals in the earth's atmosphere, giving evidence sufficient to establish a *prima facie* case in favour of our hypothesis.

We showed that this hypothesis led to no absurdities of a qualitative or quantitative character, and was quite consistent with the known phenomena of life and death and with the permanence of the conditions of earth-life as we know them.

Finally, we quoted a number of duly authenticated metapsychical phenomena observed in recent years and pointed out their consistency with the views here advocated, and the lines along which their full interpretation must be looked for.

It now remains to indicate the directions in which these principles may be further applied, and their general bearing on the fate of the human race.

In the first place, the survival of bodily death has now become a *thinkable* contingency—we might almost say a calculable event. It enters into the domains of physics and of physiology. It is

annexed to the realm of science. The soul has become measurable and weighable, and only requires suitable instruments to become as familiar and tractable as the physical organism. That this is a materialist view is now no longer a valid objection, since all matter is endowed with life, and the soul differs from ordinary matter only by being endowed with our kind of life.

The psychomeres are also the most permanent constituents of the body. They remain when all else changes. The other material is of all grades of complexity. Some of it is hardly more a part of us than our clothes. All of the material of the body possesses some kind of organic life which is to some extent independent of the psychomeres. These only act intermittently as critical directing agents, and their presence is not always essential.

We have considered the possibility of the psychomeres being temporarily withdrawn from the living body, and found no insuperable physical or physiological obstacles to prevent such withdrawal. This possibility accounts for the cases of "externalisation" of sensory and motor activities described in recent works on experimental psychology.

Death, in our view, is a natural process necessitated by the high degree of specialisation of the physical organism, and especially by the permanence and solidity of some of its structures. It is best described as a kind of "moult." It is essentially

painless, though usually preceded by suffering of some kind. It is credibly described as an extremely pleasurable process in itself, and may have been known as such to some generations of the human race. If such generations ever existed, their extinction is easily accounted for by suicide, and the survival of other tribes who had a greater fear of death, these being the "fittest" to survive for that reason. The fear of death is a racial instinct making for its terrene prosperity. It has evolved with the evolution of man.

The intellect may think out this view of the future life to the uttermost limit without much danger of arriving at any insuperable objection. But the heart may also find its peace here. The prospect held out to us is alluring. We need not sorrow for our loved ones. They are passed on to a more subtle joy, a more vivid realisation of their infinite possibilities. They are no longer fettered by the ponderous clay which encompasses and impedes ourselves. They dwell in higher realms, invisible to us as yet, but not far removed, with no impassable gulf between us and them. And when we go to join them, they are nowise debarred from appearing to us at our bedside in the forms we loved, and they may bear those shapes until such time as we ourselves shall have been taught by them to take wing to our more blissful abode.

And the sinners of this earth shall not go to a dreary place of punishment. Their suffering will lie in this, that their inmost nature is open to every gaze. Their soul-body assumes unconsciously a shape expressive of their prevailing thoughts, just as our own faces do in the course of years. Thus there is no dissimulation or deception. If even on earth people choose the society that is congenial to them, how much more rapidly will this be accomplished in a world where every thought is made instantly patent and perceptible! Those characters which do not make for the welfare of the community at large will be easily identified and discouraged until by their own efforts their bearers succeed in bringing themselves more into conformity with their surroundings. Thus we have no need for a hell, nor for torturing devils. Those nightmares of the dark ages disappear before the new light.

And when we take a cosmic view of the processes of life and death and eternity, what do we find?

We see an infinitude of worlds like our beloved earth swinging on their way through illimitable space, gathering up stray matter as they go. And from the surface of each planet their arises a gentle mist, a mist of living souls, generated by that wonderful alchemy of life which has its laboratories on the outer skin of the planet. In those laboratories the less highly organised species of matter are

trained in the course of untold ages to accommodate themselves in more and more complex organisms, until even the lowliest of material—but sentient—entities rises to become a psychomere and to take its place in the permanent service of a being akin to man. Thus is matter gradually made aware of its higher destinies, and the “reveille” resounds to the very depths of the earth.

And that incense of souls which first mingles with the clouds and then transcends them, mounts higher and higher, increasing both in tenuity and in intrinsic worth and power, until it is fit to leave the earth and inhabit the interplanetary regions. And even then the prospects are infinite, for, as I have shown in “Two New Worlds,” there is an infinite gradation of densities both within and without, and the infinity of worlds is matched by our infinite destiny.

And thus we stand, great and free, on this earth of ours, masters of ourselves and our life conditions, with higher and higher calls awaiting us beyond. We stand here fearless and dauntless, not in our solitary strength, but in the living consciousness that we, too, are born of God, that we share His freedom and His power, and that here, now, and for ever we may share His eternal bliss.

INDEX

- ABNORMAL** psychology, 208
Abode of the soul, 163
Absolute reality, 162
Activity, 46
Aërial existence, 167
Aggregates, 103
Aksakoff, Alexander, 313
Amalgamation, 194
Amoeba, 66, 69
Amphipyrenin, 108
Ancestors, 196
Animal magnetism, 204
Animals, 191
Anthropomorphic images, 143
Apparitions, 183
Aspect of the earth from the
 soul-world, 176
Assimilation, 11
Assmann, 167
Asters, 73
Astral body, 109, 209
Atmosphere, 165
Atmospheric precipitation, 170
Atoms, 212
Automatic writing, 185
Automatism, 209

BACTERIA, 195
Ballons-sondes, 167
Barrett, Professor W. F., 216,
 303, 312
Bille-Dahl, Frau von, 313
Biogenesis, 80
Biogens, 103
Biology, 90, 208, 212
Biophores, 148, 147
Birth, 32, 70, 115
Blackburn, Charles, 248, 284

Bloch, 61
Blondlot, 17
Blood-relationship, 179
Blyton, 219
Body and soul, 99
Boirac, 209
Bones, 66
Bose, 11
Boyhood, 36
Brain, 52
Burke, Butler, 11, 80
Burning bush, 157
Business, 43
Business of life, 39
Bütschli, 118, 119

CARPENTER, 303
Cataclysm, 97
Celestial potentates, 143
Cell-bridges, 60, 106
Cell-community, 150
Cell-division, 117
Cell-life, 150
Cells, 53
Centrosome, 73, 147
Chemical reactions, 149
Chemical species, 90
Chloroform, 153
Christianity, 131
Chromatin, 72, 108, 146
Chromosomes, 72, 146
Civilization, 41, 181, 200
Cohesion, 111, 150
Coldest temperature, 171
Cold wind, 307
Coleman, Benjamin, 247
Colloid, 103
Comets, 163

- Conception, 130, 198
 Condensation, 148
 Conducting layer of the atmosphere, 169
 Conjugation, 71, 118
 Conservation of energy, 144
 Continuity of natural phenomena, 141
 Control, 186
 Cook, Miss Florence, 219, 224
 Cope, 12
 Corner, Mrs., 219, 224
 Cosmic view of immortality, 327
 Cox, Sergeant, 261
 Cremation, 151
 Cripples, 156
 Crookes, 218, 233, 247, 249, 256, 265, 269, 302, 303, 306
 Curative hypnotism, 216
 Cytoplasm, 62, 147

DANGERS, 187
 Darwin, 88, 145
 Davenport Brothers, 209
 Dead matter, 26
 Death, 48, 68, 150
 De Barry, 119
 Definitions, new, 28
 Definition of a world, 88
 Definition of the human body, 105
 Definition of the soul, 112
 Deformed conditions, 152
 Demons, 183
 Density of population, 166
 D'Espérance, Madame, 291, 313
 Determinants, 146
 Determinism, 64, 91
 Development, 127
 Devils, 308
 De Vries, 146
 Diagram, 99
 Dialectical Society, 294
 Differentiation of the cells, 71
 Digestive system, 52
 Dines, 168
 Directive elements, 150
 Disease, 46, 153
 Disintegration, 151, 195

 Divine ruling in the next world, 143
 Dogma, 137
 Double, 209
 Drapery, 155, 286, 292
 Dream and reality, 18
 Dualistic systems, 97
 Duplex personality, 197
 Duplication of consciousness, 123
 Du Prel, 216

EARTH memories, 155, 159
 Ecstasy, 185
 Eimer, 12
 Electrical experiments with Miss Cook, 234
 Electrons, 110, 148
 Electrostatic attraction, 150
 Elysian fields, 142
 Embalming, 151
 Embryology, 128
 Engelmann, 118
 Enjoyment of life, 44
 Epigenesis, 127
 Equality, 199
 Ethics, 180
 Eusapia Paladino, 209
 Evil, 180
 Exaltation, 209
 Exercise, 45
 Experimental psychology, 203
 Exposures of mediums, 292
 Externalisation of personality, 111
 Extreme cold, 171
 Eyes of the soul, 174

FACTS, 16, 268
 Fairies, 184
 Fairy bush, 157
 Faith-healing, 217
 Family life, 43
 Faraday, 303
 Fevers, 153
 Fidler, 313
 Finality, 139
 Firmament, 137
 Fish, 156

Fission, 70
 Flame, 157
 Fluid, 211
 Force, 211
 Fourth dimension, 161
 Fox, Misses, 302
 Freedom of choice, 64, 199
 Free will, 91

GEMMULES, 145
 Genius, 185
 Germ-cells, 72, 125
 Germ-nucleus, 120
 Germ-plasm, 146
 Ghost, 159
 Girlhood, 36
 Gnomes, 184
 Growth, 32
 Guerilla warfare, 154
 Gully, 251

HAECKEL, 55, 130
 Hades, 140
 Hall, 218, 256
 Hamilton, Rowan, 86
 Happiness, 44
 Hare, Professor, 303
 Harrison, W. H., 218, 234, 247,
 256, 257, 274
 Haunting, 209
 Health, 41
 Hearne, 277
 Heitzmann, 57
 Helium, 26
 Henslow, 12
 Hergesell, 168
 Hertwig, 119
 Higher strata, 167
 Hodgson, Dr. R., 317
 Home, D. D., 302
 Homeric poems, 159
 Hyperboulia, 216
 Hyperesthesia, 214, 216
 Hypermnnesia, 216
 Hypnotism, 203
 Hyslop, Professor, 312

IDANTS, 146
 Ideals, 181

Identification, 310, 317
 Idioplasm, 128
 Ids, 146
 Indian, 142
 Individuality, 102
 Infra-biology, 91
 Infra-world, 88, 162
 Infra-world memories, 130
 Infusoria, 120, 195
 Inherited tradition, 125
 Instrument, 40
 Intelligent communication, 187
 Intercommunication, 175
 Introspective school, 203
 Invasion of the earth-world, 200
 Invisible psychomeres, 147
 Invulnerability, 156
 Ionisation, 148
 Ionised air, 176
 Isothermal, 169

JERUSALEM, 142
 John King, 283
 Judgment Day, 132
 Jupiter Pluvius, 170

KARMA, 198
 Karyokinesis, 72
 Katie King, 218, 288
 Kindred souls, 174
 Kingly souls, 200
 Klebahn, 119
 Knot-formation, 103

LANGUAGE, 33
 Laws of chemistry, 90
 Laws of nature, 22, 28, 76
 Le Dantec, 11, 45, 66
 Leduc, 11, 63
 Lehmann, 11, 63, 80
 Liberty, 163
 Life, definition of, 10, 28
 Life in the atmosphere, 171
 Life-period of atoms, 26
 Linin, 108
 Lockyer, Sir Norman, 88
 Locomotion, 173
 Lodge, Sir Oliver, 12, 144, 303,
 317

- Lombroso, Professor, 267, 303
 Lower organisms, 191
 Lubbock, Sir John, 294
 Luxmoore, 218, 234

MACRONUCLEUS, 120
 Makdougall-Gregory, 256
 Marryat, Florence, 218, 247, 260
 Mars, 163
 Marshall, Mrs., 279, 283
 Mass of individuals, 24
 Materialisation, 291
 Materialism, 92, 96
 Matter, 14, 15, 19, 28
 Matter in terms of life, 21
 Maturity, 37, 120
 Maupas, 118
 Maxwell, Dr. J., 297
 Mediums, 187, 274, 284, 295
 Mental pathology, 203
 Mesmerism, 203
 Metapsychical phenomena, 209,
 297, 300
 Metempsychosis, 197
 Meyer, 58
 Microbes, 153
 Micronuclei, 120
 Micro-organisms, 151
 Minot, 118
 Mitosis, 72, 147
 Mohammedan paradise, 142
 Moment of death, 108
 Monism, 97
 Monstrosities, 71
 Moon, 163
 Morselli, Professor, 312
 Multiple personality, 290
 Muscles, 50
 Myers, F. W. H., 214, 303, 317

NATURAL form, 156
 Navigable balloons, 157
 Nerves, 51, 67, 105
 New equilibrium, 155
 New faculties, 152
 New psychology, 203
 Newton's law, 80
 Nirvana, 176
 Nitrogen, 196

 Non-Euclidian space, 160
 Noxious insects, 192
 N-rays, 17
 Nuclear organism, 107
 Nucleus, 62, 70, 110

OBJECTIVE reality, 272
 Old age, 116
 Ontogeny, 130
 Optional immortality, 194
 Organic body-building, 36
 Organic consciousness, 36
 Organs, 103, 125
 Orthodoxy, 272
 Outline of the earth-body, 155
 Oversoul, 96
 Overton, 119

PAIN, 153
 Paladino, Eusebia, 301
 Paralamin, 108
 Paul, Saint, 96
 Peebles, 283
 Permanent survival, 193
 Personality, 40
 Perrin, Mrs., 283
 Phantom, 140
 Photograph of Katie King, 222,
 232
 Phylogenetic, 130
 Physical causality, 127
 Physical explanation of life, 62
 Physical life, 31
 Pillar of cloud, 157
 Pillar of fire, 157
 Piper, Mrs., 312, 317
 Pixies, 184
 Plants, 163, 192
 Play of features, 174
 Podmore, 303
 Polaroscope, 176
 Politics, 43, 79
 Political economy, 78
 Poor ghost, 140
 Popular notions, 142
 Possession, 186
 Pre-existence, 115
 Pre-formation, 127
 Press on "Katie King," 265

Principle of continuity, 141
 Principle of economy, 161
 Principle of value, 141
 Propagation of light, 80
 Properties of living matter, 11
 Protoplasts, 103
 Pseudo-mediums, 274
 Psychical research, 111
 Psychology, 85, 203
 Psychomeres, 146
 Psychometry, 209
 Psycho-therapeutics, 209
 Putrefaction, 117
 Pyrenin, 108

RADIOBES, 11
 Radium, 26
 Raps, 294, 300
 Regeneration, 129, 198
 Reincarnation, 197
 Renewing power, 68
 Reproduction, 11
 Responsibilities, 201
 Resurrection, 84
 Retrocognition, 209
 Return to earth-life, 186
 Richet, Professor Charles, 289, 303
 Rogers, E. Dawson, x
 Ross-Church, Mrs., 218, 247, 260
 Rotch, 167

SALAMANDER, 129
 Schmitz, 119
 Science, 79
 Scientific demonstration, 134
 Scientific research, 83
 Second childhood, 116
 Self-consciousness, 193
 Selfishness, 42
 Separation of the soul from the body, 111, 152
 Sex, 125
 Sexes, 195
 Sexual reproduction, 72
 Shape of birds, 157
 Shell, 140
 Showers, Miss, 261
 Sidgwick, Alfred, 76

Sidis and Goodhart, 197, 290
 Skeleton, 50
 Sky, 176
 Sleep, 44
 Soap-bubble, 165
 Social activity, 173
 Social consciousness, 34
 Social status, 45
 Society for psychical research, 215
 Solace of religion, 135
 Soul, 85, 92, 109
 Soul-body, 144
 Soul-division, 123
 Soul-world, 160
 Specialisation, 213
 Spencer, 121
 Spindle, 73
 Spireme, 72
 Spirit, 113, 145
 Spirit circles, 297
 Spirit forms, physical characteristics, 275 ; mental characteristics, 281
 Spirit hypothesis, 217
 Spirit identity, 282
 Spiritism, 204
 Spiritual body, 108, 109
 Spiritualists, 273
 Stainton-Moses, Rev. W., 209, 317
 Statistics, 197
 Statistical laws, 98
 Stoney, G. Johnstone, 81
 Subliminal consciousness, 214
 Subliminal self, 216
 Suggestion, 209
 Summary of theory, 205
 Sun, 163
 Sunlight, 173
 Superiority, 177
 Supernatural help, 304
 Supraliminal memory, 216
 Supra-world, 88, 162
 Swarm of midges, 158
 Sylphs, 184
 Sympathy, 182

TABLE-TILTING, 294
 Tapp, 226, 234, 243, 257